Cooperating apart:

a qualitative study about conditions for knowledge sharing in distributed communities of practice

Master Thesis in Strategic HRM and Labour Relations

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Semester: Spring 2016

Abstract

Purpose: This study aims to understand conditions for maintaining knowledge sharing in distributed communities of practice (DCoPs) in the context of a multinational corporation by collecting team members' perspectives. Since DCoPs exist in the organisational context and are enabled by ICT, the study also aims to capture the role attributed to both the organisational context as well as to communication technology.

Theoretical framework: To gain a deeper understanding of knowledge sharing, the study's theoretical framework is based upon the theories *Communities of Practice* and *Communities of Practice and Information Technology* (CoPIT). While the first theory enables to describe community elements important for knowledge sharing, the second framework emphasises the interrelation with technology guiding how knowledge is shared

Methodology: The study takes a qualitative approach and the empirical data is based on interviews with members in two DCoPs in an R&D-intensive multinational corporation.

Results: The results show that achieving successful knowledge sharing in distributed work settings remains challenging for organisations. The study indicates the importance of clearly-articulated common goals and appropriate community structures prominent for distributed work, which provides possibilities to share knowledge. Further, the technological support for knowledge sharing is also tightly related to the existence of structures and shared practices in DCoPs. The results also underline the organisation being vital for fostering a community identity and creating a thorough ground for knowledge sharing. We argue that knowledge can be shared in any condition, but through appropriate conditions it becomes sustainable and favours community coherence improving employee development as well as securing vital knowledge in the organisation overall.

Keywords: Knowledge sharing, communities of practice, ICT, multinational organisation

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1. Introduction

In the context of multinational corporations (MNC's), it has become more significant than ever before to bring dispersed professionals together in teams since a company's success relies heavily on effective deployment and utilization of knowledge resources (Chuang, Jackson, & Jiang, 2016). The possibility to bring professionals together can primarily be attributed to the rise of *information and communication technology* (ICT), which enables employees to operate beyond space and time zones, and serves as a platform for knowledge sharing (Ardichvili, 2008; Gilson, Maynard, Jones Young, Vartiainen, & Hakonen, 2015). However, the traditional way of organising employees by appointing them to a specific organisational function most often entails organisational boundaries hindering knowledge flow in dispersed work arrangements, which might result in employees working at cross-directions or in a difficulty in keeping a team cohesive and aligned (Wanberg, Javernick-Will, Taylor, & Chinowsky, 2015). Even though ICT mitigates organisational boundaries, it does not necessarily foster team integration or trigger frequent discussions and exchange of ideas (Jarman, 2005; Margaryan, Boursinou, Lukic & Zwart, 2014). As such, achieving successful knowledge sharing in virtual settings still remains challenging for organisations (Wenger, McDermott & Snyder, 2002). Therefore, understanding conditions for *knowledge sharing* in technology-mediated teams of professionals is vital for companies' operations in the modern business landscape. In this study we therefore want to shed light upon how knowledge sharing is impacted by various contextual conditions in dispersed teams and thus how the process can be maintained. Without comprehending these conditions it is difficult to identify which work well and which need further improvement for a team to function as a cohesive unit. Otherwise, companies risk losing vital knowledge, and their processes and operations might be affected negatively, entailing overall performance disturbances (Israilidis, Siachou, Cooke, & Lock, 2015).

Most organisations have already found ways to leverage dispersed expertise to foster *knowledge sharing* by organising disparate professionals into working groups to increase efficiency and eliminate reliance on individual knowledge (Caimo & Lomi, 2015; Kauppila, Rajala, & Jyräma, 2011). In this study we will apply the concept of *communities of practice (CoP)* (Wenger & Lave, 1991) under the conditions of distributed work arrangements, which we will refer to as *distributed communities of practice (DCoP)* throughout this paper. We argue that this concept is both relevant to the aforementioned phenomenon and the specific context of this study, which will be presented further on, since DCoPs are seen as a group of people within the same area of

knowledge brought together for sharing knowledge and improving each other's professional development through collective learning while being highly reliant on communicating through technological means (Ardichvili, 2008; Wenger et al., 2002). Despite the fact that the original concept of CoPs underlines their voluntarily basis, business practice shows that DCoPs are broadly initiated by organisations themselves to mitigate silos (Chuang et al., 2016; Wanberg et al., 2015; Wenger et al., 2002).

