AGILE GOING GLOBAL– CAN YOU MANAGE THE KNOWLEDGE?

AGILE METHODOLOGIES INFLUENCE ON MNCs' KNOWLEDGE MANAGEMENT

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Master degree Project submitted to Graduate School for the degree of Master of Science in International Business and Trade

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ABSTRACT

Previous research has emphasized the role of multinational corporations' (MNCs') knowledge management as a way to trigger the dynamic capabilities. As a means to respond to change, agile methodologies allowing for flexibility have been widely adopted among software firms. Since the intersection of MNCs' knowledge management and agile methodologies has received little attention in the literature, this study addresses this deficiency by investigating how agile methodologies influence the knowledge management of an MNC. This is done through a single case study of an MNC located in Sweden, China and the United States. The findings reveal that agile methodologies building on social capital and tacit knowledge, combined with the globally dispersed nature of MNCs that comes with cultural-cognitive pressures and difficulties in interacting face-to-face, increase the challenges on the MNCs' knowledge management. The combination of fields increases the need for structure and a strong organizational culture in order for the knowledge management to be efficient. By renewing social settings, creating mutual dependencies and building trust, organizational learning is improved, and the dynamic capabilities triggered. Lastly, the authors suggest some practical solutions of how to manage knowledge within an agile MNC, providing a valuable contribution as the intersection of the two fields are likely to become further interconnected in the future.

KEYWORDS:

ACKNOWLEDGEMENT

We would like to show our greatest appreciation to the case company and the interviewees who have contributed to this study. Without their cooperation and interest in helping us, this study would not have been possible to conduct. In particular, we would like to thank our contact person at the company who has supported and provided us with the right contacts.

Secondly, we would like to express our gratitude to our supervisor Niklas Åkerman, for his guidance and valuable critique during this process. Furthermore, we would like to thank our peer students at the School of Business, Economics, and Law at the University of Gothenburg who thoroughly viewed and criticized our study and provided valuable feedback during the process.

Gothenburg, June 7th, 2019

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LIST OF ABBREVIATIONS

MNC - Multinational Corporation

TSLS - Transnational Learning Structures

ICT - Information and Communication Technologies

KM - Knowledge Management

PI - Program Increment

US - United States of America

LACE – Lean-Agile Center of Excellence

TABLE OF CONTENTS

TABLE & FIGURE LIST

1. INTRODUCTION

This section outlines the background to the research area of multinational corporations' knowledge management combined with agile methodologies. This is followed by a problem discussion where a research gap is identified. Thereafter, the research question and purpose of the study is presented.

1.1 BACKGROUND

The international business environment has been through significant changes during the last decades, which has resulted in competition taking place at a global level where firms are rewarded for taking risks and being adaptive. The rapidly shifting global environment of uncertainty and high competition (Zahra & Das, 1993), requires companies to be able to *"integrate, build and reconfigure internal and external competencies"*, something which has become known as dynamic capabilities (Teece & Leih, 2016, p.7). Within a firm's dynamic capabilities lie the concepts of learning and knowledge management. These capabilities are sometimes referred to as practices that an organization need to use in order to solve problems or convert already existing routines (Zollo & Winter 2002). Only if the firm has an established knowledge management process, they can use the dynamic capabilities to further advance the performance (Michailova & Zhan, 2015).

Multinational corporations (MNCs) can be seen as differentiated networks, where knowledge is created in separate parts of the organization and thereafter transferred internally (Bartlett & Ghoshal, 1990). Within these networks, the geographically dispersed MNCs gain experiential global knowledge that eventually leads to organizational, cross-border learning (Jonsson & Foss, 2011; Kogut & Zander, 1993). Building upon this, scholars early emphasized the importance of the overall transferability of knowledge, identifying the role of firms as mechanisms for coordinating and mobilizing individual knowledge (Grant, 1996; Nonaka, 1994). Thus, the ability to efficiently create, transfer and manage knowledge within the whole organization is the main competitive advantage of the MNC (Minbaeva, Pedersen, Björkman, Fey & Park, 2003; Szulanski, 1996). However, the intercultural pressures that MNCs face across nations, organizations, religions and norms may impede the knowledge transfer and thus threat this competitive advantage (Nissen, 2007).

The global environment of today increases the pressure on MNCs to win market shares by becoming more innovative and flexible. Consequently, a recent trend among firms is to adopt an agile methodology (Cervone, 2014; Matarelli, 2018; Michailova & Zhan, 2015). The concept of the agile methods is originally closely connected to software development (Oliva, Couto, Santos & Bresciani, 2018). Furthermore, companies that have implemented agile methodologies are becoming less focused on heavy documentation and process-centered development methods (Singh, Singh & Sharma, 2014), compared to the companies following more traditional plan-driven methods (Takpuie & Tanner, 2016).

The emerge of agile methods have made companies more people-centered with an increased focus on knowledge-based experiences and social interactions, thus, tacit knowledge shared through verbal and informal communication (Chau & Maurer, 2003; Cram & Marabelli, 2018). Tacit knowledge has a personal quality stemming from concrete know-how and skills which are often learned through practices (Kogut & Zander, 1992), in contrast to explicit knowledge that can be codified and transmitted in a formal and systematic language (Nonaka, 1994). Hence, it is stated that tacit knowledge is more difficult to transfer compared to explicit knowledge. Due to the complexity of transferring tacit knowledge, or best practices of a firm, it is argued that there is a gap between what is known within the firm and what is actually being applied (Grant, 1996; Nonaka, 1994; Szulanski, 1996). Thus, with agile methodologies, the communication is moving from explicit to tacit, which increases the risk that knowledge is lost (Chau & Maurer, 2003). Due to the high reliance on tacit knowledge within agile methods, the importance of knowledge management has been acknowledged (Biao-wen, 2010; Cram & Marabelli, 2018; Sing, Singh & Sharma, 2014).

As companies are turning more to agile methods, focusing more on direct communication and less on documentation, it creates new challenges for MNCs and their knowledge management (Johannessen, Olaisen & Olsen, 2001). Many firms have well-established practices for how to manage the knowledge within a traditional plan-driven setting, however as agile methodologies are starting to emerge, fewer firms have developed practices for an agile context (Cram & Marabelli, 2018; Johannessen et al., 2001). Managing knowledge in an agile setting could be argued to become increasingly important for MNCs in order to be flexible and innovative in the global market (Johannessen et al., 2001; Kuusinen, Gregory, Sharp, Barroca, Taylor & Wood, 2017). Therefore, to investigate how agile methodologies influence knowledge

management could be seen as essential in order to secure the competitiveness of the MNC (Lubit, 2001).

1.2 PROBLEM DISCUSSION

The role of knowledge management in connection to MNCs has been featured in a number of studies (Bartlett & Goshal, 1988; Gupta & Govindarajan, 2000; Kogut and Zander, 1993; Jonsson & Foss, 2011; Szulanski, 1996). Several studies have examined knowledge management in traditional plan-driven settings (Johansson et al., 2012; Kogut & Zander, 1993; Schulze, Brojerdi & von Krogh, 2014) in relation to motivational factors (Hayes & Clark, 1985; Katz & Allen, 1982) and as a means to promote innovation (Kogut & Zander, 1993; Schulze, Brojerdi & von Krogh, 2014; Teece & Leih, 2016; Zahra & Das, 1993).

Moreover, organizations are interminably changing their processes, people, infrastructure and technology (Aslam & Rahman, 2017), and the current implementation of agile methodologies is yet another example of this. In fact, change is considered the only constant component within MNCs in order to manage the uncertain global business environment of today (Aslam & Rahman, 2017; Grama & Todericiu, 2016). Thus, even though MNCs' knowledge management is not a new subject within research (Gupta & Govindarajan, 2000; Kogut & Zander, 1993), the continuous change within organizations, such as implementing agile methodologies, requests new research within the area of MNCs' knowledge management.

There is extensive literature on the area of knowledge management in general, however, less research has been done on MNCs' knowledge management in combination with agile methodologies. Knowledge management studies related to agile methodologies within the software field exist, however investigating smaller firms operating within one country (Bari & Ahamad, 2011; Chau et al., 2003; Cram & Marabelli, 2018; Ersoy & Mahdy, 2015; Kavitha & Irfan Ahmed, 2011; Levy & Hazzan 2009; Singh, Singh & Sharma, 2014). Hence, the mentioned research area could benefit from further studies as MNCs' knowledge management in combination with agile methods yet has received little attention, although MNCs to a greater extent are becoming agile (Cervone, 2014). The intercultural embeddedness of the MNC, spanning across continents, norms and cultures, further complicates the knowledge management as individuals from different backgrounds need to find ways to collaborate and share knowledge for the firm to be competitive (Nissen, 2007).

Based on the above, it is evident that there is a lack of case studies combining MNCs' knowledge management and agile methodologies. As mentioned previously, the global presence of an MNC comes with challenges per se, adding to that, when an MNC is implementing agile methodologies relying on tacit knowledge, this further complicates the knowledge management. Performing a single case study would complement this rather unexplored research area, as it provides an opportunity to closely study the MNC and give an in-depth analysis of the knowledge management in an agile MNC.

1.3 PURPOSE AND RESEARCH QUESTION

The purpose of this study is to investigate how agile methodologies influence MNCs' knowledge management. By studying two different theoretical fields; knowledge management within an MNC combined with agile methodologies, the intention is to contribute in the intersection of these fields. With this background, the following research question was formed:

How do agile methodologies influence multinational corporations' knowledge management?

2. THEORETICAL FRAMEWORK

Before introducing the central concepts of knowledge management, it is essential to get an understanding of how knowledge has been defined. The section that follows concerns knowledge management, agile methodologies and institutional theory as these concepts are considered important to understand agile MNCs' knowledge management.

2.1 THE CONCEPT OF KNOWLEDGE

Many organizational researchers have committed to the task of trying to define and explain the concept of knowledge (Blackler, 1995; Grant, 1996; Nonaka & Takeuchi, 1995) which have resulted in multiple definitions. Knowledge has commonly been defined as *"justified true belief"* (Nonaka, 1994; Spender, 1996). However, a more practical view of knowledge, stemming from the fact that "*all doing is knowing, and all knowing is doing*" (Maturana & Varela, 1992, p. 27), points at knowledge as the capacity of an individual to act effectively (Gejman, 2009). Effectively refers to the action as an outcome of possessing the knowledge, that will be better for the individual or the community it takes part in, as it will require less time and resources to be performed compared to non-effective actions (Gejman, 2009). Thus, this definition of knowledge can be seen as less ambiguous and more useful when putting the concept of knowledge in connection to knowledge management (Gejman, 2009), thus favorable for the purpose of this thesis.

Within the field of management, the concept of knowledge can be seen as multi-dimensional with different definitions and categorizations, many of them being relevant for the firm (Grant, 1996). One alternative understanding of the concept is to put it in connection with the terms of data and information (Roberts, 2001). Data can be transformed into information when it is placed in a valuable pattern or seen in a context. In the same manner, information can be translated into knowledge when it is being efficiently applied and put into use (Roberts, 2001), or when it is rooted in the commitment and beliefs of the holder (Nonaka, 1994). However, the literature indicates that the complexity of knowledge seems to go beyond this definition of the concept (Blackler, 1995; Grant, 1996; Kogut & Zander, 1992; Roberts, 2001). Thus, it is important to differ knowledge from information, as knowledge includes an understanding or consciousness that has been reached through experience, learning or familiarity. Hence, it needs to entail a relationship between the individual that possesses the knowledge, the 'knowing self', and the external surrounding (Blackler, 1995).

Consequently, it is important to understand that the concept of knowledge is complex and stems from different orientations and philosophical viewpoints. Furthermore, there is no point of defining the concept of knowledge without putting it in a context (Spender, 1996). In this thesis, agile methodologies constitute the context in which MNCs' knowledge management is to be discussed. However, in order to fully understand this context, it is useful to explain the distinction between the two types of knowledge that exist in literature.

2.2 TYPES OF KNOWLEDGE

The academic literature has outlined two major typologies of knowledge; namely explicit and tacit knowledge (Grant, 1996; Nonaka, 1994; Polanyi, 1966; Szulanski, 1996). Explicit knowledge is possible to codify and can be transmitted in a formal and systematic language. Tacit knowledge has a more personal quality, making it more difficult to formalize as it is rooted in action, commitment and involvement (Nonaka, 1994), and thus resides within the human mind and body (Polanyi, 1966). Applied to a more practical context, explicit knowledge is considered more discrete or digital, as it could be captured and assessed in libraries or databases on a regular basis (Nonaka, 1994). In contrast, tacit knowledge is considered concrete know-how, craft and skills needed to a specific situation and need to be learned through practices and transferred through observations (Kogut and Zander, 1992). Thus, the tacit knowledge may create opportunities in terms of competitive advantages, as well as barriers for firms in different ways, dependent upon how it is managed.

The fundamental issue of tacit knowledge is that individuals tend to know more than they can explain. Hence, tacit knowledge can create difficulties in understanding and diffusing individual skills (Kogut & Zander, 1992; Polanyi, 1966). Furthermore, the mentioned characteristics of the tacit knowledge might constitute a barrier for replication (Kogut & Zander, 1992; Nonaka, 1994). However, Nonaka (1994) argues that knowledge held by individuals, organizations and societies can be increased through a continuous dialogue between tacit and explicit knowledge, with a never-ending process of explicit and tacit knowledge conversion. Thus, in order to fully use the tacit knowledge, it must be presented in an external, tangible form which can be used by others. Hence, the knowledge needs to be transformed from tacit into explicit (Nonaka & Takeuchi, 1995). Depending on how well this continuous interaction between the explicit and tacit knowledge works, it could lead to further

competitiveness of the firm (Spender, 1996). However, Roberts (2001) argues that the recent strong drive among practitioners to codify knowledge could lead to a neglect of the tacit knowledge. Extensive codification may imply that the knowledge becomes more static since the contact with tacit knowledge is reduced. Since innovation is highly reliant on tacit knowledge (Senker, 1995), an excessive codification may implicate a neglection of tacit knowledge which thereof will have a negative impact on the innovative capacity (Roberts, 2001).

2.2.1 KNOWLEDGE WITHIN THE MNC

The knowledge-based view of the firm was initially introduced by Grant (1996), to explain the role of knowledge in relation to the firm's performance and strategic decisions. It is stated that knowledge exists within individuals, however, the organization plays an important role in applying and amplifying that knowledge (Grant, 1996; Nonaka, 1994). Further, it is argued that MNCs exist due to their ability to transfer and exploit knowledge in an efficient way, thus to internalize the existing knowledge (Gupta and Govindarajan, 2000). Also, MNCs should possess the ability to utilize the knowledge resources on a global scale to reach local responsiveness, global integration and global learning (Bartlett & Goshal, 1989). Thus, MNCs have been considered social communities consisting of knowledge regarding how to structure different relationships and the know-how of communicating and cooperating (Kogut & Zander, 1992; Kogut & Zander, 1993).

Looking further into the knowledge-based view, Brown and Duguid (1991) investigated the knowledge-organization and the importance of internal communities within firms. Building upon this, Tregaskis, Edwards, Edwards, Ferner, & Marginson (2010) identified the role of transnational learning structures (TSLS). These are a set of cross-national structures based on social interactions that support learning and aim at identifying, interpreting and diffusing knowledge across national settings. As MNCs consist of a geographically dispersed network, the business and social norms in which the learning take place are heterogeneous (Tregaskis et al., 2010). If these challenges are not addressed, less successful organizational learning may occur (Wong, 2005). Therefore, implementing international project groups, committees, assignments and informal networks enhance learning on a global level, as global policies, best practices and a shared global culture can be reached (Tregaskis et al., 2010).

2.3 KNOWLEDGE MANAGEMENT

As mentioned previously, the concept of knowledge is an abstract notion difficult to define. Since knowledge is increasingly viewed as an organizational resource, concepts of knowledge management have gained more attention. Thus, the concept of knowledge management is, just as knowledge, a multifold concept (Leidner, Alavi & Kayworth, 2006). As a means to create sustainable, competitive value within a dynamic market, firms are establishing extensive knowledge management efforts in order to concentrate and coordinate their knowledge assets (Gold, Malhotra & Segars, 2001). In light of this, knowledge management can be seen to include the aspects of capturing, storing, sharing and applying knowledge, which all overlap and support each other (Leidner et al., 2006; Roberts, 2001). More practically, the definition of knowledge management, adopted from Petrash (1996, p. 370) could be useful, stating that "*knowledge management is getting the right information in front of the right people at the right time.*" Simultaneously, social capital is considered crucial in order to generate knowledge. Gold et al. (2001) refer to social capital as resources embedded within networks of relationships within a social unit. It is through the social capital that firms create and distribute knowledge by using networks of relationships and norms (Gold et al., 2001). Hence, the interaction between social capital and knowledge underpins the organizational advantage, where the shared knowledge forms the basis from which the social systems, and thus the social capital is created (Kogut & Zander, 1992; Nahapiet & Ghoshal, 1998). Furthermore, as both social capital and knowledge develop within social interactions and relationships, the development paths are most likely to be interrelated (Nahapiet & Ghoshal, 1998). Thus, for the purpose of this thesis, social capital and knowledge are considered commensurate, and thus enabled due to two different aspects. The first with a focus on infrastructure capabilities consisting of technology, structure and organizational culture, and the second with a focus on the processes of knowledge management; knowledge acquisition, conversion and application (Easterby-Smith & Prieto, 2008; Gold et. al, 2001; Leidner et al., 2006), which will be described in detail below.

2.3.1 INFRASTRUCTURE CAPABILITIES

2.3.1.1 STRUCTURAL CAPABILITIES

Structural elements refer to norms and trust mechanisms (Nonaka & Takeuchi, 1995; O'Dell & Grayson, 1998). The structural elements within the MNC have the intention to rationalize the behavior of individuals and units (Easterby-Smith & Prieto, 2008), however, the outcome

is often the opposite where sharing and collaboration across internal boundaries are constrained (Gold et al., 2001). There is an overall ambiguity concerning how organizations value individualism versus collectivism. Most MNCs, especially Westerns ones, value individualism by wanting the employees to make their decisions and solve problems independently (Nonaka & Takeuchi, 1995). Through an individual structure, functions and individuals are rewarded for hoarding information, which may impede effective knowledge management (Gold et al., 2001). However, MNCs also assign equal importance to the employees' ability to co-operate and work in teams. Therefore, if the MNC wants to attain the desired amount of collaboration and sharing of knowledge, it is crucial to communicate how the knowledge management is valued both at an individual and team level (Riege, 2005) while allowing for flexibility as opposed to rigidity (Gold et al., 2001). Thus, the incentive system should be designed in a manner where employees are motivated and rewarded and feel responsible for voluntarily participate in leveraging and sharing knowledge while helping others outside their own function although there is no direct personal benefit for that individual (O'Dell & Grayson, 1998).

2.3.1.2 ORGANIZATIONAL CULTURE

The importance of managing tacit knowledge has also been highlighted within the field of knowledge management as a part of the organizational aspect (Roberts, 2001; Nonaka & Takeuchi, 1995; Szulanski, 1996). When trying to transmit tacit knowledge, it is crucial to build a culture that encourages interactions, relationships and contact between employees and different parts of the organization (Gold et al., 2001). Therefore, more focus has been on the 'people side' within knowledge management (Omotayo, 2015; Roberts, 2001), treating the aspect of how the organizational culture influence knowledge management within MNCs (Leidner et al., 2006). The MNCs vision is seen as an important component that could foster an organizational culture in which knowledge management is facilitated, as it could get everyone to work in the same direction with a shared purpose (Gold et al., 2001). Moreover, an organizational culture that encourage open-mindedness and learning is seen as important for an efficient knowledge management (Abdi, Mardani, Senin, Tupenite, Naimaviciene, Kanapeckiene & Kutut, 2018), while having a positive effect on the implementation of knowledge management, especially in regards of innovation (Abdi et al., 2018). Trust and openness are often stated as values that are important and beneficial for the effectiveness of knowledge management (Gold et al., 2001). Furthermore, the vision of the MNC should result in a set of organizational values that supports the individuals to recognize what activities that

should be encouraged for what type of knowledge. However, having a clear vision and organizational values is not enough in order to facilitate knowledge management - these values need to be communicated throughout the whole MNC, while being implemented and translated into actions (Nonaka & Takeuchi, 1995).

2.3.1.3 TECHNOLOGICAL CAPABILITIES

Much attention within knowledge management has been given to the technology that facilitates the codification and distribution of knowledge (Easterby-Smith & Prieto, 2008; Roberts, 2001; Omotayo, 2015). Technology has been considered a crucial prerequisite for knowledge management, as fragmented flows of information and knowledge can be integrated and gathered at one place (Gold et al., 2001). With the development of Information and Communication Technologies (ICT), knowledge management can be facilitated by technological solutions, which becomes especially relevant for MNCs with geographically dispersed people and teams (Gold et al., 2001; Omotayo, 2015). In line with this, there has been a focus on ICTs such as intranets, online databases, and other IT infrastructures of which firms can build multimedia storage of explicit knowledge (Easterby-Smith & Prieto, 2008; Roberts, 2001). In more detail, IT infrastructure within an MNC function as a globally integrated data platform, providing the opportunity of gathering accurate and timely information that works as a basis for business decision-making (Cepeda & Arias-Pérez, 2018). Furthermore, due to the heterogeneous characteristics of both knowledge and technological solutions, it is important that organizations invest in a technological infrastructure that supports the management of both tacit and explicit knowledge (Gold et al., 2001).

2.3.2 KNOWLEDGE MANAGEMENT PROCESSES

2.3.2.1 ACQUISITION PROCESS

The acquisition process concerns aspects of obtaining knowledge and is often referred to as processes of creation, generation or collaboration, where the common theme is the accumulation of knowledge. Creating knowledge requires sharing and collaboration of personal experiences, which can take place at two levels of the organization; between individuals and between the organization and its networks. Through collaboration between individuals, differences such as background and experiences, are brought together, which can be used to create knowledge, thus assuming that interaction between individuals promotes learning. Collaboration between organizations is the other source of knowledge that is considered critical to knowledge acquisition. Through technology sharing, personnel

movement and linkages between the firm and its partners, the accumulation of knowledge is assisted (Gold et al., 2001).

2.3.2.2 CONVERSION PROCESS

It is acknowledged that the main knowledge management challenge is to keep and amplify the value derived from the tacit knowledge held by employees, customers and external stakeholders (Riege, 2005). This process within an MNC refer to making the existing knowledge useful, where aspects of organizing, integrating, structuring and coordinating knowledge are included in the conversion process. When an MNC possesses a lot of specific knowledge in different parts of the organization, the integration and combination of this knowledge are important to avoid "inventing the wheel" all over again, and increase the efficiency (Gold et al., 2001). Within this process, coordination mechanisms such as rules and directives have been acknowledged as positively affecting knowledge integration (Grant, 1996). Adding to this, more soft coordination mechanisms have been identified as important complements for effective knowledge management, referring to the ability of group problem solving and decision-making. Soft coordination implies high-interaction and non-standardized mechanisms in order to handle task complexity and task uncertainty (Grant, 1996). However, since group problem solving and reaching consensus is connected to high costs due to the difficulty of communicating tacit knowledge, these practices should be reserved for more complex and important tasks. While other coordination mechanisms such as rules and directives should be utilized for less complex tasks. Thus, the more complex the task and the higher the level of tacitness of knowledge, the softer coordination mechanisms are required (Grant, 1996).

2.3.2.3 APPLICATION PROCESS

The application process is concerned with the actual use of knowledge (Grant, 1996). This process is referred to as storage, retrieval, application, contribution and sharing of knowledge. Thus, aspects that allow for quick and easy access to the knowledge (Gold et al., 2001). Nonaka & Takeuchi (1995) highlights the MNCs' ability to create knowledge, however, they put no emphasis on how that knowledge could be applied effectively. Grant (1996), on the other hand, identifies a danger with viewing the organization as an entity that only creates, stores and deploys knowledge, since it may conceal the actual processes in which individuals engage to apply knowledge. Thus, effective knowledge application seems to be assumed, rather than treated explicitly (Gold et al., 2001).

2.3.3 KNOWLEDGE MANAGEMENT PRACTICES AND PROCESSES

To sum up, the two different perspectives of managing infrastructure capabilities and knowledge management processes run in parallels in literature. Rather than seeing the practices of knowledge management, as an opposite to the people-side of knowledge management, these can be integrated and seen as complements to each other (Easterby-Smith & Prieto, 2008). As the ability to create, transfer and manage knowledge within the organization is considered the main sustainable competitive advantage for MNCs (Szulanski, 1996), the aspects of infrastructure capabilities and knowledge management processes provide a useful theoretical foundation for defining the firm's overall capability (Gold et al., 2010). Figure 1 has been developed as a visualization of both the infrastructure capabilities, labelled the knowledge management (KM) practices, and the knowledge management processes.
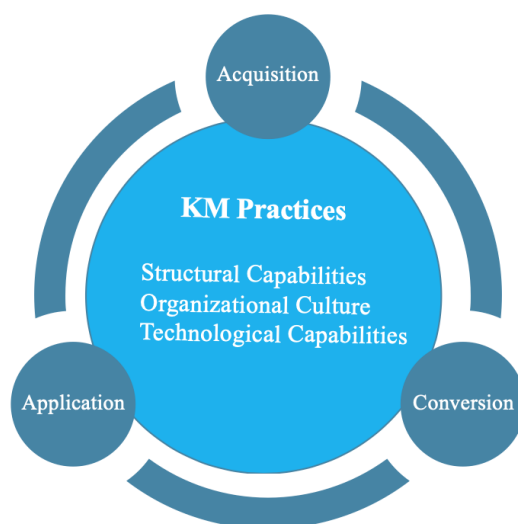
Figure 1: Knowledge Management Practices and Processes. Authors Compilation.

2.4 KNOWLEDGE MANAGEMENT AND DYNAMIC CAPABILITIES

Several authors have investigated the connection between MNCs' dynamic capabilities and knowledge management (Easterby-Smith & Prieto, 2008; Michailova & Zhan, 2015; Sher & Lee, 2004). Dynamic capabilities put a focus on learning, incorporating, building and transferring the internal and external capabilities of a firm (Teece & Leih, 2016), which is why knowledge management is considered a central part of the concept (Eisenhardt, Martin & Helfat, 2000). Not only the fact that knowledge is being identified as a crucial resource, existing within both individuals and organizations (Blackler, 1995), but the practices of actually

managing knowledge is seen as a way for MNCs to preserve and update their dynamic capabilities (Michailova & Zhan, 2015).

Easterby-Smith and Prieto (2008) investigated the connections between dynamic capabilities and knowledge management in an explanatory and detailed way and found that learning is an important component that links the two concepts together. The dynamic capabilities stem from the dynamics of the market, whilst knowledge management is a result of both social and technical elements within the firm, developed in a strategic manner (Easterby-Smith & Prieto, 2008). Even though the technical elements of knowledge management, is affecting the reconfiguration of resources and routines (Sher & Lee, 2004), more emphasis is put on the social elements, such as building relationships (Easterby-Smith & Prieto, 2008). It is thus recognized that knowledge management activities that are collective and focusing on motivation and support trigger the dynamic capabilities the most. Therefore, it is emphasized that companies need to construct and renew social settings that bring learning forward on a daily basis (Biloslavo & Zornada, 2004; Easterby-Smith & Prieto, 2008; Zollo & Winter, 2002). By incorporating learning as a central part in both knowledge management and dynamic capabilities, it will lead to the reconfiguration of resources and routines which eventually can result in sustained performance (Easterby-Smith & Prieto, 2008).

2.5 AGILE METHODOLOGIES FOR SOFTWARE DEVELOPMENT

An organization's ability to be agile is defined as a *"combination of flexibility, nimbleness and speed"* and is increasingly considered as a source of competitive advantage (Singh et al., 2013). Singh et al. (2013) posit that organizational agility is the firm's capacity to create change in two dimensions which often are under conflict, namely; flexibility and the speed of the firm's product or service offerings. During the last two decades, agile methods have been considered a means to help firms to adapt to changing, unpredictable and disruptive environments (Adler et al., 1999; Grewal & Tansuhaj; 2001; Judge and Miller; 1991). Compared to the more traditional software development method, e.g. the Waterfall method, that has been more focused on fixed, sequential steps in which one step has to be completed in order to start with the next one (Balaji & Murugaiyan, 2012). Agile methodologies have emerged among software development firms and are becoming well established within that industry (Oliva et al., 2018). This development has corresponded with the overall increase in competition, which has implied

that the literature on agility, strategic flexibility (Evans, 1991) and decision speed (Judge & Miller, 1991) has increased.

One of the common agile methodologies is called Scrum (Schwaber & Beedle, 2002). One important aspect of the Scrum method is the open office space that facilitates communication (Mishra, Mishra & Ostrovska, 2012). The basic Scrum Team consist of 5-7 employees (Schwaber & Beedle, 2002) and always includes a product owner, a development team and the Scrum Master, where the Scrum Master is the leader and has the overall responsibility in creating an effective team (Gonçalves, 2018; Schwaber & Beedle, 2002). One important facet of agile methodologies is the Program Increment (PI) planning. The agenda of this meeting can include the business context, product vision and organization readiness (Kalenda, Hyna & Rossi, 2018). The overall aim is to plan the next program increment with the relevant stakeholders, prioritize the work and create visibility across teams (Paasivaara, 2017).

Moreover, the Scrum methods build on four main events; S*print Planning, Daily Scrum, Sprint Review and Sprint Retrospective*, which focus is to increase the transparency. The Scrum Team works in periods of time called sprints which last for a maximum of one month and starts with the *Sprint Planning*. At this event, the employees focus on different types of functionalities that the final product requires, which are withdrawn from the product backlog and then placed in the Sprint Backlog (Gonçalves, 2018). The Sprint Backlog is then physically visualized on a whiteboard or with post-it notes in order to make the progress visible. The result of the Sprint Backlog is a version of the product that represents a step forward in the development process, thus an increment that adds up to other increments from previous sprints. When the increment is marked as done the product is ready to be used (Gonçalves, 2018). The *Daily Scrum*, also called standup is a short meeting for about 15 minutes where the focus is to synchronize activities for that day. Once a sprint has been completed, a *Sprint Review* is carried out where an evaluation is made regarding what has been achieved (Gonçalves, 2018), and a short demo is held to show the progress for relevant stakeholders (Schwaber & Beedle, 2002). The customer can be invited to become part of the development process to continuously get valuable feedback and thus enhance customer collaboration (Levy & Hazzan, 2009). Moreover, the *Sprint Retrospective* is a meeting that is held between the Sprint Review and the new Sprint

Planning and is considered a formal opportunity to focus on inspection, adaptation and improvement (Gonçalves, 2018).

2.5.1 KNOWLEDGE MANAGEMENT IN AGILE METHODOLOGIES

Within agile methodologies, knowledge is considered a core resource as it is transformed into products and services during the process and is characterized by team collaboration (Kuusinen et al., 2017). The agile methods further promote tacit knowledge sharing through informal communication channels, such as personalized communication and face-to-face contact (Dybå & Dingsoyr, 2008). As agile methods favor social interactions and individuals over processes (Dingsoyr, Nerur, Balijepally & Moe, 2012), both the informal communication among teams as well as the existence of tacit knowledge increases (Santos, Goldman & de Souza, 2015), implying that the risk of knowledge being lost is augmented (De La Barra, Crawford, Soto, Misra & Monfroy, 2013). Therefore, the organization needs to find a way to facilitate and preserve the knowledge, as a means to build market value and core competence (Amritesh & Misra, 2014) and therefore create a competitive advantage (Lesser & Stork, 2001).

Within agile methodologies, there is less focus on heavy documentation (Singh, Singh & Sharma, 2014), compared to the more traditional Waterfall method where substantial documentation and testing have taken place at the end of each project (Balaji & Murugaiyan, 2012). Hence, the agile methodologies value individuals rather than processes and mainly rely on socialization as a means to share tacit knowledge (Cervone, 2014; Chau et al., 2003). This indicates a movement from process-centered development to people-centered development (Sing et al., 2014).

Furthermore, the agile methods promote cross-functional teams, that are self-organizing, where individuals are able to perform multiple roles. It has been widely acknowledged that agile methodologies facilitate knowledge sharing within a team (Chau, 2005; Chau et al., 2003; Chau & Maurer; 2010; Holz, Melnik. & Schaaf, 2003), which is essential as knowledge sharing promotes the creation of new knowledge (Lesser & Stork, 2011; Zollo & Winter, 2002). Considering the knowledge sharing within agile teams, Santos et al. (2015) identified three elements needed in order to succeed in creating an effective knowledge management process;

development of purposeful practices, organizational support and appropriate stimuli. The practices include face-to-face contact, rotational teamwork, shared meetings, while the organizational support includes strategic aspects, structure, culture, environment and communication flows and channels. Lastly, the appropriate stimuli concern problems, creating shared goals and incentives (Santos et al., 2015). If these three aspects are applied, it is considered to generate successful knowledge management processes.

Furthermore, another way of supporting tacit knowledge sharing within agile methodologies is to implement Communities of Practice (CoP) (Bari & Ahamad, 2011; Levy & Hazzan, 2009; Kavitha & Irfan Ahmed, 2011). Through establishing CoPs, individuals that share a common practice are bound by informal relationship, where the overall aim is to learn and develop through regular interaction within the community (Kähkönen, 2004; Wenger, 1998). Through a decrease in the learning time for new employees, enabling faster response to customer requests and fostering the generation of new ideas, these communities of practices are considered to enhance the organizational performance (Lesser and Storck, 2001).

2.6 INSTITUTIONAL THEORY

As this study seeks to address how MNCs' knowledge management is influenced by agile methodologies, the authors believe that it also is relevant to consider different institutional contexts and the possible impact it may have on the knowledge management. Since MNCs are becoming involved in intercultural interactions across continents, religions, norms and customs, the cross-cultural differences may hamper the knowledge management and subsequently the competitiveness of the firm. Although not handling knowledge management explicitly, the institutional theory could serve a tool to understand cultural change (Nissen, 2007). Albeit the institutional context is an area that often is overlooked when discussing learning and knowledge management within MNCs, it is essential as the institutional structures at the home market may shape the learning and subsequently resonate when the MNCs go abroad (Almond, Ferner & Morgan, 2007; Doremus, Keller, Pauly & Reich., 1999; Lam, 2003). The main principle of institutional theory is that organizations sharing the same environment, will adopt similar practices and therefore become isomorphic with each other (Dimaggio & Powell, 1983; Kostova & Roth, 2002; Meyer & Rovan, 1977). Hence, since individuals in the

same field are considered homogenous, with a similar background and part of the same associations, a shared way of thinking is developed (Dimaggio & Powell, 1983).

Scott (2014) refers to institutions as properties that stabilize and create meaning through processes that are set in motion by pillars of regulative, normative and cultural-cognitive elements which guides behavior and make up or support institutions. These three pillars have been reviewed as the vital ingredients of institutions (Scott, 2014). The regulative pillar consists of processes to establish rules, inspect others conformity with the rules and reward or punish those that do not comply with the rules in order to influence future behavior (Scott, 2014). The normative pillar concerns rules that propose a commonly acceptive, evaluative and obligatory dimension to the social life. Trespassing norms often results in feelings correlated to shame or disgrace, while if complying with norms, feelings of respect and honor are evoked. Lastly, the cultural - cognitive pillar concerns the shared appreciation of the essence of social reality and therefore creates a frame in which meaning is made. The culture within this aspect refers to the more embedded cultural forms, where beliefs are held by some, but not by others and where individuals in the same situation may interpret the situation in different ways. Compliance is considered reached because other ways are perceived as impossible and routines are followed and taken for granted as it is *"the way we do these things"* (Scott, 2014 p. 68). Feelings associated with this pillar are on the positive side, feelings of belief and confidence, while on the negative side, feelings of confusion and disorientation (Scott, 2014). Two culture-cognitive dimensions that have been connected to knowledge management are individualism and collectivism, as these are seen as two main features distinguishing different cultures (Triandis, 1995). In more individualistic cultures, people value independence and are more motivated by their own desires and needs (Yu, 2014). In cultures that are more collectivistic oriented, interdependence is important, and people are motivated by the organization's values and goals. Furthermore, it is found that face-to-face communication will induce a stronger feeling of cooperation in a collectivistic culture compared to an individualistic one (Yu, 2014). From here on, the three institutional pillars presented by Scott (2014) will be referred to as pressures.

As countries apply various institutional pressures, it requires that firms are able to adapt to different structures (Gosain, 2004). However, as many parts of the institutional environment

are country-specific, such as culture and legal systems (Rosenweig & Singh, 1991), this indicates that the MNC might face different and sometimes diverging institutional pressures (Westney, 1993), which in turn can inhibit the knowledge transfer (Khuong Le-Nguyen, Harindranath & Dyerson, 2014). Building on this, Kostova & Roth (2002) developed the concept of institutional duality where the subsidiaries abroad are obligated to comply with practices mandated by the parent company, which creates a within organizational pressure for conformality. While at the same time, the subsidiaries exist in a host country with other institutional pressures to comply with. This results in that each subsidiary is confronted with two distinct isomorphic pressures where it needs to maintain legitimacy both within the host country and the MNC (Bartlett & Goshal, 1988; Grant, 1996; Kostova & Roth, 2002). In order to fully understand the concept of institutional duality, the internal pressures are based on the MNCs home institutional context. Though, the dispersed nature of the MNC creates an indirect institutional influence, as they are filtered through the parent organizations. Hence, the relational context linking the subsidiary and the parent is important as it influences the way these pressures are interpreted and perceived by the foreign subsidiary where concepts of trust, identity and dependency are considered important building blocks (Kostova & Roth, 2002).

Interorganizational trust is defined as a common belief within the subsidiary that the parent; make a good faith effort to behave in line with commitments, is honest and does not take excessive advantage of the subsidiary (Kostova & Roth, 2002). Moreover, Szulanski (1996) noted that a higher level of trust positively influenced the practice transfer, while Tsai & Goshal (1998) found that trust between units facilitated the exchange of knowledge. Identification is considered the degree to which the employees at the subsidiary experience a sense of attachment to the parent and feel that they are part of the parent organization. Therefore, when the subsidiary identifies with the parent, the diffusion of practices increases as the employees perceive themselves as similar to one another (Kostova & Roth, 2002). Moreover, Kostova & Roth (2002) found that within an organizational context, the interdependence is an important element, rather than a power-based dependence. Hence, the parent is seen as equally dependent on the subsidiary, which creates an equal distribution of power between the two (Kostova & Roth, 2002).

2.7 CONCEPTUAL FRAMEWORK

In order to investigate how the agile methodologies influence MNCs' knowledge management, a conceptual framework has been created, as seen in Figure 2. The model is constructed based on the key concepts from the theoretical framework, derived from a literature review of three fields; knowledge management theory, theories on agile methodologies and institutional theory. How the conceptual framework was created in detail can be further examined in Appendix A. In order to analyze the data and answer the research question, the most central concepts have been coupled and visualized in Figure 2.