Even though researchers have paid significant attention to *knowledge sharing* in distributed work arrangements*,* we perceive the results being somewhat inconsistent. For instance, one of the arguments might be rooted in the definition of knowledge itself (Wasko & Faraj, 2000), where there seems to be a lack of coherent direction on what line to follow. As a consequence, many scholars end up studying information sharing, focusing on its codification and dissimilation (Jonsson, 2015). Further, the growing studies within the area have a tendency of scrutinizing mainly single factors related to either success or failure of distributed knowledge sharing looking upon individual antecedents (e.g. Rosen, Furst & Blackburn, 2007), the role of ICT (Sapsed & Salter, 2004) or cultural heterogeneity (e.g. Chiu, Hsu, & Wang, 2006). As such, the overall team context for knowledge sharing is disregarded. However, some researchers tend to agree that the comprehension of conditions of distributed CoP has a high potential of uncovering antecedents facilitating knowledge sharing (van Dijk, Hendriks & Romo-Leroux, 2016). Further, a tendency of many scholars is to build the discourses upon criticality of knowledge sharing among knowledge workers as for example researchers. However, knowledge sharing between employees within support functions', for example Human Resources (HR), is clearly omitted (e.g./ Kotlarsky, van den Hooff & Houtman, 2015; Alin, Iorio & Taylor, 2013). Following the aforementioned arguments, we perceive that there is a knowledge gap within existing empirical studies scrutinizing conditions for knowledge sharing in *organisational contexts*.

1.1 Purpose and research question

The aim of this paper is thus to comprehend conditions for knowledge sharing in distributed CoPs in the context of a multinational corporation to understand how to maintain the process of knowledge exchange. To broaden the comprehension of *knowledge sharing* in *DCoPs* and to depict it from a different angle, we will use the sample of employees within *support functions,* namely Human Resources (HR) and Regulatory Affairs, in the context of an R&D intensive *multinational organisation*. As such, this paper puts knowledge sharing in a different setting. To

accomplish this, we intend to collect DCoP members' interpretations to understand perceived conditions for knowledge sharing within their specific communities. To achieve the purpose we intend to answer the following research question:

How do DCoP members perceive conditions for knowledge sharing within their respective community?

A broad scope of the research question enables us to approach knowledge sharing conditions in the respective DCoP from a holistic perspective. Since DCoPs do not exist in isolation but are embedded in MNCs and enabled by ICT, we intend to pay attention to the role attributed to both the organisational context as well as to ICT. By highlighting the aforementioned issues, the results might facilitate our comprehension about how to better leverage knowledge through distributed CoPs to streamline organisational practices.

By exploring this question, the following study contributes to our understanding of knowledge sharing in the context of a MNC in several ways. Firstly, the study looks upon two distributed CoPs consisting of support functions, which are encouraged by the organisation itself to share knowledge across organisational boundaries. We therefore take a look at knowledge sharing in a different context, extending the existing findings of the topic and thus challenging the original concept of CoP. Secondly, the results of the study might provide important implications for HR practitioners in particular, and multinational companies in general.

This paper consists of separate sections to answer our research question. The next chapter presents earlier research within the topic of knowledge sharing in DCoPs. Then follows the theoretical departing points. Next, the methodology of the paper is described, and thereafter the results of the study are presented. Lastly, sections including discussion and conclusions round off the paper. More detailed descriptions of each chapter will be presented in the lead paragraph of each chapter.

2. Previous research

This section will describe earlier research on knowledge sharing in multinational organisations as well as knowledge sharing in DCoPs. Since DCoPs in the study are organised by the company and have resemblance with virtual teams, such terms as community and team are used interchangeably.

2.1 Knowledge sharing in MNCs

Knowledge sharing within multinational organisations has gained significant attention from researchers, where previous research suggests two main advantages of intraorganisational knowledge sharing. Firstly, it improves a company's overall performance leading to a sustained competitive advantage (Grant, 1996; Haas & Hansen, 2007) and, secondly, it leads to knowledge creation and innovation (Tsai, 2002). Therefore, scrutiny of the phenomenon is vital for firms operating in the knowledge-intensive landscape. We could trace various approaches to studying knowledge sharing in organisational contexts, however, quantitative methods and social network analysis have been found to prevail in the area (Caimo & Lomi, 2015; Guler & Nerkar, 2012; Lai, Lui, & Tsang, 2016). Consequently, researchers call for more qualitative studies to explore the issue (Caimo & Lomi, 2015). However, regardless of the applied methodology, scholars agree that knowledge sharing in MNCs always benefits employees by developing their skills and professionalism (Israilidis et al., 2015; Styhre, 2011).

Research has identified two major factor clusters influencing knowledge sharing in multinational organisational contexts: individual-related factors and organisation-related compounds (Israilidis et al., 2015; Levin & Cross, 2004). For instance, researchers contend that the organisational formal structure such as hierarchies and business unit divisions influence interactive patterns in DCoPs (Caimo & Lomi, 2015; Guler & Nerkar, 2012). Namely, the organisational structure provides both opportunities for the existence of social networks as well as it impedes knowledge sharing (Caimo & Lomi, 2015): by creating organisational boundaries among employees, it also creates antecedents and reasons for the development of communities of practice. Further, the organisational culture might influence cohesiveness creating discrepancies in knowledge flow in communities (Wanberg et al., 2015). For instance, if a company encourages competition among business units and functions, it produces diverging practices building boundaries. Consequently, it might lead to the absence of a common ground leading to a difficulty of sharing knowledge. Even if competition is encouraged, cooperation is still required by the organisation, which is referred to as coopetition (Tsai, 2002).

Diverse organisational incentives such as performance-based rewards are also believed to foster knowledge sharing on one hand, but are also seen by some scholars as an insufficient coordination tool; thus, informing contradictory results about organisational factors' influence on knowledge sharing (Fey & Furu, 2008; Israilidis et al., 2015).

Further, the organisational context can support the development of *social identity* between the community and the firm (Langner & Seidel, 2015). Individuals are more inclined to collaborate with their team members if they perceive that they know who their team members are as well as if they identify with them (Ashforth & Mael, 1989). This could however be problematic since team members often possess different identities due to occupation of various roles and memberships fostered by organisational structure, which might in its turn constrain interaction (Eckel & Grossman, 2005; Kimble, 2011). A CoP might thus have diverse identities and thus various interests which could aggravate collaboration and knowledge sharing in the community (Alvesson, 2000; Hislop, 2003). Hence, if the firm fosters a social identity, the members feel their belonging to both the organisation and the community, which facilitates knowledge exchange (Langner & Seidel, 2015).

Since communities of practice are voluntary according to the original definition, there might be lack of formal control from the organisation (Lave & Wenger, 1991). Thus, this lack of control should be compensated by other coordination mechanisms (Tsai, 2002). For instance, a shared vision might provide employees with clear expectations and an understanding of the company's intentions, which is especially critical in the absence of formal control (Ipe, 2003). Additionally, knowledge sharing mechanisms influence organisational outcomes differently: whilst exchange of electronic documents is considered time-saving but not directly causing changes in the nature of practice and work, personal interrelations are on the contrary time consuming but provide considerable benefits to the quality of work (Haas & Hansen, 2007). Therefore, research should consider both knowledge sharing mechanisms to acquire a rounded picture of the process.

Still, even though knowledge sharing activities are encouraged in the organisational context, some employees might not be willing to participate. Some researchers affiliate it to the lack of appropriate knowledge to share, which also leads to an underestimation of the value of knowledge that can be acquired (Israilidis et al., 2015). If companies do not solve such

ignorance, they might end up having an obsolete stock of knowledge and a ruined performance (ibid).

Based on the existing research, communities of practice, cultivated for knowledge sharing, do not necessarily overcome organisational boundaries. Research on knowledge sharing still remains limited to knowledge sharing structures in form of formal dispersion of knowledge from headquarters or through ad hoc teams (Martin-Rios, 2014). However, a large share of a company's critical knowledge, particularly tacit knowledge, is often transferred informally through interactions (Powell, Koput & Smith-Doerr, 1996).

2.2 Knowledge sharing in virtual communities of practice

Scholars have devoted their attention to studying knowledge sharing in multinational firms through scrutinizing the value of virtual teams and CoPs (Caimo & Lomi, 2015; Haas & Hansen, 2007). Recently, CoPs and later on DCoPs, have emerged as a construct fostering knowledge sharing across organisational boundaries and thus as a mechanism of knowledge management in multi-unit organisations (Haas & Hansen, 2007; Wanberg et al., 2015). Knowledge sharing in DCoPs emerge when members engage in problem-solving through discussions (Wenger et al., 2002). Knowledge is seen as tacit and explicit (Ling, Kehong, & Haixia, 2010; Nonaka & Takeuchi, 1995). The explicit type can be described as more formal and thus can be easily codified and transferred (ibid.). It is said however that tacit knowledge is referred to personal skills and experiences and is bound to its specific context (Tsoukas, 1996; Von Krough, Ichijo, & Takeuchi, 2000). Therefore, the type of knowledge predicts the mechanism of sharing, where tacit knowledge is difficult to codify and easier to transfer through socialisation (Haas & Hansen, 2007). Considering the constructs of knowledge and its local embeddedness, DCoPs are seen as the most appropriate structure to facilitate tacit knowledge sharing and organisational learning (Ardichvili, 2008). Even employees rely more on DCoPs to obtain knowledge in the modern organisational structure (Weber & Kim, 2015). For instance, by participating in CoPs, members improve their reputation and legitimacy (Styhre, 2011). Importantly, since DCoPs are continuously unfolding, antecedents for knowledge building are also developed with time (Wenger & Snyder, 2000).