Regarding the knowledge management practices, the conceptual framework is built on the concepts elaborated by Gold et al. (2001), namely *technological capabilities, structural capabilities* and *organizational culture*. These are a central part of the analysis and are, therefore, logically put in the right circle in the model seen in Figure 2. When examining the theory on agile methodologies and its relation to knowledge management, the authors found that the fundamental concepts can be incorporated into these three broad concepts as well. Thus, the concepts that Santos et al., (2015) describe as the main elements to achieve successful knowledge management within agile working methods; development of purposeful practices and organizational support could both be connected to the broader term of *organizational culture.* Furthermore, Santos et al., (2015) also acknowledge the importance of appropriate stimuli, which can be connected to incentive systems as described by O'Dell & Grayson (1998) and can, therefore, be incorporated under *structural capabilities*.

Moreover, the processes of knowledge management are important to analyze in order to fully understand the knowledge management. Firstly, the *acquisition process* is about knowledge creation, generation or collaboration (Gold et al., 2001). Secondly, the *conversion process* is about making knowledge useful and seeks to generate value from the tacit knowledge within the firm (Gold et al., 2001; Riege, 2005). As the agile working method builds on tacit knowledge (Santos et al., 2015), the conversion process is of particular importance in this regard. Thirdly, the *application process* refers to how the existing knowledge is coming to use (Gold et al., 2001; Grant, 1996). These three processes of knowledge management are visualized in Figure 2 as interrelated with the knowledge management practices, as the processes and practices together shape the knowledge management.

The authors further discovered that the *institutional environment* may affect the knowledge management within an MNC (Nissen, 2007; Tregaskis, 2010). For an MNC to use the knowledge management in an efficient way, the institutional context should be taken into account (Almond et al., 2007; Doremus et al., 1999; Lam, 2003). In the conceptual model, the institutional environment consists of the three pressures presented by Scott (2014), namely *regulative*, *normative* and *cultural-cognitive*. Hence, the institutional environment is illustrated in the left circle in Figure 2, which has an assumed effect on knowledge management.

Finally, as indicated by the research question, the relation between the institutional environment and the knowledge management takes place in an agile context, which is visualized as a background in the Conceptual Framework.
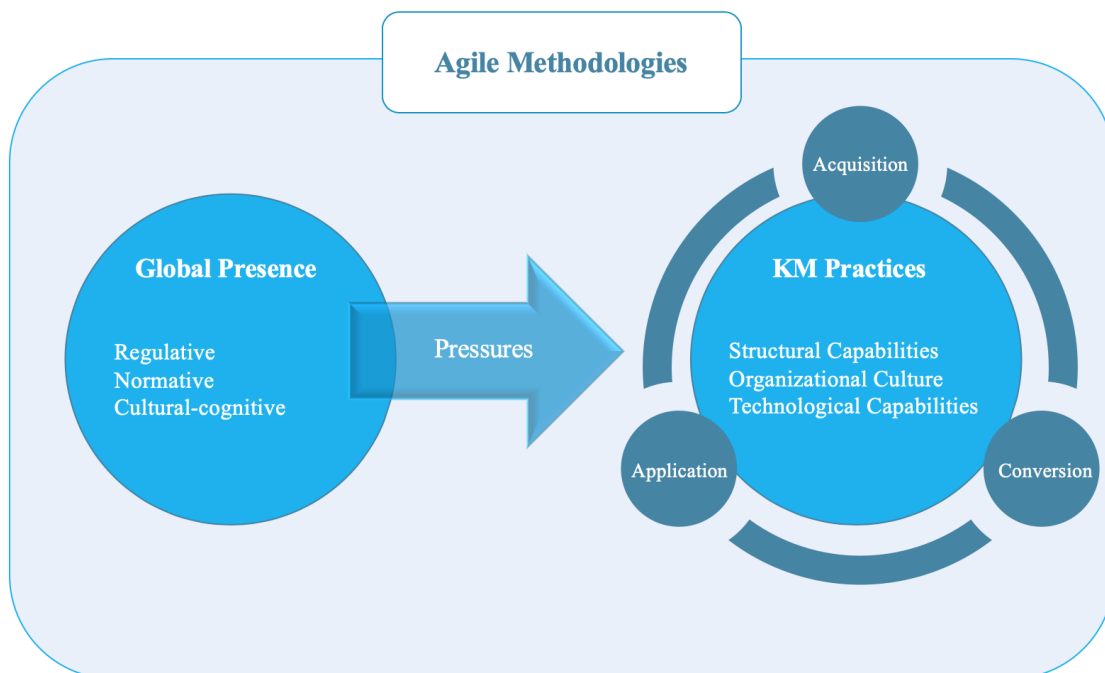
Figure 2: Conceptual Framework. Authors Compilation.

3. METHODOLOGY

The following section includes a systematic and theoretical description of the methodologies that have been used within this study, alongside a motivation of the chosen research strategy. The objective of this section is to provide the reader with a transparent view of how the research has been conducted while giving the reader the opportunity to critically evaluate the quality of the study, which is why discussions regarding the trustworthiness of the study are included.

3.1 ABDUCTIVE RESEARCH APPROACH

The research approach of this study has been inspired by an abductive reasoning, which is considered to fall between the inductive and the deductive approach (Dubois & Gadde, 2002). As the purpose of this thesis is to gain a deeper understanding of how agile methodologies influence MNCs' knowledge management, the abductive approach serves as an appropriate standpoint. From the authors' point of view, it is seen as logical to follow the abductive approach as the investigated research is still quite unexplored. Compared to the inductive and deductive approach, the abductive research approach is considered to be beneficial for theory development as the data is taken into consideration (Dubois & Gadde, 2002; Dubois & Gadde, 2014; Folger & Stein, 2017), and thus considered the right choice for the purpose of this thesis.

As a starting point for this study, the authors began to investigate the existing literature of knowledge, knowledge management and multinational corporations. With this in mind, the authors got in touch with potential case companies, who identified the complexity with knowledge management. Additionally, the focus of knowledge management in connection to agile working methods was initiated as a result of discussion with these companies, as it was noted that agile methodologies came up as a suggested research area from the discussions. After that, the theory was adjusted and adapted according to the newly discovered focus of agile methods, further indicating the abductive standpoint as the authors moved between empirical data and theory (Dubois & Gadde, 2002). Thereafter speculations about the characteristics of knowledge management within agile methodologies were initiated by the researchers, as the authors believed that knowledge management is complex for MNCs within agile working methodologies. This speculation was later confirmed by existing literature and the chosen case company. This is in line with Folger and Stein (2017), who argue that the

abductive reasoning is used in order to come up with speculative, but logical, assumptions about the nature of a problem, thereafter conclude what kinds of evidence that will be needed in order to increase the further understanding of it.

3.2 QUALITATIVE RESEARCH METHOD

In order to understand how agile methodologies influence MNC knowledge management, there is a need to closely study the firm in order to gain an in-depth understanding of the case. Thus, the authors have chosen a qualitative research strategy, with an emphasis on words rather than the quantification of data. This strategy is chosen as a means to investigate the subject in depth and to have the possibility to subjectively analyze the case (Eisenhardt, 1989). The two areas of MNC knowledge management, as well as agile methodologies have both been explored, however separately. Therefore, as the objective of the current study is to contribute to the intersection of the two fields, the aim is to develop existing theory (Eisenhardt, 1989). As the research question indicates, this study takes place in a multinational environment, which is why a qualitative method is considered useful in order to understand the complex variety of contexts that an MNC face, such as different norms and cultures. Getting a qualitative, nuanced and in-depth understanding of different institutional pressures could, therefore, be seen as beneficial for MNCs as well as for the international business research field in general (Birkinshaw, Brannen & Tung, 2011). In line with this, qualitative interviews are used in order to have the possibility to get detailed descriptions of experiences, behaviors and processes (Rowley, 2012).

3.3 SINGLE CASE STUDY

For the undertaken research question, a single case study has been used as it provides an opportunity to investigate the complexity and the particular context for one specific firm (Cassell, Cunliffe & Grandy, 2018; Yin, 2013). Furthermore, the case study approach describes and examines mechanisms that generate a perceived pattern (Tsang, 2014), aspects that were considered important for the research question as the authors wanted to provide an in-depth analysis of the phenomena of knowledge management within an agile MNC. Another benefit with a single case study, compared to for example multiple case studies, is the opportunity to take the rich context surrounding the studied area into consideration, choosing deep case studies over surface case studies (Dubious & Gadde, 2014). Thus, the authors were not willing to sacrifice the in-depth and contextual nature of the study by including more case companies (Yin, 2013). Therefore, the authors have been dedicated to get a good understanding and to

give a detailed description of the context in which the case takes place. Although a single case study, Tsang (2014) argues that theoretical implications still can be generated. Furthermore, to include multiple sources of data is considered to make amends for the potential drawbacks of not conducting a multiple case study (Yin, 2013). Consequently, it is logical to argue that the same result would not have been reached if conducting a multiple case study, due to limitations in resources as well as the need for splitting the attention between many different cases and settings.

3.3.1 SELECTION OF CASE COMPANY AND INTERVIEWEES

As the purpose of the study was to gain a thorough understanding of how knowledge management is used in an agile MNC, a purposive sampling technique was chosen. The criteria when selecting case company was that it should be an MNC, as this is considered to pose several, unique challenges for the firm in terms of the knowledge management processes. Furthermore, the company should have adopted agile methodologies. An additional criterion was that the headquarter should be located in Sweden and preferably in the west of Sweden, due to time constraint of the researchers. Since there are limited amount of MNCs located in the west of Sweden, the selected case was to some extent also selected out of convenience (Cassel, et al., 2018). After screening the market based on the above criteria, the case company was selected. Hence, the case was chosen in a strategic way in order to ensure that the company were relevant to the research question (Silverman, 2010). This type of approach is often used in qualitative studies to identify information-rich cases and focus on individuals with certain characteristics that will assist to develop the research (Etikan, Musa and Alkassim, 2016).

Through an initial contact with the case company, respondents with different roles were identified. One important aspect was to include individuals from different departments but also from different geographical contexts in order to capture the complexity that a global presence may bring for an MNC. Thus, when selecting interviewees, it was based on a mix of managers and employees from different geographical areas as well as different levels of the hierarchy. When investigating the topic of knowledge management, it seems logical to include individuals from different levels of the organization, especially the employees at operational levels. This because, compared to for example executives and other managers, the employees are exposed to situations and challenges on a daily basis where the exchange of knowledge becomes vital. Therefore, within this field, it is considered relevant to include several employees who could give their view of the daily practices of knowledge sharing. This was done in order to include

multiple perspectives, experiences and backgrounds which would create a more nuanced picture of the subject and mitigate biased data only stemming from managers (Eisenhardt & Graebner, 2007).

In this study, the case company is anonymous, hence the name of Company X is a fictive name. Through providing full anonymity the privacy of the company and the respondents is protected, which is likely to improve the reporting of issues and information that can be sensitive for a specific individual (Lavrakas, 2008). Since the subject of this thesis includes topics that could be perceived as sensitive to talk about, such as cultural differences, religions and norms, it is seen as beneficial for the study to provide anonymity for the respondents in order to get as close to the reality as possible while increasing the trustworthiness of the study (Myers, 2013). In order to ensure the anonymity of the respondents, the country they work in is not revealed. This have an impact on understanding who said what in the empirical findings, however it was something that was necessary due to ethical considerations.

3.4 COLLECTING CASE STUDY EVIDENCE

One principle of data collection is to include multiple sources of evidence, which also is the main advantage of case study methodology. Within this study, interviews, documents and observations were included as sources to collect case study evidence. These were considered most relevant for the study as they provide different and complementary viewpoints of the research area. Through a methodological triangulation by using multiple sources of evidence a better understanding of the case study was reached (Morse & Niehaus, 2009). This method further allowed the authors to collect and identify overlapping data which further increased the confidence in the findings as some data were convergent. Furthermore, throughout the process of conducting the case study, the objective has been to establish a chain of evidence that the reader could follow. This is strengthened by including correct citations as well as having a clear research question guiding the overall study. Thus, facets that enable the reader to move back and forth easily in order to trace the chain of evidence. Through this approach, the trustworthiness of the study is increased (Yin, 2003).

3.5 PRIMARY DATA COLLECTION

The primary data was collected using semi-structured interviews with managers and employees at different levels of the hierarchy within the studied company. The questions asked were based

on an interview guide, seen in Appendix C. Although the questions somewhat varied as additional questions were asked dependent on the situation (Rowley, 2012). In comparison to a structured interview, this methodology allows for greater flexibility where the interviewees can speak freely and elaborate on areas, they find important. Hence, the semi-structured methodology is considered appropriate for a case study research (Collis & Hussey, 2014). As the studied area is rather unexplored, it required a possibility that new information could easily be brought up. Accordingly, as the study has an abductive approach with the aim of subjectively interpret the data, the choice of semi-structured interviews was seen as a good choice (Rowley, 2012).

3.5.1 CONDUCTING INTERVIEWS WITH COMPANY X

The main source of data in this study is interviews with employees at the case company. The data is drawn from respondents located in Sweden, the US and China, divided over different divisions, the R&D department and the Management Team. Furthermore, this study has included respondents with different roles, as seen in Table 1 below.

Role	Number of respondents
Release Train Engineer	3
Manager	3
Scrum Master	2
Product Owner	1
Developer	1
Business Analyst	1
Tester	1

Table 1: Roles of Respondents.

As this research design is based on semi-structured interviews, an interview guide was created in order to facilitate the interview situation (Rowley, 2012). This guide served as the foundation for the interviews, ensuring that the relevant topics were covered in the interviews. Investigating a subject such as knowledge management can be perceived as abstract and complex, thus, the authors had to ensure that the interview questions were adapted to the participants and encourage them to talk around the topic (Rowley, 2012). Thus, the interview guide was formulated with a simple and direct language, so that the interviewees would understand the questions in a similar manner. This reduced the risk of obtaining answers difficult to compare or analyze at a later stage.

In order to develop a qualitative interview guide that served the purpose of the study, a first draft was sent to a test person in order to receive feedback on the clarity of the questions. After this, changes to the interview guide were made. As seen in Appendix C, the finalized version of the interview guide starts with general opening questions about the subject and the interviewee, followed with questions relating to how knowledge is being created, shared and reused on a daily basis within agile methods. The questions about MNCs' knowledge management processes were connected to agile methodologies throughout the whole interview, instead of treating the subjects separately. The guide was used purely as guidance for the interviews while allowing for additional questions to be asked, this semi-structured way implied that all interviews differed to some extent, depending on how the interviewee responded. Hence, the interviews had a degree of structure while allowing interviewees to go more broadly, of the interview guide (Rowley, 2012).

Type of Interview	Duration	Date
Face-to-face	60 min	26/3
Face-to-face	30 min	26/3
Face-to-face	60 min	29/3
Face-to-face	35 min	28/3
Face-to-face	50 min	1/4
Face-to-face	30 min	29/3
Face-to-face	40 min	30/3
Face-to-Face	50 min	3/4
Face-to-face	60 min	8/4
Face-to-Face	40 min	9/4
Telephone call	35 min	10/4
Skype Videocall	35 min	11/4

Table 2: List of Interviews.

As seen in Table 2, most of the interviews were performed face-to-face, as it is considered to increase understanding and personal engagement from the interviewee. Through conducting face-to-face interviews, additional information could be withdrawn from social cues, such as body language, voice and language (Opdenakker, 2006). However, as some of the respondents were based in the United States of America (US) and China, those interviews were conducted through a video call using Skype. After receiving consent from the respondents, the interviews were recorded which is considered an advantage (Saunders, Lewis and Thornhill, 2009),

additionally brief notes were taken to further facilitate follow-up on interesting topics. Moreover, the main part of the interviews was conducted in Swedish. This was because it is the mother tongue of most of the interviewees, which enabled a more comfortable interview where the interviewee could speak more freely (Andrews, 1995).

3.5.2 OBSERVATIONS AT COMPANY X

When conducting this study, the authors got access to the case company where a total of 100 hours were spent. This enabled the authors to gain a deeper understanding of the context while also allowing for spontaneous observations and building relations with interviewees. In line with the overall purpose of the study, the main objective with the observations was to see how individuals act in their natural environment which is why the authors kept the active participation at a minimum and tried to solely observe, rather than being active (Höst, Regnell & Runeson, 2006). During the observations, the authors tried to position themselves in a way to not disturb the event and in general avoid interaction with the subjects as that potentially could change their behavior (Klein & Myers, 1999). Moreover, spending time at the case company and observe the daily work of the employees enabled the authors to come closer to the empirical findings. Furthermore, the observations helped the authors when interpreting the empirical findings coming from the interviews as it both created a triangulation of the data while also raising the trustworthiness and confidence of the findings (Eisenhardt, 1989).

Type of Observation	Number of People	Location	Duration	Date
OneTime Pulse meeting	25	Gothenburg	60 min	28/3
CoP	25	Gothenburg	60 min	28/3
RunTime Pulse meeting	15	Gothenburg	60 min	2/4
Show & Tell	25	Gothenburg	40 min	2/4
OneTime Pulse meeting	15	Gothenburg	60 min	11/4

Table 3: Observations.

All observations can be seen in Table 3 above. The authors began to observe different routine meetings held every week, called OneTime Pulse and RunTime Pulse. These meetings are open for everyone to join, however, for the OneTime Pulse meeting, it is mainly the Release Train Engineers and management team involved. The RunTime Pulse meeting is mostly attended by Service RunTime managers and the Lean-Agile Center of Excellent team (LACE-team). From

the interviews, it became evident that it would be suitable to also observe meetings with an overall purpose to share knowledge and increase the learning, which is why the authors also attended a Community of Practice (CoP) and a Show and Tell. Both the CoPs and the Show and Tell are open events in which anyone can join. When conducting observations, the authors focused on how the knowledge was shared, how the discussions developed and if any unwritten and unspoken rule were visible, rather than the content of the actual knowledge. These observations provided the authors with valuable insights of the structured knowledge sharing sessions that would not have been possible to withdraw solely from interviews.

3.6 SECONDARY DATA COLLECTION

In order to get different and complementary viewpoints of the data (Morse & Niehaus, 2009), documents were used as secondary data collection, seen in Table 4 below. The authors found it valuable to compare documents with data from the interviews and observation to reach a deeper understanding of the case company. In particular, the notes from a Strategy Workshop were useful for further insights as employees from all global sites had participated in this workshop. Insights from the interviews regarding the global nature of the MNC and its possible influence on the knowledge management could thereby be strengthened with help from these notes.

Name of Document	Pages	Type of Document	Additional Information
Company Presentation	32	PowerPoint	
Notes from Strategy Workshop including all employees	2	Word	Insights of Global communication aspects
Communication Plan	12	Word	Guidelines for external and internal communication (not launched)

Table 4: Documents.

3.7 DATA ANALYSIS

As presented earlier, this case study has been conducted using an exploratory and abductive approach, implying that the data analysis and the theoretical framework has been developed in parallel. The authors followed the reasoning that data should not be forced into pre-existing categories, the categories should rather be developed from the derived empirical evidence in order to get a deeper understanding of the results (Glaser, 1978).

After conducting the interviews, the collected empirical data was transcribed and the different themes of knowledge management practices and processes were developed. Whilst listening to the recordings, notes were taken if there were any practical circumstances that affected the interviews. By transcribing the interviews, the authors became familiar with the data and the different key points that are brought up by the respondents (Rowley, 2012). The interviews were conducted in both Swedish and English, which has an impact on the transcription process as the Swedish answers needed to be translated to English. In order to minimize the risk of losing some interpretations of details (Nes, Abma, Jonsson, & Deeg, 2010), both authors carefully viewed the translations in order to ensure that they were as similar to the original language as possible.