Given the altered application of the phenomenon in organisational contexts positing that DCoPs are encouraged by managers as knowledge sharing entities but still retaining its informal status (Wanberg et al., 2015), we lean upon broader research about virtual cooperation. Interestingly,

virtual cooperation is to a greater extent considered vital for knowledge sharing in organisations compared to traditional teams (Wei, Stankosky, Calabrese, & Lu, 2008), since the way virtual cooperation structures communication enable knowledge exchange regardless of distances (Kauppila et al., 2011). In order for knowledge sharing to occur between team members, they need to engage in discussions, reply to questions, contribute with ideas when making decisions as well as inform the teams what has been done in their common virtual environment (Bartol & Srivastava, 2002; Rosen et al., 2007). Consequently, the whole organisation can draw benefit from the knowledge of a single individual due to collaboration (Nonaka & Takeuchi, 1995). Challenges with knowledge sharing in these settings however involve the lack of face-to-face meetings, cultural differences and time aspects. Considering dispersion as one of the characteristics of DCoPs, some researchers posit that distance still matters (Dimitrova & Wellman, 2015). Specifically, community members prefer to connect with members located in physical proximity, which means that even possibilities to meet result in a better knowledge sharing outcomes (Haas & Hansen, 2007). Other distinctive challenges are connected to the team member's capability and motivation to share knowledge as well as the risk of sharing improper information (Rosen et al., 2007). High risk is also associated with withholding information, which diminishes the possibility to take an appropriate decision (Lu, Yuan, & McLeod, 2012).

Since knowledge sharing is actively enacted by the organisation itself, it might entail a certain control of DCoPs (Wanberg et al., 2015), which is known to negatively affect the willingness to share knowledge (Tsai, 2002). However, if a community member is dedicated to his or her work in general it might be a key to improve the DCoPs performance (Halgin, Gopalakrishnan, & Borgatti, 2015). Some researchers refer to it as identified motivation or a feeling of importance to the team, which drives one's willingness to share knowledge (Stenius, Hankonen, Ravaja & Haukkala, 2016). Other studies pinpoint reasons for why individuals may not share information or knowledge, that could be a fear of becoming criticized (Ardichvili, 2008). Some members thus choose to be passive participants only aiming to learn, without sharing their experience, and thus not contributing to the community. In such cases knowledge is perceived as a public "property", while participants do not consider actively partaking in DCoP (Cheung, Lee, & Lee, 2013). This leads in its turn to a stagnation of community practices (Sins & Andriessen, 2012).

Further, a feeling of equity, which is related to the equivalence of the shared and learned knowledge, has shown to be critical to a balanced participation in a DCoP (Chou, Lin, & Huang, 2016). That is why the existence of trust among the members in a community, or if they perceive

that sharing knowledge will increase their reputation and expertise, is considered to foster knowledge sharing (Wasko & Faraj, 2000). However, trust seems to affect the quality of shared knowledge, whilst it has no influence on the frequency of shared knowledge. In other words, trustworthy connections in DCoPs foster exchange of relevant and content-rich knowledge. The same correlation is rendered to language: shared language drives exchange of a more sensitive and qualitative knowledge (Chiu et al., 2006). If members establish a firm sense of trust in their CoP, the members are more likely to continue sharing knowledge in the future (Chuang et al., 2016).

In summary, such aggregated topics as knowledge contribution, main motivators for knowledge sharing as well as technology-related issues have dominated this area of research (Chou et al., 2016; Lee, 2009; Rivera & Cox, 2016; Wasko & Faraj, 2000). Further, many studies scrutinise health and educational sectors, and hybrid DCoPs where both customers and professionals are involved, going beyond a work-related context (Moen, Mørch, & Paavola, 2012). However, we argue that there is still little known about how these DCoPs actually operate and share knowledge in the context of a multinational corporation, as well as what conditions render their success.