A codification of the empirical findings was made in order to order to keep track of what has been said during the interviews. The codification of empirical findings can be seen in Appendix D and it worked as a tool for the authors when conducting the analysis. However, as the codification of empirical findings only shows if a subject has been mentioned or not, it does not give any indications of how the respondent talked around the subject, nor how other factors such as social cues could be seen throughout the interview. Thus, the codification does not provide any nuances of how strong a statement is. Reflecting deeper on the data, the process included some logic from the pattern matching method (Yin, 2018), as the collected data was categorized into patterns. The first step of the analyzing process was to see which empirical findings that were the most important in terms of how many respondents that had mentioned a subject, and also how strong the statements were. Moving on, the data was categorized into the existing theoretical framework, using the headlines from the theory section in order to create a logical structure. However, the authors found that in order to analyze all important empirical findings deeper, new theory needed to be added to the theoretical framework, further indicating an abductive way of reasoning. As an example, the theory of collectivism and individualism in connection to knowledge management (Triandis, 1995; Yu, 2014) was added. Furthermore, the theory on institutional duality presented by Kostova & Roth (2002) was added as a result of empirical findings.

3.8 QUALITY OF RESEARCH

In recent years, the issue of research quality in relation to qualitative studies have been contested. Although there is a lack of consensus regarding what measures to use when evaluating qualitative research, the main importance is to ensure a high degree of trustworthiness, which is why this method of evaluation has been used throughout this qualitative case study.

3.8.1 TRUSTWORTHINESS

The concept of trustworthiness refers to the level of confidence in the data, interpretation and the methods used to ensure the quality of the research (Connelly, 2016). Although agreed that trustworthiness is a necessary concept, it has been debated what constitutes trustworthiness (Leung, 2015). For the purpose of this thesis, the criteria of *credibility, confirmability, transferability, dependability* and *authenticity* developed by Guba and Lincoln (1986) have been used to ensure a high level of trustworthiness.

In order to answer the research question, multiple sources of evidence were used such as interviews, observations and secondary data. Through a triangulation like this, the credibility is considered to be further enhanced (Guba & Lincoln, 1986). After gathering the data, the case company got to review the findings, which provided an opportunity to provide feedback and adjust potential misunderstandings, serving as a means to establish a high level of *credibility* in the study. Although having a semi-structured approach which enabled respondents to go off topic, the same interview guide was used as a basis for all interviews, which was done as a means to ensure a high degree of *conformability* and consistency of the study and thus establish neutrality of the findings (Leung, 2015). Furthermore, as described previously, the consistency has been augmented by triangulation of methods which is in line with recommendations provided by Yin (2012). Both authors participated in all interviews, as a means to ensure a coherent view and interpretation of the collected data (Saunders et al., 2009), and avoid biases from one person and thus strengthen the conformability of the study (Guba & Lincoln, 1986).

Although this case study is based on one case company, focusing on the interviewees and their stories, the question of *transferability* is still important as it refer to the extent to which the findings are useful for persons in other settings. As several interviews across different hierarchies within the MNC were executed, the transferability is considered to be increased (Yin, 2014). Furthermore, a description of the data and the context in which it was collected

were provided which is considered to enhance the transferability (Guba & Lincoln, 1986). However, due to time and access constraints, the sample of interviewees is still limited which implies that the transferability of this study to the whole industry could be questioned. However, in order to deal with this issue and further strengthen the transferability, the authors have described the data and the setting in which the data was collected (Merriam, 2009).

In order to ensure the stability of the data over time and conditions and thus increase the *dependability,* peer-discussions were executed where the research process and findings were discussed with neutral colleagues. Through these discussions, the authors were able to be honest with the study while the peers contributed with reflexive analysis and brought up topics that might not have been covered otherwise (Krefting, 1991). Furthermore, through using the same interview guide as a starting point for all interviews, the dependability is considered to be enhanced, as it is more likely to receive the same result if the study was repeated in the same context, with the same methods and the same persons (Graneheim & Lundman, 2004; Guba & Lincoln, 1986).

The *authenticity* of the study was strengthened through carefully selecting the appropriate case company and interviewees and by providing detailed descriptions of the context (Schou, Høstrup, Lyngsø, Larsen & Paulsen, 2011). Thus, a broad range of different realities is presented, which creates fairness of the study (Guba & Lincoln, 1986). Furthermore, the authenticity was promoted through designing the interview questions in a manner that allowed participants to speak freely, and thus ensuring that their voices were heard. This was enabled through the semi-structured interview guide which created a balance between the interviewees and the researcher (Milne & Oberle, 2005). Furthermore, as the researchers continuously asked follow-up questions in order to gain more rich data is also considered a means to ensure that broad viewpoints were shared. All the collected data were transcribed which enabled a more accurate analysis while enhancing the authenticity (Milne & Oberle, 2005).

3.9 ETHICAL CONSIDERATIONS

Throughout the process, ethical considerations have been taken into account. Prior to accepting to participate in the study, the respondents were informed about objectives and topics of the research, implying that none of the respondents was forced to take part in the study (Diener & Crandall, 1978). The case company further got the opportunity to express feedback or concerns on the data collection methods. A mutual agreement concerning how to treat confidential

information was established before collecting data, where the name of the case company and the respondents were kept anonymous. By letting the respondents stay anonymous, this enabled them to talk more freely and open about certain questions, simultaneously increasing the trustworthiness of the study (Myers, 2013). During the interviews, the authors avoided to ask too personal questions and thus not invade the privacy of the respondents (Diener & Crandall, 1978).

4. EMPIRICAL FINDINGS

This section presents the empirical findings of this study. The section is initiated with an outline of the company structure in order to give the reader a thorough understanding of the case. Thereafter, the section follows a logic based on topics that were often mentioned during the interviews such as; agile methodologies, communication tools, organizational culture and collaboration, while ending the section with a short summary of the main empirical findings.

4.1 CASE COMPANY AND THE ORGANIZATIONAL STRUCTURE

The case Company X was founded in the late '90s in Sweden and is active within the IT industry. Today, the company operates globally with offices in Sweden, North America and China, as seen in Figure 3. Company X currently has about 400 employees, spread across the different departments and countries with the headquarter located in Gothenburg. The organization consist of different functions such as Finance and HR, Sales & Marketing, Product Management and Delivery. Moreover, there are two regional divisions of Asia Pacific and the Americas. The major part of the employees is found within the delivery department, which also has been the focus department of this study.

Figure 3: Company X's global business (marked blue) and office locations. Authors Compilation.

The organizational structure of the delivery department is based on different divisions, some divisions are only located in Gothenburg and some are geographically dispersed. In 2011, the company opened up the site in China and has approximately 40 employees. Today, the Chinese site has the overall responsibility for one customer, whilst before only working as a support function. The site in the US opened up in early 2000, with approximately 10 employees and consist of the management team for one customer, while the development team is located in Sweden. Within the delivery department, there are not only the customer-specific divisions, but it also consists of an R&D function with the task of delivering standardized solutions to the customer-oriented division. The function of R&D has not always been present at Company X but was introduced as a means to increase the standardization. However, how much the divisions use the solutions developed by the R&D function varies depending on what the customer is asking for and how the deal is designed. As seen in Figure 4, the divisions and the R&D function each consist of numerous teams. Each team consists of 8-12 individuals.

At the office in Gothenburg, each division is assigned one floor. The purpose of this is both of practical reasons where it is considered good to have members working for the same customer close to each other, but also of juridical reasons. If a customer is visiting the office, they should not see the work of other divisions, which is facilitated by the physical separation.
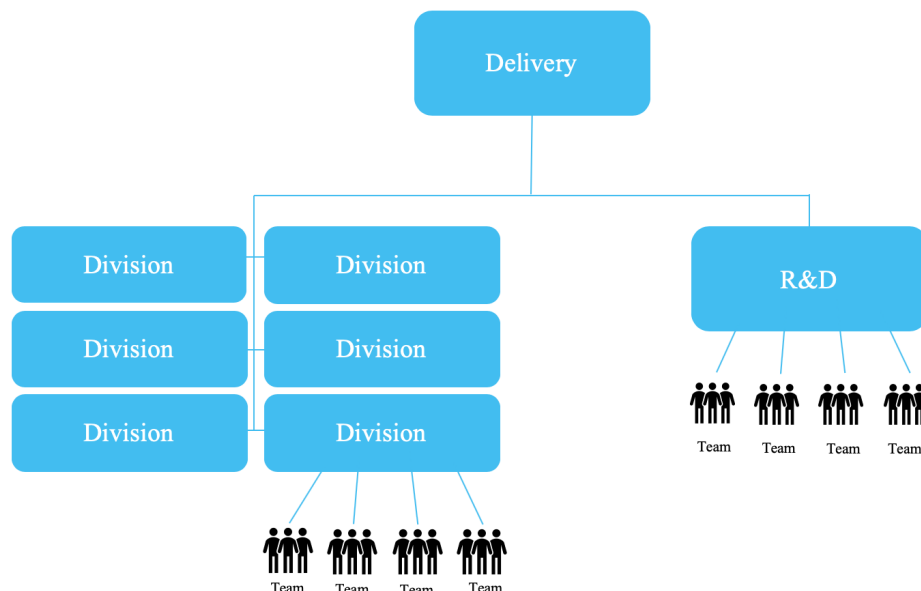

Figure 4: Organization Structure of Delivery Department. Authors Compilation.

4.1.2 OWNERSHIP AND STRUCTURAL CHANGES

During the last years, Company X has been through an intense period of growth with expansion into new geographical areas, which has implied an increase in the number of employees. Only in 2018, one of the divisions went from one employee to 100. This increase comes with challenges for the knowledge management as well as for the organizational culture. The overall growth of the company is considered a contributor for a rather unstructured organizational culture, where the earlier way of spreading information through talking to someone in the corridor is no longer possible.

"We still have a spirit of a small business, where the culture is built upon contact where everyone knows everyone. However, as we are growing, the corridor talks do not work anymore, but we still lack the structure of a big company which creates a rather unstructured way of diffusing knowledge and information."

Interviewee 6

Historically, Company X has provided their customers with customized products, with a company structure built on divisions named after the customers. This structure implied that customers receive exactly what they were asking for, however, it also implied that some divisions could be doing the exact same thing. Therefore, the R&D platform was developed in order to standardize the services. However, as the customers required some form of customization, Company X today are aiming at a balance between standardization and customization, where the R&D function builds a standardized platform, while the different divisions utilize the platform and provide customized solutions. Dependent on how long the respondents have worked at the company, different views are given concerning how the collaboration between divisions and the R&D function is proceeding. Many respondents mentioned that they did not really understand the role of the R&D function in relation to their own work. The reason for this was mainly that the R&D was seen as a separate entity, which the other divisions had little interaction with as it did not come naturally. However, all respondents were curious about the work of the R&D function and showed a positive attitude towards increasing the collaboration, in order to be able to work in a more efficient way.

Furthermore, Company X has been through a change of ownership. Through taking part in observations at routine meetings it was clear that the management wanted to communicate that

it was business as usual for all teams and divisions, despite the change in ownership structure. This was also visible through interviews where none of the respondents mentioned that this would change the way they worked at the moment, but rather something that potentially could create a visible change in two-three years.

4.2 AGILE METHODOLOGIES

Company X has worked a lot in implementing agile methodologies and strives for flexibility and innovation, characteristics that have followed the company from the very beginning. At the headquarter, the company has office spaces which are open, and individuals are in continuous movement. Observations showed that individuals spontaneously walk over to their colleagues to ask for help or to do pair-programming, where one senior person sits beside a more junior colleague and assist her or him in their work. Moreover, the office environment consists of many whiteboards full of post-it notes that are used for planning and updating how the Sprints evolves. These whiteboards are frequently used, and ties are drawn between responsibilities in order to see each team's' responsibilities. Furthermore, after a Sprint ends, each division has a large board on which they evaluate what went well, what went bad and what they are going to do better until next time. The topics can vary between purely work related as well as aspects such as having more coffee breaks or after works together. Observations further showed that the meeting rooms at the Gothenburg office are used frequently, indicating that meetings are held constantly both in large groups as well as between two individuals.

From the interviews, it was clear that the respondents had almost the same view of the agile methodologies, however highlighting different aspects. There is an overall positive attitude towards agile methods as it enables the employees to be more adaptable to the environment surrounding them and to be prepared for new things. Through working with short-term goals, the teams can prioritize the work that is most crucial and deliver accordingly to what the customers want and needs at the moment. Although the exact outcome is not specified at the very beginning, the outcome is often considered better as it is more adaptable and according to what the market desires. If something happens during the Increment the teams are ready and willing to make changes, while also having the freedom to make their own decisions.

"Agile for me is to be within the change, to embrace the change and to work with short term goals (...), it is about understanding the complexity in what we do"

Interviewee 1

Moreover, the importance of having well-functioning teams was also something that became evident throughout the interviews and observations, where teamwork and close collaboration between team members were seen as crucial in order to succeed. Through cross-functional teams where all members work together, the risk of being completely dependent on one individual is reduced. Some respondents also compared the agile methodologies at Company X to previous workplaces where the work was tied to clearly defined steps, something which rather disabled freedom and innovation. Furthermore, the agile methodologies have taken time to implement at the office in China as it took several increments before it was effective. As the Chinese business context is built on traditional waterfall methodologies, this has implied some complications when it collides with agile methodologies. Therefore, there has been issues with contract writing as customers in China might require more details of the outcome than what is normally done in agile methods. However, today the employees in China truly understand the agile methodologies which the respondents believe is because mutual trust has been reached between parties.

4.2.1 PROGRAM INCREMENT PLANNING

The PI Planning is an important part of agile methodologies and is an event that occurs every 12 weeks at Company X. This is seen as an important element for the overall communication and planning at the company. During the PI Planning, employees at the global offices come to the headquarters in Sweden in order to meet face-to-face with the rest of their colleagues, and especially the ones they are working in close collaboration with. Conducting a PI Planning means that Company X sets the roadmap for the coming twelve weeks, taking the new business surroundings, the company's current resources and the vision for the coming period into concern. Furthermore, a Retrospective is also included, considering what to improve from the last PI. Respondents, mostly located in the global offices outside Sweden, also see the PI Planning as an opportunity to get to know their colleagues better.

"People travel to Sweden for PI Planning, to get to know people and see what is happening in Sweden, it is very helpful. Meetings and travel are important - face-to-face is very important"

Interviewee 10

Respondents see this as very valuable and well spent time, as it facilitates for the upcoming work period. During the PI planning, questions that otherwise might not have been brought up are raised and it also gives the team members a chance to get to know their colleagues based in another country, which is seen as vital for the work to run smoothly.

4.3 COMMUNICATION TOOLS

4.3.1 TECHNOLOGY

Respondents at different levels indicated that the technological tools are important for the communication at Company X, working mostly as a strong complement to socialization and verbal knowledge sharing. Four main technological communication tools are used at Company X; Slack (a chat tool), Xnet (an intranet for sharing descriptions and information), email and Skype. The different technological tools are used for different purposes; however, some functions are common. Slack is an application that all employees have access to and is used frequently for quick communication. Thus, it is quicker than email and the employees use it for all types of questions. However, for communication with employees in China, an application called WeChat is sometimes preferred as it is considered to work best in China. Slack is frequently used by developers, where different channels are used for different kind of questions.

"We use Slack a lot, we have different Slack channels where you can write a question, and someone comes with a quick response. It is almost like you have a human network through Slack, where you can ask the questions."

Interviewee 1

Thus, the tool is easy to use and anyone that is active can respond to a question in a channel they are in. It is not unusual that employees use humor when communicating on Slack or WeChat, as respondents express that this facilitates the communication and something that makes the chat more fun and open. This came up especially regarding the communication with global colleagues, as a way of getting to know each other without the possibility of face-to-face contact.

"We use a lot of humor to 'break the ice'. We use GIFs in order to lighten up the communication, it is easy to misinterpret pure text (..)"

<div align="right">*Interviewee 8*</div>

Some channels in Slack involve more employees, whilst some are only within one team or between two individuals. There are numerous channels for different purposes on Slack. However, the characteristics of what is going to be communicated also matters for the usage of Slack. Respondents mentioned that when issues are simple, it works fine to write on Slack, however, if the issue becomes more complicated, face-to-face interaction is preferred. Thus, it was expressed during the interviews that it is important to find a balance between writing on Slack and talking face-to-face, and that the power and efficiency of face-to-face interactions are sometimes underrated. This balance is also identified by another respondent who highlights that you have to use email as a complement to talk to people.

"No one is paying attention to an email that is just a statement. You have to talk to the person, then send an email, then talk again, not just send the same email over and over again. You have to use different ways of communicating."

<div align="right">*Interviewee 6*</div>

Through Slack, it is also common that employees link to a page that exists in the other tool, Xnet, a tool that is viewed as more static with descriptions and documents of different processes. However, respondents expressed that it can be difficult to find what you are looking for when you really need it, as there is so much information with little structure. Keeping the information updated on Xnet is also something that has been highlighted as problematic during the interviews by most of the employees. A general opinion is that individuals are too busy to document sufficiently on Xnet.

"There is a lot of documentation in the Xnet, but I am not sure how much that is used. (...) It needs to be updated, everyone knows that, but it is difficult."

<div align="right">*Interviewee 6*</div>

Furthermore, email is not generally a tool that employees in the headquarter in Sweden use for quick responses, it is more used as a tool for feedback after a meeting. However, individuals

still receive many emails and a common opinion among the respondents is that they receive too many emails while having little time to read them.

"If I am having a stressful day, I do not prioritize to read an email that comes from someone internally at the company, I rather prioritize to work with the delivery towards the customer."

Interviewee 2

Simultaneously, email is seen as an important communication tool when communicating with team members in the US, due to the time difference and other preferences. Due to the agile methodologies, things are in continuous change and therefore the team members need to have a lot of contact, as customers' requirements should be taken into consideration and tasks need to be re-prioritized all the time. Respondents from the division with dispersed team members in Sweden and the US mentioned that the main communication tools are emails in combination with daily Skype calls in order to keep the daily communication going. However, the time difference is highlighted by several respondents as something that complicates the daily contact and the knowledge sharing.

"(...) it becomes more difficult when you do not have the daily, quick, contact. We use email to communicate globally, and you get an answer at night or the next working day. There is a delay all the time, which makes it more difficult to ask follow-up questions."

Interviewee 5

Furthermore, the lack of face-to-face communication further increases communication difficulties between the Swedish headquarter and global sites. A respondent from China expressed that the lack of face-to-face communication creates difficulties in understanding each other, and requested more video calls, however, one mentioned issue is that the facility in China does not have enough video call rooms. For example, the respondent expressed that by only using voice call, it can be difficult to determine whether an issue is urgent or not, as one cannot read face-expressions.

"I think that the language and the culture become issues when we do not have face-to-face talks, when you do not have your face expressions and only your language it can cause problems. (...) We need to have more video call rooms, instead of only listening to a voice all the time."

Employees expressed that there is a lack of structure on which channel to use for what purpose, resulting in that everyone is doing it their own way. The usage of the different communication tools is something that employees learn after a while at the company, it is not a part of any onboarding nor any specific guidelines exist. Several respondents stated that since Company X has been owned by another company for a long time, and are becoming part of a new ownership structure, it is important to really put emphasis on deciding what kind of channels that are used for what type of communication. Thus, there is an opinion that more clear guidelines and templates for communicating would facilitate the overall knowledge management.

4.3.2 DOCUMENTATION

Throughout the interviews, the subject of documentation was brought up. Today Company X uses Xnet for documenting things, such as teams' backlogs. However, respondents mentioned that there was a need to document more in order to increase efficiency. Today the Xnet is used as the main tool for documenting information, although there is a certain discontent with how it works. Employees expressed a certain confusion concerning the structure and that it is difficult to find the information you are searching for. However, a general opinion is that the Xnet has to exist, as the documents need to be stored somewhere if a customer requests it, or if new employees need instructions or information. Moreover, developers also use it for backlogs and to communicate suggestions of improvement that have been highlighted from the team members as important within a certain developing process.

Furthermore, as Company X is growing rapidly with offices and customers in different parts of the world, the need for documentation is considered to be increased. Xnet is expressed as valuable for teams that are not located in Sweden, such as the Chinese teams, who are dependent on the documentation from Swedish developers to know what is happening. It was expressed that the reliance on documentation may vary, if you know whom to talk to and you are geographically close to that person, incomplete documentation can be overbridged by a face-to-face interaction. However, a respondent with experience from the Chinese team expressed that confusion occurs if there is a lack of accurate documentation on Xnet whilst face-to-face interaction is not possible. The same issue was brought up by a team member in a dispersed team located in both Sweden and the US, stating that documentation, although very

short, can be interpreted in many different ways which is complex when you are not geographically close.

"If there is nothing on Xnet people get confused and do not know what is happening. When I was in China, of course, I needed more documentation. Here in Sweden you can just go and have a fika and talk to people, however, more documentation is needed for the remote of teams."

Interviewee 10

An opinion expressed by several respondents is that more documentation is needed, however the main reason to why it is not done to a great extent today is said to be due to lack of time and the difficulty in documenting system knowledge. One team further expressed that documentation made from the very beginning when building the solution made their work more efficient and saved more time, than if no documentation was made from the beginning. Moreover, some respondents raised the concern that employees at Company X are good at documenting the small pieces, however, the more general processes are not documented at all. The small pieces might be relevant during that period of work for those specific individuals, however, the value of it decreases fast after a Sprint or Increment is finished. In general, there is a certain confusion regarding what to put on Xnet and what to write on Slack among employees, where some sort of classification is regarded as necessary in order to structure where to find information. Although seen as a necessity to start documenting more due to the growth of the company, there is also a need to keep a balance in order to not document too much.

"We have to start documenting more but at the same time be careful not to become too focused on details. When you start documenting it is easy to just take another step, and another and another, and at last you have this 'read the instructions on page 42', where everyone has lost their responsibility. We want everyone to feel an individual responsibility here."

Interviewee 9

4.3.3 ROUTINE MEETINGS

Each week company X has different routine meetings. The OneTime Pulse meeting is held once a week where each division report statuses on their ongoing deliveries. The meeting normally involves employees that are based in Sweden, the US and China and therefore some

individuals are present in person, while others share their thoughts through Skype, using a voice call. Due to time differences, China and the US cannot attend simultaneously, which is why the meeting is held at different times every two weeks.

Observations at OneTime Pulse meetings showed that the Release Train Engineers for each division got assigned five minutes each to briefly talk about how their work proceeded. This was done with the aid of a PowerPoint slide with the following order of headlines; *"highlights"*, *"risk factors"* and *"need support with"*. Observations indicated that the main focus of these meetings was for the Release Train Engineers to report what they have done the previous week, how sales were going and if time allowed what issues and problems they were facing. Most of the topics that were highlighted from each division was considered quite specific for that division, with little potential synergies across divisions. When someone was presenting, it sometimes led to a discussion, which often involved R&D. However, for some divisions, it was purely reporting their status, which rather led to a lack of focus among other participants where observations showed that some started to answer emails or send slack messages instead of actively listening to the person that was presenting.

This meeting is open for everyone at the company to join, however, interviews and observations showed that it is mostly Release Train Engineers and the management team that attends. The main reason for this was that the respondents did not feel like they would be able to contribute, which was mostly based on that they did not know the exact purpose of these meetings. Many respondents mentioned that they believed that this was a meeting for the management team and that they almost never got any information back to team level about the topics of these meetings. Based on the interviews, it became evident that the respondents did not know of any explicit purpose of these meetings, which contributed to a certain confusion around why individuals would attend, even though everyone was well aware of that the meetings were open for everyone.

"The meetings are open. But unfortunately, it is not that kind of culture that everyone attends, I don't know if people would think it was strange if I went. And I am not sure how to report the time if I went either."

<div align="right">*Interviewee 7*</div>

The RunTime Pulse meeting occurs once a week and deals with projects that are already delivered to customers which might need maintenance or support, where the Service RunTime managers are presenting, and the LACE-team is in charge of running the meetings. This meeting also involves employees based in Sweden, China and the US which is why some individuals join the meeting through a Skype call. During this meeting, each division presents aspects that are quite specific for that certain division. Observations showed that individuals participating in the meeting were mainly focused on what they were going to present, instead of listening to others. Compared to the OneTime Pulse meeting, the RunTime Pulse meeting had less focus on only reporting statuses and a bit more focus on asking for help. Moreover, every day each team has a Daily Scrum which is a meeting where they talk about what to do during that day in order to stay aligned in their work. Among all respondents, these meetings were seen as an important tool to share knowledge within the team and learn from each other.

4.3.4 WORKSHOPS TO PROMOTE KNOWLEDGE SHARING

Except for routine meetings, Company X has established different sessions in order to increase the knowledge sharing between functions, divisions and teams. These sessions are sometimes mandatory for employees with specific functional roles but are always open for everyone at the company, both to attend and to lead them. These kinds of sessions are called *"Show & Tell"* and *"Communities of Practice"* (CoP) which both have different niches and are aimed at different groups of interests. Each session is held every two weeks, less or more, hence, there is an event every week that is possible to attend. In most of the cases, there are about 20 attendants on every session, however, they are sometimes cancelled for different reasons such as lack of time or that no one is able to hold the session.

Observations show that the sessions of Show and Tell seem appreciated by the employees in which a case is presented, starting with a problem and a potential way of solving the problem. An observed session involved the subject of how to run a test for a solution. In this session, it was mostly developers that attended; however, it was open for everyone to join. During the session, a recorded video showed how the division tested the solution and the three presenters from one division commented on the video. The presenters encouraged individuals to take part in the discussion throughout the session, while also ending the whole session with a comprehensive discussion where individuals could ask questions. The solutions were presented in a way that all individuals could understand and how the exemplified solution could be applied to their own work. Observations showed that the attendants appreciated the

presentation as they followed up with questions, thoughts and possible developments of the test. Although these sessions sometimes are mandatory for specific employees, respondents highlighted that it could be useful for everyone to go, although if it does not concern your specific work area as it is a good opportunity to get a comprehensive view of what is happening in the other teams.

CoP is a broad session and the themes vary a lot, however, it is mostly about more general working processes and practices, like how you are coaching your team members. One general perception about CoPs is that it can be difficult to reach a natural knowledge sharing during these sessions if they are too structured and more like lectures, however, some employees do not see the point of going if there is no clear structure or purpose. Furthermore, it is expressed that it can be difficult to absorb and really use the knowledge that is shared, as you might not take notes for example. However, individuals see the sessions in general as good gateways into knowing who to talk to within a specific area.

"It is rather knowing whom to talk to that is valuable with the sessions, not the content that is presented."

Interviewee 1

The observed CoP was related to servant leadership which relates to coaching leadership and started with a short role play where two consultants within agile coaching did a small act in how to coach each other. This beginning lightens up the environment and the attendants laughed during the play. This was followed by a more structured presentation with the aid of PowerPoint slides where they talked about the history of leadership and coaching, where some of the respondents lost their focus and started to look around in the room. However, following this, the presenters handed out coaching cards as the attendees were going to practice coaching each other. The group of 20 employees were divided into pairs of two and coached each other on real problems they had connected to their current working tasks. The attendants quickly got animated and energetic and started coaching each other with the help of the questions on the card they were given. After about ten minutes the presenters ended the session with a short role play and thanked everyone for coming. Afterwards, some individuals that attended the meeting said that it was a good CoP that was structured and not so diffuse as they normally are.

Based on interviews several respondents stated that they do not always have enough time to attend the sessions, and that these sessions are not prioritized when individuals are stressed. Also, interviewees mentioned that even though everyone is encouraged to initiate a theme or even lead a session, it is mostly the same people that are engaged in them. Furthermore, it is said that managers could be clearer on the fact that it is encouraged that employees attend and lead the sessions, as employees do not fully know if they are allowed to prioritize these sessions or not. Thus, respondents indicated a certain confusion regarding if they could use their working hours to attend to these sessions or not.

4.4 ORGANIZATIONAL CULTURE

Most of the respondents share a common view of the organizational culture at Company X and claim that it is based on collaboration, openness and allowance to make mistakes. Employees are encouraged to be social by asking whoever that might have the answer to a specific question and the culture is described as energetic from many of the respondents. The overall organizational culture is considered to the be the main motivational drive to share knowledge between team members, where a general feeling of working together is the strongest drive. Since individuals are not judged based on their individual work, but rather the teams' work, it becomes natural to prioritize collaboration and contribute to the team and the division.

However, the strong drive to contribute to the team and the divisions best comes with a backside. A strong team spirit is something that is brought forward by several respondents, referring to a feeling of familiarity within teams. However, throughout the interviews, it was mentioned that the divisions were seen as separate entities within the company. The respondents viewed the different divisions as companies within the company, with little or no collaboration and contact in between.

"Collaboration is a central aspect of the organizational culture, but above all within teams and divisions. It is quite paradoxical; it is a lot of collaboration but in a segregated way"

Interviewee 4

Furthermore, the respondents also highlighted the freedom of action as something vital for the organizational culture, where employees are allowed to make mistakes which enables an innovative mindset. This is seen as important as employees are encouraged to try new things,

and that they are not punished for making a mistake, rather a mistake is seen as an opportunity to learn. In the eyes of the employees, this aspect differentiates Company X from many other companies, especially companies in other countries.

"This company is OK if you make a mistake, which is really good. Here, if people are making mistakes, you learn something. You do whatever you think is necessary and it's OK if you make a mistake - that's a main aspect of the culture"

Interviewee 10

Innovation and creativity are important parts of the organizational culture, and respondents highlighted the importance of showing good examples of the company spirit. For example, the company recently had a weekend off-site with the whole company and a task was to make a movie in teams, showing how the company spirit could look like. This was the first time that many of the employees located in global offices met each other. Later on, the best contribution was voted for and shared on the specific Slack channel that existed for the conference trip. Several respondents stated that an important part of the organizational culture is to encourage good actions that show the Company X spirit. Moreover, employees at Company X globally expressed the same view of the organizational culture as collaborative, friendly and open-minded. For the sites located outside of Sweden, the organizational culture and to actually get to know the individuals at other sites were seen as an important aspect in order to increase the collaboration and knowledge sharing.

"The organizational culture is not a bottleneck, it's more about getting to know each other. I don't see that different countries are causing a problem for communicating and sharing knowledge, it's rather to not understand the individual or not knowing whom to talk to that is the problem"

Interviewee 12

However, some respondents expressed that there is a gap between the employees working in the teams and the management, referring to a feeling of hierarchy and that employees not being fully sure of what is going on outside their own team. It was expressed that since the company has grown so fast, it is not as easy to talk to everyone as it was before, which has created discontent among team members. Connected to this, the information and knowledge coming from the management is something that respondents emphasized for improvement, as some

considered it difficult to understand what the management was doing and where the company was going.

"You are in your own small bubble; my team's delivery is the most important thing. But you have no feeling of the next level of it. 'But why is this customer important? Where are we going?' Why is this important?' What world are we contributing to?'

Interviewee 4

Some employees refer to the organizational culture as a bit messy and that Company X could be a bit disoriented sometimes. Respondents also bring this up in connection to the history of the previous ownership. Many interviewees highlighted the importance of knowing in what direction the company is going. Although a certain confusion around the organizational culture exists, some respondents also thought that this confusion could have a positive effect as it could contribute to creating a social cohesion at the company, as it has brought employees closer to each other.

4.5 COLLABORATION

4.5.1 COLLABORATION BETWEEN INDIVIDUALS

The physical environment at the offices has played an important role in how the collaboration evolves. The headquarter in Gothenburg consist of different floors with different divisions on each floor. In turn, the divisions consist of several teams of 8-12 individuals that are sitting next to each other in the open office space.

The individual collaboration is based on having the right network and knowing whom to talk to. Many respondents mentioned that the small chats by the coffee machine could make a big difference in understanding who possessed a certain skill or knowledge, something which in the long run could be very beneficial. Most of the respondents also thought that the collaboration at a team level worked well and that the teams were very strong, which is seen in Figure 5. Having relatively small teams where the team members get to know each other was seen as a contributor in creating a well-functioning collaboration. Moreover, for this purpose teams remain the same during long periods of time. Being physically close to each other and being able to quickly ask a question when needed is also something that was seen as an

important factor for the collaboration. Although in the same office, respondent mentioned that if they needed to talk to another individual at another division, the physical distance of one floor up or down could hinder them to go and talk to that individual face-to-face.

The collaboration between individuals is something that the majority of respondents described as open and with a desire to help others, something which was considered to have its roots in overall organizational culture. Moreover, none of the respondents mentioned that having individuals with different cultural backgrounds as something that impacts their daily work. Most of the respondents mentioned that the desire to share knowledge was more based on personal characteristics than cultural background and that it was an overall desire to help others that guided the individuals. However, it was noted that the general problem is not to find individuals that are motivated to share knowledge but rather to find individuals that are willing to receive the knowledge. Many respondents mentioned that there is a general lack of time and that individuals are very busy with the everyday work so they cannot go to CoPs or Show and Tells, although it would be beneficial for their individual learning.

4.5.2 COLLABORATION BETWEEN DIVISIONS

The collaboration between divisions is something that all respondents mentioned as an important area for improvement. It was found that the collaboration between divisions could take place, but only if the person had some personal connection to an employee at another division, otherwise the collaboration mostly takes place at the team level with a focus on what they are working on. The reason for this was considered to be related to how Company X has worked historically with completely separated divisions that deliver customized solutions, which has created a strong sense of being a family at a division level, however, the same feeling does not exist at a company level. Respondents highlighted that they did not know who is working in which team in the different divisions and that each division works independently. Basically, respondents expressed that they did not know whom that might possess a certain knowledge or skill within other divisions. However, divisions sometimes had dependencies towards other divisions or dependencies towards R&D. Meaning that if the divisions should be able to do x, R&D needs to do y and vice versa. During periods of dependencies towards one or another, the collaboration increased and individuals across divisions talk more frequently to each other. However, during periods of non-dependencies, there are little or no interaction between the divisions and R&D.

"The problem is that we have many autonomous teams that are doing things which are presented for a division owner, but that information is most likely not shared to others"

<div align="right">*Interviewee 5*</div>

Thus, the weak collaboration between divisions is seen in Figure 5 below. Generally, respondents highlighted that they would like to increase the collaboration between divisions and that they could see great synergies and advantages of collaborating to a greater extent. Respondents highlighted aspects such as saving time, minimizing the risk of making the same mistakes twice, increase the learning and become more efficient. In order to be able to reach these synergies, the respondents requested more structured knowledge transfer in order to understand how and where to share information, and thereof decrease the risk that information is lost. Some respondents mentioned demos as an option for increasing the knowledge about what the other divisions are working on. A demo is an open session where developers get the opportunity to show what they have been working on.
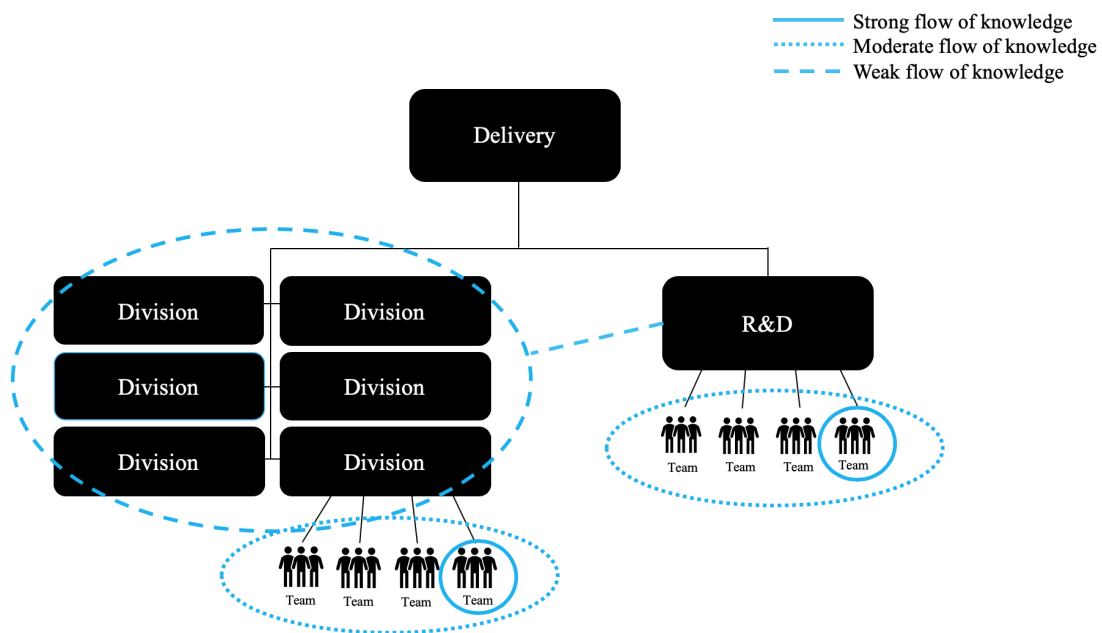
Figure 5: Flow of Knowledge between Teams, Divisions and Departments. Authors Compilation.

4.5.3 COLLABORATION BETWEEN GLOBAL SITES

In order to spread knowledge across continents, one effective way is considered to bring employees from the other sites to Sweden and vice versa, in order to let them see what happens in other offices. It was mentioned during the interviews that the collaboration between the sites of US and China was low, resulting in a weak flow of knowledge as seen in Figure 6. It is

mostly employees from the offices abroad that come to Sweden for a couple of months, something that is considered as well invested money. However, respondents from the office in China would like to increase the exchange with more employees from Sweden coming to China as it is considered valuable both in terms of increasing the network as well as building up relevant competencies.

"It is possible to write kilometers on Xnet, however, it is not the same as meeting face-to-face. When you actually have met an individual in person it is easier to continue on Slack or Xnet afterwards"

Interviewee 3

The quick access of face-to-face interactions is something that the sites outside of Sweden mentioned as problematic as they do not have access to the company network in the same building nor within the same time zone. The office in China sees great potential with transferring employees from the headquarter to China, just in terms of the big network that the individuals might bring.

"If I want to ask anyone anything at the Swedish office, I do not know whom to contact - it is hard. It is really helpful with a big network in Sweden. Although (...) has not moved yet, we already see the effects."

Interviewee 12

From the Chinese perspective, the interviews showed that there is a dependency on information and knowledge existing in the headquarter in Sweden. It was stated that it was sometimes a lack of interest from Sweden to know what happens in China, it was rather the Chinese office that was curious about what the Swedish office was doing. One expressed problem is that it is difficult for the individual possessing the knowledge to know which knowledge gaps that exist between the different entities, thus, what the Chinese office needs. This was one aspect described as hampering the flow of knowledge, resulting in a moderate flow of knowledge between the sites, as seen in Figure 6. One example considered a specific cloud service that the company is using towards customers in China. However, it is claimed that a lot of strategic knowledge about the service is still locked up in Sweden.