2.2.1 Role of communication technology in knowledge sharing in DCoPs

The existence of DCoPs is possible due to the technological prosperity and the increased use of internet, the ability to send emails and use instant chatting, as well as to communicate through videoconferencing and conference calls, which has resulted in the opportunity to allocate work globally (Daim et al., 2012). Since ICT is a vital enabler of CoPs, we consider it important to separately summarize its influence on knowledge sharing. A consequence of this opportunity, however, shows that team members in virtual teams trust the technology to enable conversations more than collocated teams do, since they are not able to meet all their colleagues in person (Weber & Kim, 2015.) This also implies that members in virtual settings and DCoPs continuously find themselves in different roles and thus encounter different ways of managing their work assignments and communicating with others (ibid.).

Most studies on ICT in virtual settings conclude that it facilitates the work for the team members (Watson-Manheim et al., 2012). Studies have for instance found that the various ways of communicating through ICT can both reduce and enhance the possibilities of misunderstandings and cultural differences (Grabher & Ibert, 2014; Shachaf, 2008). Studies also show that ICT can

increase feelings of group identity among the members, perceptions of having a common ground, as well as facilitate the possibility to share knowledge with selected recipients within and/or outside the team (Hwang, Singh & Argote, 2015). However, the team members must both have and be willing to share their tacit knowledge with the help of ICT in order for the whole team as well as organisation to draw benefit from the knowledge (Griffith, Sawyer, & Neale, 2003). Further, the experience of having used ICT before has a positive effect on knowledge sharing (Martins, Gilson & Maynard, 2004). ICT cannot however substitute for "real meetings" since, as mentioned, face to face meetings involve direct responses, body language etc. (Alin et al., 2013), and ICT does not imply a stability in the teamwork simply because it eases the ways team members can connect to one another, and thus does not perform as a sufficient tool to work coordination and knowledge sharing (Israilidis et al., 2015; Watson-Manheim, Chudoba & Crowston, 2012). We therefore experience a continued need to investigate the role ICT connected to DCoPs has, since the previous studies show controversies in the results.

3. Theoretical framework

The following section outlines the theoretical departure of the study and intends to equip with analytical tools to give an explanation of conditions for knowledge sharing. We explain the CoP concept from a knowledge sharing perspective. Further, since DCoPs are enabled through ICT, we discuss its implications for knowledge sharing conditions using a CoPIT framework.

3.1 The theory of Communities of Practice: a knowledge sharing angle

We build our study upon the *theory of Communities of Practice* (CoP), which originally serves as a framework to collective learning (Lave & Wenger, 1991). However, since knowledge sharing is key to learning (Wenger & Snyder, 2000; Tsoukas & Vladimirou, 2001), we broaden the theoretical assumptions of CoP theory by discussing it from *a knowledge sharing perspective*. Since information and knowledge are often used interchangeably, as earlier studies have shown (Jonsson, 2015), we find it important to differentiate these terms. Even though the concepts are closely related, information is most often referred to as certain content transmitted through different ways of communication, and serves as a necessary foundation for knowledge (Nationalencyclopedin, 2016). The process of *sharing knowledge* refers to an interactive activity or a conversation among individuals to solve problems, align actions or find solutions for organisational value, where participants make sense of information (Ipe, 2003; Jonsson, 2015). In the CoPs context *knowledge sharing* is acknowledged as one of the key purposes which helps to legitimize and enhance member's expertise as well as to improve their practice (Duguid, 2005; Lippert, 2013; Wenger et al., 2002). According to the concept, the knowledge within an organisation is gathered around diverse CoPs, which develop a certain practice the company needs for its operations (Wenger et al., 2002).