"The Cloud technology is our strategy, but that knowledge is quite built up and remained in central. We are lacking that knowledge in China, even though we have to deal with the customer here. From a knowledge perspective, we are quite filled up in central but not regionally. "

<div align="right">

Interviewee 12

</div>

Moreover, one team is geographically dispersed with the development team in Gothenburg and the division management team in the US. As the team works on different continents the collaboration is built much upon trust and personal connection and is described as strong, which is seen in Figure 6 below. The collaboration includes daily Skype meetings as well as some face-to-face meetings, such as the PI planning. The PI planning is seen as a hygiene factor in order to make the collaboration work for the rest of the time. Furthermore, meeting face-to-face is seen as vital as it provides an opportunity to raise questions that otherwise would not have been raised. The team further noted some degree of cultural differences in the US compared to Sweden. Respondents mentioned that it exists differences in regards of delegating work and issues might arise when one individual becomes the source to all knowledge which is considered to be connected to a different managerial culture in the US.
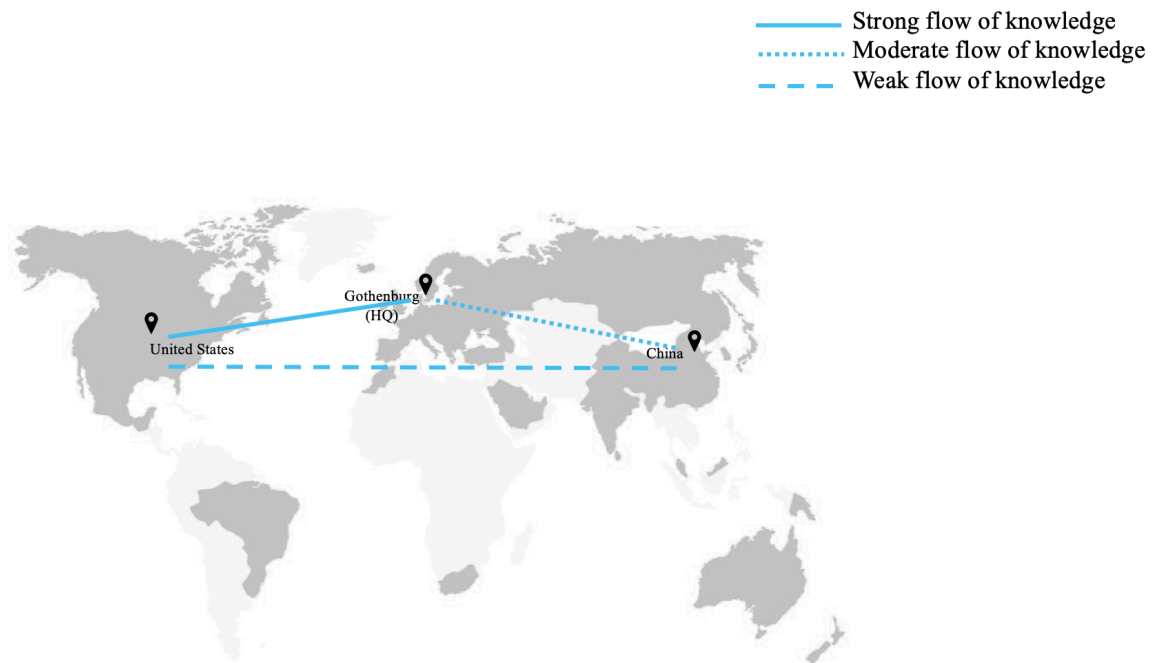

Figure 6: Global Flow of Knowledge. Authors Compilation.

An aspect that was brought up in connection to sharing knowledge on a global level between the headquarter and China was responsibility. Previously, the headquarter just gave instructions to the site in China, but now the Chinese office is in charge of a whole process, from development to delivery. Thus, respondents stated that when the Chinese office got full responsibility for one customer, the motivation for learning increased. This in turn positively affected how the knowledge was shared between the two sites. Hence, to not just give instructions or a small part of a task to the global entities, but for the headquarter to give responsibility for a whole process to the Chinese office has contributed to a positive change.

"That changed a lot. For us to learn is motivating, (....) once you start taking full responsibility, it encouraged me and the team to learn more about the whole process, which encouraged and motivated us to get the knowledge in different areas as we had that demand naturally."

Interviewee 12

4.6 SUMMARY OF EMPIRICAL FINDINGS

The empirical findings show that respondents describe the agile methodologies as allowing for flexibility, openness and innovation. Today, the agile methodologies are implemented throughout the whole company, however, the implementation globally took longer time. The empirical findings further indicate that the technological tools are a natural part of the communication at Company X, as they serve as good complements to socialization and verbal knowledge sharing. However, the respondents expressed a desire for more structure and guidelines concerning the purpose with each tool, as well as a need to increase the storage of knowledge. In relation to this, many respondents expressed that the existing knowledge is not used in an efficient way. Furthermore, it is seen that power dependencies exist between the headquarter and the global entities at the studied company, such as the dependency of documentation. It is further seen that the need for video calls vary among respondents.

A strong and coherent organizational culture was seen as the main motivational drive to share knowledge, where words of openness, collaboration and allowance for making mistakes were commonly mentioned among respondents. Moreover, the collaboration at team level worked well, while the collaboration between divisions and the R&D function and between the global sites, was considered weak. Personal connection was described as the most important factor for knowledge sharing among respondents, especially when problems are becoming more complex. Therefore, the PI Planning, CoPs and Show & Tell were all seen as important events

for building networks and sharing knowledge within the organization. Moreover, having individuals visiting or relocating to the global sites was further seen as enhancing the global knowledge sharing. However, considering routine meetings, respondents expressed a lack of clear purposes and guidelines from the management.

The weak collaboration between global sites was described as partly related to the time zone differences and the lack of face-to-face meetings. However, respondents highlighted that increased responsibility to the Chinese office was found to have positive effects on the knowledge sharing and the motivation for learning. The table in Appendix D shows a codified version of the empirical findings. In the following section, the key findings are further evaluated and analyzed.

5. ANALYSIS

This section will present how the findings relate to the existing literature on knowledge management within an agile organization. The analysis is built on the conceptual framework provided in section 2.7 and thereof starts with discussing the knowledge management practices, followed by an analysis of the knowledge management processes. Thereafter, the impact of the MNCs global presence is analyzed. This in-depth analysis of the different aspects forms the basis in determining the compatibility of the original conceptual framework.

5.1 KNOWLEDGE MANAGEMENT PRACTICES

5.1.1 STRUCTURAL CAPABILITIES

The past years Company X has been part of a new ownership structure as well as an organizational change. The roles of the divisions and R&D has changed, going from fully customized to fully standardized, to where Company X is today, trying to find a balance between the two where R&D function is building a platform that the divisions can use. However, the knowledge sharing between R&D function and the divisions is weak. This is seen in Appendix D, as 9 out of 12 respondents mentioned this as an issue. Respondents communicated a certain confusion regarding the actual role of R&D where many expressed uncertainties around what they were doing and how they could use their solutions. Hence, as the strategy concerning the role of R&D has not been completely defined, the divisions have witnessed confusion regarding how to collaborate with them. This goes in line with what Easterby-Smith and Prieto (2008) and Gold et al. (2001) argue, that the intention might have been to rationalize the behavior of units and individuals, though as noted the outcome is somewhat the opposite it as has inhibited collaboration across divisions. In order to increase the knowledge sharing between divisions and throughout the whole company it could be argued that more clear communication is needed for how knowledge is valued, which is in line with Riege (2005) arguments. Though, the authors argue that it is crucial to also communicate why more collaboration across divisions is needed. The respondents understood that collaboration and knowledge sharing could benefit their work, however still little interaction took place. Thus, in order to increase the knowledge sharing between divisions, a clear purpose should be presented, which in turn can create the awareness and enlightenment needed in order to increase

the collaboration throughout the organization. The authors argue that as the company is growing, the structural element in terms of the norms that Nonaka & Takeuchi (1995) and O'Dell & Grayson (1998) mention, are becoming more important.

The collaboration is not only dependent on clear communication and purposes, the aspects of individualism and collectivism also have important roles. Respondents expressed that issues might occur when individuals in the US become the source to all knowledge, due to another managerial culture. On the other hand, one respondent experienced that they were dependent on knowledge and information coming from Sweden and that the company is *"quite filled up in the central"*. Moreover, this issue is also seen at division level as many respondents mentioned that they had little interaction with both R&D and other divisions, although they were well aware that they might be developing similar solutions. Although collaboration is seen as a cornerstone of the organizational culture at Company X, it evidently exists some facets of unwittingly information hoarding, which inhibits the knowledge sharing, in line with the arguments provided by Gold et al. (2001). This could be explained using Gold et al. (2002) arguments that a typical Western firm value individualism where information hoarding becomes an issue. As mentioned by a Manager, Company X wants their employees to make their own decisions and solve problems in an independent way, which Nonaka & Takeuchi (1995) argue is typical for a Western firm who value individualistic behavior. However, as agile methodologies build on strong collaboration (Kuusinen et al., 2017), there are risks that tensions arise between on the one hand collaboration and on the other hand solve problems independently. Therefore, as agile methodologies promote collaboration, while the individualistic nature of Company X promotes independence and self-problem solving, the authors argue through building upon Riege (2005) arguments that it becomes even more important to clearly communicate how the knowledge management is valued in order to create a balance between the two otherwise conflicting facets.

One way to deal with information hoarding is to implement incentive systems for knowledge sharing. According to the respondents, Company X does not have an incentive system for increasing the knowledge sharing, the knowledge sharing is rather something that is built into the culture and is seen as something that should occur naturally. Though, evidence has shown that the knowledge sharing on a global level and between divisions is low. Although Company

X does not have an incentive system for knowledge sharing, Santos et al. (2015) argue that creating common incentives and goals is vital for a successful knowledge management. Building on Santos et al. (2015), through creating common goals for the whole company and a change of norms concerning the knowledge management, the mindset of the employees could change and thus leading to an increase of knowledge sharing across divisions. Therefore, if the employee's mindset moves from a division focus to a company focus, the knowledge sharing would improve. Thus, having incentive system based on knowledge sharing outside the own team (O'Dell and Grayson, 1998), the efficiency of the knowledge management would increase.

Another way to increase the efficiency of the knowledge sharing is to establish clearer structure around the routine meetings. Respondents expressed a confusion around the purposes with meetings such as RunTime Pulse and OneTime Pulse, as they almost never got any information back to team level about what happened at these meetings. The weekly meetings were mostly attended by managers, although they were open for everyone to join. However, employees within the teams did not see why they should go although they were aware that it might benefit their overall learning and understanding of the company. Moreover, the observations showed that the purposes of the meetings remained rather unclear as it was perceived that meetings were mostly dedicated for reporting statuses, rather than asking for help or learn from each other. Moreover, Company X has different sessions dedicated for knowledge sharing, such as Communities of Practice and Show and Tell, which are both considered examples of how to enhance the organizational performance (Lesser and Storck, 2001), while being considered aligned with the agile methodologies (Kähkönen, 2004); Wenger, 1998). However, respondents expressed a certain confusion regarding if they could devote time to attend or arrange these sessions. Once again related to Riege (2005) and the Conceptual Framework (Figure 2), it becomes evident that it is crucial to have a clear formulated objective on how the knowledge management is valued. Thus, to create a clear objective around the meetings and the knowledge sharing sessions. As mentioned by Interviewee 1, the knowledge sharing sessions are important also in terms of gaining a broader network and that *"It is rather knowing whom to talk to that is valuable with the sessions, not the content that is presented"*. This statement is related to what Gold et al. (2001) refers to as social capital, and thus the CoPs and

Show and Tell could therefore be seen as an important enhancer of social capital and as an efficient tool to create and distribute knowledge throughout the company.

Hence, when investigating the empirical data, it is seen that the structural capabilities, presented in the Conceptual Framework (Figure 2), play an important role in knowledge management within the studied MNC, as stated by Gold et al. (2001). Moving on, the organizational culture evidently also has a major role in creating an environment that fosters knowledge sharing, something which will be further developed in the following section.

5.1.2 ORGANIZATIONAL CULTURE

As seen in Appendix D, 10 out of 12 respondents thought that the organizational culture was important for knowledge management, thus formed an important part in their willingness and overall motivation to share knowledge. Hence, the act of sharing knowledge was seen as something natural and as it was built into the culture. Confirming theory on organizational culture within the Conceptual Framework (Figure 2), the empirical findings show that it is vital to create an organization culture that encourages interactions, relationship and contact between employees (Gold et al., 2001). Respondents mentioned that they felt like it was companies within the company, something which impeded the collaboration across divisions. This is further seen in Appendix D, as 9 out of 12 respondents though that the knowledge sharing between divisions was weak. Interviewee 4 mentioned that collaboration was a central part of the organizational culture, however in a segregated way. This statement is considered quite representative of how all respondents described the organizational culture. The culture encourages interactions and relationship with employees which is in line with what Gold et al. (2001) argue is important, however, across divisions, the interactions are not encouraged to the same extent. This is likely to be related to how the strategy at Company X has been working historically, with customized solutions implying that there was no interaction across divisions. However, today the strategy is more based upon collaboration across divisions, as the solutions to some extent are standardized. This movement from customized towards more standardized solutions has yet not fully been applied to the whole company as employees still see the divisions as separate entities. The fact that the interactions across divisions are low is evidently impacting the knowledge transfer as the potential synergies between divisions are not taken advantage of. Gold et al. (2001) argue that the organizational culture should encourage

interactions across different parts of the organization, although this is something that clearly has been identified as complex and difficult to achieve at Company X.

Although that Company X was viewed as to some extent segregated, the organizational culture was perceived similar among the respondents. Interviewee 10 mentioned that making mistakes is a way of learning, something which creates an innovative mindset. The fact that the employees have the courage to make mistakes is likely something that would not have been possible if a certain degree of trust was not built into the organizational culture. This is in line with Gold et al. (2001), who argue that trust and openness are beneficial for the knowledge management, which is something that also is seen as an important contributor to the organizational culture at Company X. Generally, the organizational culture at Company X is viewed in the same way by the majority of the respondents, regardless of where they are located or in which function, they work in. Collaboration, openness and allowance for making mistakes were words frequently used when describing the organizational culture. Having a culture that is perceived similar among employees from different parts of the organization is something that Abdi et al. (2018) see as an important factor for MNCs as the organizational culture is exposed to different institutional pressures which are likely to impact the culture in different ways. Employees at the offices in China and the US mentioned that to get to know the individuals in Sweden played an important role in order to increase the knowledge sharing and maintain the organizational culture similar across sites, where meetings such as the PI planning and Daily Scrums were seen as vital. Thus, an aspect that has been important for the organizational culture to remain open and collaborative is to meet face-to-face, which is in line with the arguments provided by Abdi et al. (2018).

Although perceived as strong and coherent among respondents, clear communication of the organizational values is considered essential. Respondents mentioned the recent conference off-site as an important part in shaping the organizational culture, where they got to exemplify the spirit of Company X in a video. As Company X has been growing a lot the recent years, it also increases the pressure on the organizational culture not to disappear in the growth. The activity could be considered as an important tool to clearly communicate the overall organizational values in order to facilitate the knowledge management (Nonaka and Takeuchi, 1995), but also an important possibility for the employees to get to know each other. Though, as Company X is globally dispersed, the technological tools which will be analyzed below,

become an important enhancer of both the global organizational culture and the knowledge management in general.

5.1.3 TECHNOLOGICAL CAPABILITIES

The gathered data indicate that technological capabilities are seen as hygiene factors at Company X. Thus, technological tools are a natural part of the communication between employees and as expressed by Interviewee 6, it is most efficient to use in combination with face-to-face contact. Moreover, the exchange of information between individuals and groups is facilitated by using quick and user-friendly tools, such as Slack. Interviewee 1 compared Slack to a human network where you get quick responses. As many respondents have indicated, the characteristics of Slack is in line with the agile methodologies, with speed being a central part (Singh et al., 2013). Many respondents described Slack as consisting of different types of communication and a general impression is that it is viewed as less formal compared to the more traditional tool of email. Moreover, the usage of humor and the possibility to use GIFs on Slack is a clear example of personalized communication. This indicates that the frequent usage of Slack at Company X does not only depend on its user-friendliness and speed but also its informality and the opportunity for the employees to communicate in a personalized way. Hence, the empirical findings support Singh et al. (2013) who argue that knowledge management within agile organizations needs to include communication built on informal and personalized ways of interacting. This is further seen as particularly important when the organization is geographically dispersed as argued by Gold et al. (2001) and Omotayo (2015), confirming the importance of technological capabilities as presented in the Conceptual Framework (Figure 2).

Another frequently used communication tool that also has the opportunity for more personalized communication is to use video calls through Skype. This tool is being used on the weekly meetings of RunTime Pulse and OneTime Pulse, where attendants from China and the US are joining the meetings. However, only one of the two offices at a time due to time differences. During the observed meetings, the attendants that joined through Skype did not use the video call function, only the voice function was used. Something which the Chinese respondents mentioned was mostly due to lack of video call rooms at their offices. However, the respondents that have to communicate with employees that are geographically distant expressed how valuable it can be to actually see someone's facial expression when talking to the person. As told by Interviewee 12, the lack of video calls is something that complicates the

communication, for example, to determine if a problem is urgent or not. As argued by Cepeda & Arias-Pérez (2018), the technological tools should facilitate knowledge management within the MNC, as the shared information should work as a basis for business decision-making. However, it is clear that the decision-making becomes more difficult when you are not geographically close as stated by Interviewee 12. Though, the problem regarding lack of video calls was not brought up by the respondents that are located in the headquarter in Sweden, indicating that this issue is not viewed the same throughout the whole organization. It is thus logical to argue that if it is not seen as a problem for the employees at the headquarter in Sweden, it might not be prioritized throughout the whole organization. Hence, the employees in the headquarter in Sweden might have enough contact with the individuals they need in order to make important decisions and therefore do not see the need for increased video contact. This lack of understanding could, in turn, hamper the knowledge management on a global level as the absence of face-to-face contact complicates the decision making for some, but not for others.

Moreover, the other commonly used communication tool, Xnet, is a tool that is mostly used for descriptions. It is clear that this resource is valued higher for employees that are working globally, outside the headquarter in Sweden. For example, the Chinese teams are dependent on accurate documentation on Xnet from the developers in Sweden in order to *"know what is happening"*. This was also an issue brought forward from a respondent being located in the US who highlighted how the need for documentation increases if you are not geographically close to that person. Thus, since most of the employees are located in the headquarter in Sweden, the employees in China and US have a greater need for documentation as they are dependent on the information and knowledge coming from the headquarter. Moreover, as stated by Cepeda & Arias-Pérez (2018), IT infrastructure that can provide accurate and timely information is important for an MNC. However, it is clear that it is difficult to keep the information on Xnet timely and accurate. The issue is not only to keep it updated, but it has also been expressed that it is difficult to find what you are looking for as there is a lack of structure and guidelines of the usage of Xnet. As interviewee 6 expressed it there is a confusion around *"how much that is used"* of the information on Xnet. Thus, with the agile methodologies, documentation on Xnet does not work that well for Company X. The case of Company X confirms the earlier known theory of agile knowledge management, namely that verbal and informal communication is preferred rather than heavy documentation (Chau & Maurer, 2003; Cram & Marabelli, 2018; Singh et al., 2014). However, when verbal and informal communication is not

possible due to geographical distances, there is a risk that knowledge is not being transferred in an effective way.

Hence, the above three mentioned tools serve different purposes. Interviews show that Company X uses Xnet for sharing more static information and knowledge. Although, the more complex the tasks are, the more face-to-face communication is needed. Overall, face-to-face communication is important for communication, as stated by 11 out of 12 respondents, seen in Appendix D. However, the communication tools of Slack and Skype are used when a face-to-face meeting is not possible. This shows that Xnet is used for a more explicit type of knowledge when using the definition from Nonaka (1994). When the knowledge becomes more tacit, containing more know-how and is skill-based (Kogut and Zander, 1992), the technological tools with more dynamic and personalized functions are used if a face-to-face meeting is not possible. Thus, it seems as if the technological advancement of tools like Slack and Skype allows employees to come closer to a normal conversation that takes place face-to-face, as they consist of more 'natural' elements, such as the possibility to be informal and show feelings through the usage GIFs as emphasized by Interviewee 8. Hence, the empirical evidence shows that some technological tools are more useful when it comes to the transfer of tacit knowledge within the company. This could be explained by Nonaka (1994) arguments that the tacit knowledge has a more personal quality, and it is being embedded in interactions (Kogut & Zander, 1992 & Nonaka, 1994), and the technological tools are facilitating these personal interactions in which the tacit knowledge exists. Consequently, the empirical findings go in line with Gold et al. (2001), who argue that it is important to invest in different types of technical solutions as they will support the knowledge management of different types of knowledge.

Thus, the above three mentioned knowledge management practices of structural capabilities, organizational culture and technological capabilities partly facilitate the knowledge management, confirming the Conceptual Framework (Figure 2). However, it is important to also analyze the knowledge management processes in order to fully understand the knowledge management at the studied company.

5.2 KNOWLEDGE MANAGEMENT PROCESSES

5.2.1 ACQUISITION PROCESS

The empirical data show that Company X is innovation-driven, and the agile methodologies allow different individuals to be a part of the development process. The organizational culture is an indication of this, as it is described as building upon collaboration, openness and allowance to make mistakes. A clear example of how knowledge is generated through collaboration is the PI Planning, where team members from the US and China come to the headquarter in Sweden to socialize and plan the coming twelve weeks. Thus, the organizational culture and the PI Planning are important parts of the acquisition process as it is about creating, generating and collaborating in order to accumulate knowledge within an organization (Gold et al., 2001). Furthermore, customers' insights are considered during the whole development process, as a continuous customer dialogue is held, and tasks are being re-prioritized within the teams. This is a clear example of what Gold et al. (2001) argue to be knowledge creation between the company and its external networks, while also being in line with what Levy & Hazzan (2009) argue is an important part of the agile methodologies. The PI Planning is an important part of the collaboration at Company X. As stated by Interviewee 10, the PI Planning is vital in order to *"get to know people and see what is happening in Sweden, it is very helpful (...) face-to-face is very important"*. However, global communication and collaboration is thereafter hampered by geographical distance and different time zones. As mentioned, the collaboration within teams, and within divisions is often well functioning. Furthermore, it is noted that the geographically dispersed team manage their daily collaboration well, as they are forced to since the team are spread out on two continents, Sweden and the US. Except for the PI Planning, there is not much collaboration between the US and the Chinese site.

This indicates that the acquisition process is well functioning between Company X and its external networks, as well as within teams and within divisions. However, full collaboration is not utilized on a higher level within the organization, i.e. between divisions, and not between the US and the Chinese office. Accordingly, the collaboration is not sufficient in order to foster a successful knowledge acquisition process as being described by Gold et al. (2001), presented in the Conceptual Framework (Figure 2). This is further seen as problematic as Gold et al. (2001) argue that collaboration between individuals with different experiences and backgrounds is vital for a more efficient knowledge creation and learning. Thus, the company should better utilize the variety of backgrounds and experiences that comes with the global

presence and therefore create knowledge that is transferable outside individuals' own team, division and country.

One way to better utilize each individual's experience is through personnel movement. Within teams and divisions, Company X remain quite static, as teams remain the same since it is seen as important to get to know the team members and the teams' methodologies. Thus, this could potentially harm the accumulation of knowledge. However, on a global level, the personnel movement has been seen to have good effects. Individuals transferring from the headquarter in Gothenburg to the office in China is something already before the actual transfer have brought great benefits for the Chinese office. Interviewee 12 mentioned that the transfer opens up a greater network for the site in China, which is seen as valuable. Furthermore, employees starting in China and later transferred to Sweden has been valuable for both offices in term of creating a mutual understanding. This supports the arguments stated by Gold et al. (2001) who argue that personnel movement is important for the accumulation of knowledge.

Hence, the acquisition process at Company X could benefit from further collaboration throughout the organization. It is clear that when Company X has implemented international project groups, global learning has improved. This can be seen with the team that is dispersed in both Sweden and the US, where continuous learning takes place over national borders as they are communicating on a daily basis through the Daily Scrum meetings. Respondents with experiences from this team mentioned that the knowledge transfer is built upon trust and personal connections. This is considered an important tool to increase the transparency across the sites, which Gonçalves (2018) argues is one cornerstone of the Scrum methodology. Thus, social interactions, such as international project groups, are crucial in obtaining transnational learning as described by Tregaskis et al. (2010). Though, when the knowledge is acquired it needs to be simplified in order to make it useful, which is the focus of the following section.

5.2.2 CONVERSION PROCESS

The interviews show that technological tools play an important role at Company X when making existing knowledge useful. An insight from the interviews is that it is each individual's preferences and the convenience of the technological tool that drives what kind of tool that is

being used by the employees. For example, Slack is frequently used by employees at the headquarter in Sweden, whilst email is preferred when communicating with employees in the US, and some use WeChat towards colleagues in China. There are no specific guidelines that are part of the onboarding for new employees for how to use the different communication tools, this is rather something you learn after a while at the company. As mentioned by Interviewee 9, there is a need to start documenting more, however without becoming too focused on details and ending up with a mindset of *"read the instructions on page 42"*. However, since there are no guidelines on how to use the different technological tools, the coordination and structure of the existing knowledge are missing. Hence, even though the existing knowledge has been transferred from tacit to explicit in some way such as through Slack or Xnet, the knowledge is not always useful for the employees since there is a lack of coordination and structure within the different technological tools (Gold et al., 2001). However, this lack of structure might be partly explained by the fact that agile methods emphasize people before processes and face-to-face contact is seen as an important tool for knowledge sharing (Chau et al., 2003). Hence, the low priority for creating structures for technological tools might have its roots in the agile methodologies. Though, for a global company that is growing, the authors argue that there is a need to create structure and guidelines in order to make the knowledge useful on a global level. However, there might be contrasting views within the company of how much knowledge that should be codified from tacit to explicit, as too much codification might hamper the ability to be free and innovative, as stated by Roberts (2001). This statement is related to what Interviewee 9 mentioned, there is clearly a need to create a balance and keep the documentation on a good level, which can be seen as especially important for an innovative company such as Company X.

The respondents further highlighted the importance of face-to-face contact in order to solve more complex problems. As expressed by Interviewee 3, *"it is possible to write kilometers on Xnet, however, it is not the same as meeting face-to-face"*. However, observations showed that the weekly meetings of RunTime Pulse and OneTime Pulse are mainly focused on reporting status updates rather than using the time for group problem solving and decision-making. Moreover, the meetings are standardized as each divisions' Release Train Engineer follows a certain template and gets to present in five minutes. Since these are the only meetings where all divisions and sites are involved, it is logical to argue that they would benefit from mechanisms making the environment more open for discussion. Though, when tasks are becoming more complex and with a higher level of tacitness, the technological tools need to

be combined with more soft coordination mechanisms in order to achieve efficient knowledge management, making tacit knowledge explicit (Grant, 1996). Thus, in order to enhance the conversion process at Company X, the meetings of RunTime Pulse and OneTime Pulse would benefit from being less standardized, while encouraging a more open approach. As stated by Grant (1996), reserving these meetings for handling task complexity and uncertainty by the use of group problem solving, high-interaction and non-standardized coordination would also be more efficient for the knowledge management. However, this would require the company to implement more rules and directives for less complex tasks (Grant, 1996), such as guidelines for technological tools. By doing this, the employees could be more focused on solving complex tasks by sharing knowledge between divisions and sites.

Moreover, implementing more rules and directives is seen as important in order to increase the knowledge integration. Throughout the interviews, it was noted that parts of the old organizational structure of purely customized solutions live on as a heritage within the company. Interviewee 5 mentioned that the main problem is that the teams are very autonomous and that the things they do *"is most likely not shared to others"*. Since Company X possess a lot of specific knowledge in different parts in the organization the risk that the divisions will develop the same solutions increases, something which Gold et al. (2001) refer to as 'inventing the wheel' all over again. Though, in line with Grant (1996), more coordination mechanisms are seen as important in order to increase the knowledge integration. This can also be seen as an important task in order to minimize the feeling of companies within the company, which many respondents mentioned as an issue. Hence, the efficiency of the conversion process could be improved, which in turn would facilitate the application process that is developed in the following section.

5.2.3 APPLICATION PROCESS

As Company X is a global company, technological tools play an important role in applying the existing knowledge. As mentioned previously, the different platforms of Xnet, Slack and email have somewhat ambiguous purposes which have created confusion among employees. Respondents mentioned that guidelines were missing concerning where to post different things, which results in that everyone posted and shared information in what they thought was the correct way. Implying that the quick and easy access to knowledge is reduced (Gold et al.,

2001). Thus, it becomes evident that more structure around how and where to share knowledge is needed in order to facilitate the application process. Another aspect related to the access of knowledge could be connected to access in terms of networks. Employees working in China mentioned that it was difficult to know whom to talk to at the office in Gothenburg, which complicated their work. Whereas employees at the office in Gothenburg with a broader network in the same building thought it was easier to find the right individual to approach if they had an issue. For the Chinese office, this creates an undesirable dependency towards the headquarter which increases their workload as well as minimize their efficiency as the access of relevant networks is reduced, something which Gold et al. (2001) argue is important for an efficient application process. Thus, through establishing more clear guidelines on whom to contact for specific questions, the application processes for the whole company would become more efficient.

Hence, the access to knowledge and networks is clearly relevant to the application process. Regarding the storage of knowledge, it was evident that the individuals working in China requested more documentation in order to be able to perform their work. An explanation for this could be the time zone difference. As mentioned by Interviewee 5, the constant delay *"makes is more difficult to ask follow-up questions"*. Hence, since employees in China and the US cannot call or send a Slack message and get an instant reply, they are more prone to have accurate documentation available. Although Gold et al. (2001) argue that storage is an important element of the application process, this argument is not directly applicable to agile methodologies as it does not support documentation to a great extent (Sing et al., 2014). Thus, the agile methodologies might not fully support the knowledge storage in terms of documentation, however, it is important for global knowledge management to be efficient. Thereof, the combination of agile methodologies and the MNCs global presence increases the need for some kind of storage of knowledge. Furthermore, the time zone differences discussed as having an influence on the knowledge management is an empirical finding not matching the existing Conceptual Framework (Figure 2) developed by the authors, implying a need for modification to fully capture what pressures the MNC is exposed to.

Observations and interviews show that agile methodologies build on tacit knowledge and informal communication. The knowledge sharing is considered strong among respondents at team level, however, at a division level and at a global level, the knowledge could be used in a more efficient way. There are some existing structures for how to share knowledge at the office

in Gothenburg, such as CoP and Show and Tell. Although a global company, the different knowledge sharing sessions remains on a national level, without any diffusion to the other countries, which in turn reduces the collaboration and knowledge sharing between sites. As mentioned by Interviewee 1, the knowledge sharing sessions are important in terms of *"knowing whom to talk to",* rather than the actual content. Thus, the concept of transnational learning structures as presented by Tregaskis et al. (2010), is not fully utilized at the studied MNC as sharing organizational competence and know-how on a global level seems to be lagging behind. Moreover, through implementing knowledge sharing sessions on a global scale would imply that less written, traditional documentation is needed, which is in line with how Singh et al. (2014) defines agile methodologies. Through for example an increase in video calls and streaming CoPs, the personalized communication would increase, which is aligned with the agile methodologies (Dybå & Dingsoyr, 2008). By implementing CoPs globally, individuals are bounded by informal relationships on a global level (Kähkönen, 2004; Wenger, 1998) which has a positive impact on the organizational performance (Lesser and Storck, 2001). Hence, in line with Gold et al. (2001), implementing global knowledge sharing session increases the social capital as it enables a wider network across the whole organization.

The above arguing indicates that the application process could be improved. Many respondents expressed that the existing knowledge was not used in an efficient way. Respondents mentioned that Company X could become better at knowledge sharing, especially across divisions. Employees at the site in China highlighted that they often needed to ask for information and knowledge, otherwise they did not receive it. They further mentioned that the office in Gothenburg showed little interest and curiosity towards the Chinese office, whereas they felt more interest in knowing what was going on in Gothenburg. Although not related to the application process mentioned by Gold et al. (2001), the personnel movement is something that the authors argue could have an impact on knowledge sharing on a global level. By transferring employees from the headquarter in Sweden to the Chinese office, the understanding within the whole company of what the Chinese office is doing is likely to increase, which in turn will have an impact on the application process as the current knowledge could be used in a more efficient way.

The above analysis of the infrastructural capabilities and knowledge management processes creates an understanding of how the knowledge management at Company X relates to the presented Conceptual Framework in Figure 2. This, while simultaneously highlighting aspects

that should be developed in order to enable more efficient knowledge sharing. However, in order to fully comprehend the environment surrounding the MNC, the institutional context and the pressures it might give rise to are further analyzed below.

5.3 GLOBAL PRESENCE

5.3.1 CULTURAL-COGNITIVE INFLUENCE

The culture-cognitive influence on knowledge management is visible in the empirical findings. It is seen that the Chinese respondents seem to be more dependent on video calls compared to the employees in Sweden. Thus, they would like to have more communication where it is possible to read another person's facial expression in order to determine whether a problem is urgent or not, as described by Interviewee 12. Furthermore, in relation to documentation, respondents with experiences from the Chinese office expressed that there is a higher dependency on accurate documentation from the Swedish headquarter in order to "*know what is happening*" in China, as Interviewee 10 stated. One possible institutional explanation for this could be connected to the cultural-cognitive pressure explained by Scott (2014). Thus, as mentioned previously it can be seen that the Chinese office emphasize more interdependencies towards the Swedish headquarter, something that was not mentioned by US respondents. This indicates that the Chinese office could be influenced by more collectivistic values as described by Yu (2014). Furthermore, even though both the site in China and the US entity have big geographical distances to the headquarter in Sweden, the lack of face-to-face contact was mostly highlighted by the Chinese respondents. This further supports what Yu (2014) argues, namely that face-to-face communication will evoke a stronger feeling of collaboration in a collectivistic culture compared to a more individualistic one.

However, when it comes to making tacit knowledge explicit, employees in China and the US are more dependent on accurate documentation from the headquarter in Sweden, compared to Swedish employees. As stated by Interviewee 10, the Swedish employees could just "*go and have a fika and talk to people*" to solve a problem, whilst this is not as easy when you are located on another continent. This is further related to the issue of geographical distance that the studied MNC has to cope with. Moreover, this is a finding that is reflected throughout the empirical data, however, not to be found in the Conceptual Framework (Figure 2), making the authors question its accuracy in this regard. As mentioned earlier, the differences in the need for documentation may have institutional explanations, such as the cultural-cognitive pressures

presented by (Scott, 2014) discussed above. This, in turn, is not only affecting how much employees are documenting but also how they document things, as different individuals have a different understanding of the need for it. These differences are causing feelings of confusion among employees, as a negative outcome of the cultural-cognitive pressure explained by Scott (2014). Thus, the conversion process, and in particular the part of structuring knowledge (Gold et al., 2001), is affected by the global presence of the MNC. Thus, the cultural-cognitive pressure presented in the Conceptual Framework (Figure 2) is visible to have an effect on the knowledge management at Company X.

Another cultural-cognitive pressure that might have an effect on knowledge management is how the company is part of a new ownership structure. The heritage from previous ownership as well as the fast expansion with onboarding of new employees could be an explanation to why some respondents perceived the organizational culture as messy, something which Scott (2014) refers to as disorientation and confusion. Although, there is simultaneously a general feeling of pride towards the organizational culture as the majority of the respondents, regardless if their home area was in Sweden, the US or in China described it in the same way; open-minded, collaborative and allowance for making mistakes. Due to the fact that the organizational culture promotes open-mindedness and learning through making mistakes, it is viewed as efficient for knowledge management (Adbi et al., 2018), and therefore as coherent and strong.

5.3.2 THE DUALITY OF INSTITUTIONAL CONTEXTS

The institutional context in Sweden has affected the global parts of Company X. This can be seen as the agile methodologies initiated by the headquarter in Sweden has been implemented throughout the organization in China and the US. However, Chinese companies generally use more traditional waterfall methods of developing which implies that the organization in China face a different institutional environment. This resulted in that the transformation to agile took longer time and complexities around things such as contract writing have occurred. However, today Company X has a coherent view of their agile methodologies throughout the organization. The delayed implementation of agile methodologies globally can be related to what Kostova & Roth (2002) refer to as institutional duality as tensions regarding what the headquarter in Gothenburg wants differs from the institutional pressures stemming from the Chinese context. However, since the agile methodologies have been applied to all offices, the relational context can be seen as strong and influential (Kostova & Roth, 2002). Furthermore,

this is in line with the arguments provided by Almond et al. (2007), Doremus et al. (1999) & Lam (2003) who claims that the learning structures at the home market shape the learning at a global level.

Moreover, the coherent view of the agile methodologies was not the only important facet for the knowledge management. Throughout the interviews and observations, it was seen that the dependency, identification and trust played essential roles for the knowledge sharing. It is evident that when the Chinese office got full responsibility for one customer, instead of only being a support function, the motivation for thorough learning increased among the Chinese employees. As stated by Interviewee 12, getting full responsibility increases the motivation to learn and to get knowledge in new areas. Thus, trust does not only facilitate the exchange of knowledge as Tsai & Ghoshal (1998) argue, based on evidence from this case it also increases the motivation for learning. The increased responsibility results in a motivational change at the studied company, which logically triggers the dynamic capabilities according to literature (Biloslavo & Zornada, 2004; Easterby-Smith & Prieto, 2008; Zollo & Winter, 2002). This, in turn, leads to a sustained performance (Easterby-Smith & Prieto, 2008). Moreover, the authors argue that being geographically dispersed increase the need for trust between entities in order to ensure efficient knowledge management where all sites feel involved.

The above also relates to the interdependence aspect. As one division has its team members in both Sweden and the US, a mutual dependency is created which has a positive impact on knowledge sharing. However, the Chinese office still seems to be more dependent on the headquarter in Sweden. Interviewee 12 expressed the difficulties of not knowing whom to talk to. *"If I want to ask anyone anything at the Sweden office, I don't know whom to contact - it's hard"*. Thus, this creates a power dependence which inhibits the knowledge transfer. Rather, there should be interdependence between the headquarter and the Chinese office as suggested by Kostova & Roth (2002). Furthermore, identification is seen as important for the knowledge management at the studied company, building upon Kostova & Roth (2002), who argue that the global sites need to identify with the overall organization. This is seen as the respondents described the organizational culture in a similar manner and with a sense of pride towards working at the company, irrespectively of their location.

Moreover, as described by Interviewee 9, Company X *"want everyone to feel an individual responsibility"* when solving problems. However, based on the Chinese institutional pressures

as mentioned earlier, the Chinese employees seem to be more used to collectivistic values and interdependencies. An example of this is that the Swedish office sometimes perceived it as the Chinese office was dependent on more clear management guidelines from the headquarter and requested more documentation. The company's expectation of taking individual responsibility reflects individualism which is particularly common for Western firms (Nonaka & Takeuchi, 1995; Yu, 2014). Thus, the Chinese employees are subject to cultural-cognitive pressures stemming from both intra-organizational aspects, but also cultural-cognitive pressures coming from their institutional context, such as collectivistic values. Though, the outcome of the different cultural-cognitive pressures could be seen as a balancing act in terms of gaining legitimacy in the Chinese home market while trying to contain the legitimacy from the headquarter (Kostova & Roth, 2002). This, in turn result in an institutional duality for the employees at the studied MNC (Kostova & Roth, 2002). The above reasoning further confirms the importance of the cultural-cognitive pressure as presented in the Conceptual Framework (Figure 2).

5.3.3 REGULATIVE AND NORMATIVE INFLUENCE

The regulative pressures on the knowledge management practices are difficult to identify at Company X, as employees clearly expressed that the company's culture includes openness and allowance of making mistakes without being punished for it. Interviewee 10 expressed it as; *"if people are making mistakes, you learn something. You do whatever you think is necessary and it's OK if you make a mistake".* Hence, surveillance and sanctioning power as theorized by Scott (2014) is not something that has been seen at Company X in order to reach compliance with rules and directives. The absence of rules and directives within the company is also likely to be influenced by the agile methodologies, as processes are not prioritized, rather flexibility is in focus (Cervone; 2014; Chau et al., 2003). In some sense, the lack of rules and directives might impede the ability to increase the structural capabilities, since there are no direct, negative consequences of not following existing guidelines. Although, the normative pressures that affect the knowledge management at Company X is a bit more visible. Norms are referred to as something that has been commonly accepted (Scott, 2014). Norms that are stemming from different institutional environments are seen in how it has become a norm that it is mostly managers who attend the weekly meetings of OneTime Pulse and RunTime Pulse. This occurs even though the meetings are said to be open for everyone, however, the main reason for other employees to not join the meetings is that they are not sure how they could contribute or that the purpose of the meetings is unclear.

Hence, there is an absence of regulative pressures at the studied company and the normative pressures does not have a strong influence on the overall knowledge management. These pressures stemming from the MNCs global presence might not be visible due to *"the way we do these things"*, i.e. the organizational culture, is considered strong and coherent. This does not mean that these two pressures described by Scott (2014) do not exist, rather, they are not seen to have an effect on the knowledge management at the studied company. Therefore, the Conceptual Framework in Figure 2 is questioned in regards of both the regulative and normative pressures, indicating a need for revision.

6. CONCLUSION

This section concludes the research presented in this study. The answer to the research question is provided, followed by managerial implications, ending with limitations and recommendations for future research.

6.1 CONCLUSION

The aim of this study was to investigate how agile methodologies influence the knowledge management within an MNC. Based on this the following research question was formulated:

How do agile methodologies influence multinational corporations' knowledge management?

The result from this study shows that agile methodologies building on social capital and tacit knowledge, combined with MNCs' global presence comprising of cultural-cognitive pressures and difficulties in interacting face-to-face, increase the challenges on the MNCs' knowledge management.

It is seen that structural capabilities in terms of guidelines and clear purposes are needed for knowledge management in an agile MNC. Confirming theories on agile methodologies, documentation is not in focus, rather face-to-face interactions are emphasized, increasing the risk that knowledge is lost within an MNC. This due to difficulties in interacting face-to-face and communicating directly as a consequence of time zone differences. As seen in the revised conceptual model below (Figure 6), geographical distance and time zone differences have therefore been added as a part of the global presence affecting the knowledge management of an agile MNC. Thus, in order to avoid that knowledge is lost, it is important to find ways to make the knowledge accessible on a global scale. Hence, it is clear that turning tacit knowledge into explicit knowledge, i.e. the conversion process, increases in importance for an agile MNC. Therefore, combining agile methodologies with MNCs will result in that structure need more emphasis compared to what is highlighted in the literature on agile methodologies. Thus, clear purposes and guidelines are included as important structural capabilities, seen in the revised conceptual model.

Within agile teams, the knowledge sharing is built on frequent social interactions and sharing of tacit knowledge, affirming existing theory. However, the focus on strong knowledge sharing within teams is hampering the knowledge sharing outside teams. Therefore, knowledge

management practices should be focused on collaboration throughout the whole organization. The result from the study further shows that the importance of trust increases with an MNCs global presence. By delegating responsibilities to global entities, it is shown that the motivation for learning increases which has a positive effect on knowledge sharing. Thus, it is seen that knowledge management practices that aim at increasing trust will have a positive effect on motivation and learning. Hence, by renewing social settings, creating mutual dependencies and building trust, the overall organizational learning is improved which thereby trigger the dynamic capabilities. These three aspects are therefore added to the knowledge management practices in the revised conceptual model as seen below.
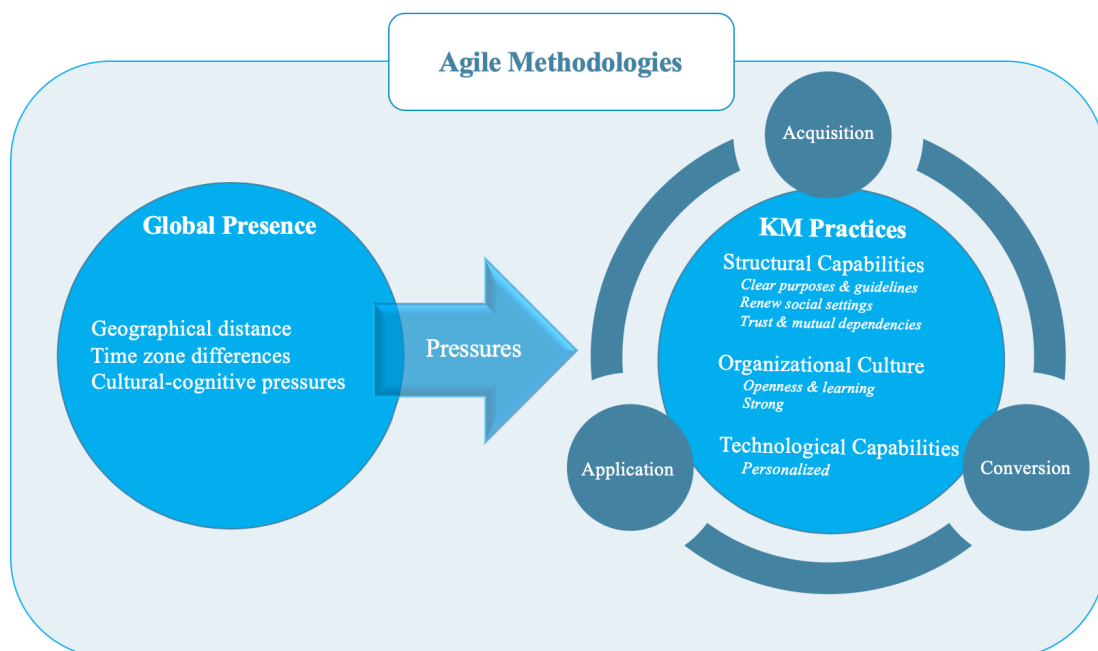
Figure 7: Revised Conceptual Model. Authors Compilation.

In order to deal with pressures stemming from a global presence, the study demonstrates that an organizational culture encouraging open-mindedness and learning has a positive effect on the knowledge management within an agile MNC. The study shows that agile methodologies, emphasizing openness and flexibility, create favorable conditions in building such a culture. Therefore, openness and learning have been incorporated in the revised conceptual model as two important aspects for the knowledge management within an agile MNC.

Moreover, through an open organizational culture, the influences of regulative pressures stemming from different institutional contexts are seen to be mitigated. This because, when the organizational culture is open and flexible, the regulative pressures are more easily handled and therefore does not have an effect on an agile MNC knowledge management. Furthermore, a strong and coherent organizational culture is seen as a knowledge management practice that facilitates global entities' identification with the overall organization, positively affecting the knowledge sharing. Continuously, when "*the way we do these things*" is clear, i.e. when the organizational culture is strong, individuals tend to identify more with the overall organization than with normative pressures stemming from different institutional environments. Hence, this study shows that the regulative and normative pressures stemming from the MNCs global presence do not have any visible influence on the knowledge management within an agile MNC. The regulative and normative pressures are therefore removed, and the aspect of a strong organizational culture is added, as seen in the revised conceptual model presented above.

The result of the study further shows that face-to-face interactions are important for knowledge sharing. However, geographical distance makes face-to-face interactions more difficult. It is therefore important to incorporate functions within the technological tools that are as similar to face-to-face interactions as possible. Thus, technological tools need to be personalized, an aspect that has been added to the revised conceptual model. Also, the importance of face-to-face interactions may vary due to cultural-cognitive pressures. Confirming theories regarding cultural influence on knowledge management, this study shows that the cultural values such as collectivism versus individualism may have an effect on knowledge management within an agile MNC. Therefore, the cultural-cognitive pressures are kept as a part of the global presence in the revised conceptual model. On a global level, it is therefore essential to create an understanding of different needs stemming from cultural-cognitive pressures in order to make the knowledge management efficient.

This study contributes to the limited research that exists in the intersection of MNCs' knowledge management and agile methodologies. Even though extensive research exists in the area of MNCs' knowledge management, this study brings a new perspective to the literature by embracing the constant change that MNCs undergo (Aslam & Rahman, 2017). As suggested by Cervone (2014) and Johannessen et al. (2001) more industries are turning to agile methodologies which is why this study adds a contemporary contribution to the existing research. Due to the agile methodologies' reliance on tacit knowledge, the importance of

managing knowledge has been highlighted by scholars (Biao-wen, 2010; Cram & Marabelli, 2018; Singh et al., 2014). Building upon this, the result of this study shows that adding MNCs' global presence to the equation elevates the importance of knowledge management even more. Furthermore, Nissen (2007) mentioned that the intercultural embeddedness could further complicate the knowledge management, however, evidence from this study shows that agile methodologies that allow for openness and flexibility could mitigate the complexity that comes with intercultural embeddedness.

6.2 MANAGERIAL IMPLICATIONS

As highlighted in this study, knowledge management has the potential to increase organizational learning and the competitiveness of an agile MNC. The results show that all three knowledge management practices of *structural capabilities*, *organizational culture* and *technological capabilities* need to be integrated for efficient knowledge management. It is seen that structural capabilities play an important role for knowledge management within an agile MNC. Practitioners should, therefore, implement structure through the use of clear guidelines for communication tools and communicate clear purposes with internal meetings. Furthermore, time zone differences and difficulties in interacting face-to-face put more emphasis on the process of making tacit knowledge explicit, i.e. making knowledge accessible. Organizations should therefore implement technological tools that encourage this, but it does not necessarily have to be through the traditional way of documenting. Instead, agile companies could record demos that becomes accessible through a common platform.

The results of this study further show that knowledge sharing within an agile MNC is facilitated through the use of personal communication tools. Thus, managers should implement technological tools that enable personal, informal and quick communication, such as chat tools. It is further seen that it is important to create an awareness of how cultural-cognitive pressures could affect the needs of using more personal communication tools, such as video calls on a global level. Moreover, practitioners should aim at implementing an organizational culture that promotes many face-to-face meetings that encourages openness. By creating an environment that allows for mistakes, the learning is considered to be triggered. Based on the findings, there is a risk for agile teams to become very strong which in turn can inhibit effective global knowledge management. The authors, therefore, suggest that agile MNCs should increase the personnel movement as it is considered to increase global learning while building global

networks, which is vital for an agile organization. Moreover, through delegating responsibilities on a global level, the trust among sites increases which creates important mutual dependencies, positively affecting the knowledge management. Related to this, the authors suggest implementing globally dispersed teams as it is considered to increase the effectiveness of the overall organizational learning.

6.3 LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

This study's contribution has highlighted how agile methodologies influence MNCs' knowledge management, though there are some limitations necessary to take into account. This study is built on a single case that was executed during a limited time frame. Therefore, to execute a longitudinal study would both improve the dependability and the authenticity, as it could give researchers a chance to study the phenomenon over a longer time. Furthermore, conducting a multiple case study could strengthen the transferability as it would give an opportunity to compare results from more than one case. Due to the constrained time frame, the number of respondents has been limited. Thus, the transferability of the study would increase if a larger number of respondents was included. Furthermore, due to limited resources, interviews with respondents in other countries were conducted with the use of Skype and telephone, decreasing the possibility to withdraw additional information from social cues from the respondents. Thus, conducting face-to-face interviews with all respondents would further increase the authenticity of the study.

In addition to the above aspects, the authors found other aspects that could benefit from further research. The agile methodologies have mostly been implemented by software development organizations, however, there is an ongoing shift as it is starting to spread to other industries. Thus, the research on agile methodologies combined with knowledge management is still scarce outside the field of software development. Therefore, it would be interesting to study how the agile methods work outside this traditional field and what challenges it may bring for MNCs´ knowledge management. Furthermore, as knowledge sharing within an agile organization relies much on face-to-face contact, it creates challenges for a geographically dispersed organization. As seen in this study, one of the main issues for knowledge sharing is considered to be the time zone differences, whereof time zone management, in combination with knowledge management would make up an interesting study.

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8. APPENDICES

8.1 APPENDIX A - DEVELOPING THE CONCEPTUAL FRAMEWORK

The process of searching for information within the area of knowledge management started before knowing the exact focus of study. Before a final research question was developed, the authors elaborated on interesting topics within the area of knowledge management within MNCs, combining existing research as well as empirical insights. Thereafter, a comprehensive literature review was conducted, using guidelines from Boote and Beile (2005) in order to go through earlier research within the field in a systematic way. Finally, the reviewed literature was found in connection to the fields of 'Knowledge Management' and 'Agile Methods'.

DATABASES

Several databases have been used in order to find a broad range of relevant articles. This in order to amplify the search of literature and to utilize the efficiency that it can bring. The authors have used the search tool, Supersearch, provided by the University of Gothenburg, that covers several databases of academic journals (University of Gothenburg, 2018). Moreover, the databases ScienceDirect, Emerald and Google Scholar were used based on their relevant fields, the range and the quality of the content.

KNOWLEDGE MANAGEMENT

The literature review within the field of knowledge management was done by searching for knowledge management, mostly in connection to MNCs. Due to the fact that the field of knowledge management is quite researched and broad, the authors had some requirements and strategies to find the most relevant articles. A requirement for the articles to be included in the literature review was that they had to be peer-reviewed, have the right focus and that they should be published in appropriate academic journals. In this regard, the databases and the different search tools were useful in order to apply filters and combine different keywords. The keywords used within this field can be found in Appendix B. Furthermore, articles written in other languages than English and Swedish were also excluded in this study.

AGILE METHODS

The literature review of agile methods was conducted by searching for the keywords presented in Appendix A. The relevance of the articles was mostly examined on titles, the abstract and keywords presented, as well as the number of previous citations of the article. The focus of

these articles was that it would explain the main characteristics of agile methods, the practices included and, in some cases, also how knowledge is being managed, to the extent it could be found. The same requirements of peer reviewing were applied on this area as well, however, due to the novelty of the area and how the conceptualization of the area is in constant change, other articles have been included in this study as well. Although, in the cases in which articles have been used that are not peer-reviewed, they have been cited in other peer-reviewed articles.

8.2 APPENDIX B - KEYWORDS FOR LITERATURE REVIEW

Knowledge Management

Keywords Phase 1
Knowledge Management
Knowledge Management + MNC
Knowledge Creation
Tacit + Explicit Knowledge
Knowledge Management + Dynamic Capabilities
Knowledge Based View
Knowledge + Competitive Advantage

Keywords Phase 2
Changing Global Environment
Knowledge + Institutional Theory
Agile Methodologies

Agile Methodologies

Keywords Phase 1
Agile Methodologies
Agile Working Methods
Agile

Keywords Phase 2
Agile Literature Review
Agile Project Management
Agile + Knowledge Management
Knowledge Management + Agile MNC
Agile + Software Development

8.3 APPENDIX C - INTERVIEW GUIDE

General Background
- Describe your role within the company
    - How long have you been working at Company X?
    - What does the agile way or working mean to you?

Main Questions
- Describe the collaboration at Company X…
    - Between individuals?
    - Teams? divisions? With Sweden?
- How do you make use of the knowledge?
    - If you figured out how to solve a problem, how would you transfer this solution? How is documentation used?
- Do you think that the existing knowledge is being used in an efficient way?
- How does the global presence of the company affect the transfer of knowledge? Also, that you have multicultural teams within the company?
    - How do factors such as culture, religion and norms influence how you communicate and share experiences with each other? What are the challenges?
- How does information from meetings spread to all employees?
- Describe how you learn from each other.
- If there is something you do not know, how do you proceed to find it out?
- What motivates individuals and teams to share knowledge? Is this different from country to country?
- Describe the organizational culture.
- What importance do you think the organizational culture has when sharing knowledge and learning from each other? Do you see any difference in the willingness to share knowledge depending on the individual's background?
- Are there any cultural differences regarding if you want to work in teams or more individually?
- In what way is the technology (databases, IT-systems, communication tools) used in order to…
    - Create knowledge and new ideas?
    - Document (and use) knowledge?
    - Reuse and share knowledge?)

Finishing Questions
- How can Company X become better at sharing knowledge?
- Is there anything you want to add?

8.4 APPENDIX D – CODIFICATION OF EMPIRICAL FINDINGS

	Respondents											
Empirical Findings	1	2	3	4	5	6	7	8	9	10	11	12
Face-to-face communication is important	M	M	M	M	M	M	M	M	M	M		M
Slack is an important tool	M		M	M	M		M	M	M	M		
Slack is "high and low", personal/professional purposes	M		M			M	M	M				
Need more video calls												M
Time zone differences makes the communication more difficult					M			M	M	M	M	M
Documentation on Xnet is difficult to find	M		M		M		M	M				
Accurate documentation is important				M	M	M		M		M	M	M
Highlights a need for increased storage of knowledge		M						M	M	M		M
Highlights a need for demos					M	M	M			M		
The existing knowledge is not used in an efficient way		M		M	M		M	M				M
Knowledge is being lost when a person quits		M			M			M				
Highlights a need for more structure and clear purposes	M		M	M	M	M	M	M	M	M	M	
Weak knowledge sharing R&D - divisions	M		M	M	M	M	M	M	M			
Weak knowledge sharing between divisions	M	M	M	M	M			M	M	M	M	
Weak knowledge sharing between teams in the same division	M							M	M			
Strong knowledge sharing within-team	M	M	M	M	M		M	M	M	M	M	M
Do not have time to go to knowledge sharing sessions	M							M		M		
Do not see a clear purpose with open routine meetings							M		M	M		
Relocating people is important for KM		M			M			M	M	M	M	M
Travelling is important for knowledge sharing					M			M		M	M	M
Personal connection is important for knowledge sharing	M	M			M	M	M	M	M	M		M
Company culture is important for KM		M	M	M	M	M	M		M	M	M	
Company culture has 'team spirit'							M	M	M	M		
Company culture is collaborative		M		M			M	M			M	M
Company culture is messy	M					M						
Company culture is effected by earlier ownership	M								M		M	M
Company culture is open	M	M	M	M	M		M		M		M	
Company culture has freedom / allowance to make mistakes		M	M						M	M		
Company culture consists of energy and passion		M				M		M				M
Company culture of a "small business"						M			M			
Company culture is multicultural							M		M		M	
Hierarchies is a cultural difference	M		M	M	M			M				
Chinese office is dependent on management guidelines from HQ	M		M					M		M		
Responsibility to Chinese office motivates knowledge sharing			M									M
China office is dependent on documentation from HQ								M		M		M
US office is dependent on documentation from HQ											M	

M = mentioned by respondent.