According to the theory, communities should include *three main elements* to constitute a profound structure for knowledge sharing: *a domain, a community* and *a practice.* The *domain* refers to the knowledge the community is dedicated to, and the knowledge it leverages to the organisation and stakeholders. The domain is particularly important to knowledge sharing as it fosters engagement, shared identity and dictates what knowledge should be shared (Wenger et al., 2002). The element further concerns the interconnectedness of members' working conditions and thus leads to a consistency of a community's activities (ibid.). *The community,* on the other hand, underlines a group of individuals who mutually engage in and interact around the shared knowledge domain (Wenger et al., 2002). In other words, the sense of community creates a participative and trustworthy climate favouring knowledge sharing (Styhre, 2011; Wenger et al.,

2002). By utilizing a common language and achieving a common ground, members can easily continue to exchange knowledge (Cramton, 2001). As such, the development of cooperative skills is vital for continued knowledge sharing (Styhre, 2011). Further, *the practice* is built upon norms, rules and tools and represents an outcome of knowledge sharing, shaping a common repertoire for CoP (Wenger et al., 2002). In other words, the practice develops shared approaches of addressing and solving problems consistently as a community. Importantly, a community does not lead to homogeneity among members but rather to the enhancement of their identities, which makes it important to also look at the role of the individual. Similarly, the omission of the individual aspect is a broadly expressed critique of the concept (Lippert, 2013). Therefore, we extend the notion of knowledge embedded into community and suggest that it is simultaneously possessed by individuals, who can decide on what knowledge to share, when and with whom (Ipe, 2003; Wasko & Faraj, 2000). The process then depends on the personal engagement in the community which cannot be forced by the organisation (Probst & Borzillo, 2008; Wenger et al., 2002). Thus, lack of engagement can negatively influence knowledge sharing.

3.2 The theoretical framework of Communities of Practice and Information Technology

Since we investigate dispersed CoPs, ICT is an important condition for knowledge sharing to take place. The theoretical framework of *Communities of Practice and Information Technology* (CoPIT) (Lippert, 2013) will enable to shed light on the interrelations among CoPs and ICT and rests upon the integration of the CoP concept, a structuration model of technology and adaptive structuration theory. Given the fact that CoPs are based upon practice, and since *knowledge sharing* is attributed to as a *work practice* (Styhre, 2011), we argue that the presented theory is relevant to understanding ICT's role in knowledge sharing in our context. The central assumption is *reciprocal dependency* among collaborative technology and CoP, which mutually affect each other and evolve through time (Lippert, 2013; Oborn & Dawson, 2010; Wenger et al., 2002). Consequently, the theory does not only account for the sole influence of ICT.

The theory pays significant attention to *structures* of both CoPs and collaborative technology. The structure of ICT is, for instance, constructed by resources, capabilities and features provided by technology in combination with attributed goals and values, helping to comprehend the meaning of the tool (Wenger et al., 2002). Thus, ICT has a dual role: it is shaped and used according to human interpretation of its features, and it simultaneously forms how and when it is used in a CoP. Aggregating this to a CoP level, structural elements of a CoP, outlined elsewhere in the paper, determine how and when ICT is used (Lippert, 2013; Wenger & Snyder,

2000). The usage of ICT leads to construction and reconstruction of both social structures, referred to as *appropriation* (Lippert, 2013). In other words, ICT is not static by nature but is evolved and interpreted through interaction with CoP (Holford, 2014). To exemplify, CoPs practice might influence the *perception and usage of ICT*, where positive perception in its turn produce positive outcomes for CoPs development and thus continued usage of ICT. Similarly, other scholars also (Baralou & Tsoukas, 2015; Kirkman & Mathieu, 2005) emphasize the importance of perceptions of technology use. These perceptions are shaped through four *types of appropriations* by *direct use* of ICT or *in combination* with another social structure, by *constraint*, questioning the structure of ICT, or by *judgmental actions* either accepting or neglecting the structure (Lippert, 2013). In sum, the technology cannot affect knowledge sharing directly but rather through the perceptions of its usage produced through reciprocal dependency within CoP (Baralou & Tsoukas, 2015; Orlikowski, 2000). Important to mention is that the theory only provides a general guideline for the interrelations that exist but does not explain particularities of human actions and structures of ICT. However, since ICT is not the main focus of our study but rather a complementary dimension, we believe that this model will reveal ICT's role in the studied context.

3.3 Towards an integrated framework

Hence, the theoretical departure of this study is rooted within the foundations of CoP theory and a community's reciprocal dependency with ICT. However, DCoPs do not exert implications to knowledge sharing in vacuum but are also influenced by the organisational context. Therefore, our study will also pay attention to the role of the organisation to depict conditions in a wider scope. This interrelation determines sharing mechanisms and forms the process in general. Therefore, the main advantage of our theoretical framework is that it does not only provide tools for understanding knowledge-sharing processes in organisations, but it also depicts how factors influencing a knowledge-sharing process are interrelated.

4. Methodology

The following section describe how the research design and setting, participant selection, data collection as well as data analysis was developed. Issues concerning reliability, validity and ethical considerations are also included.

4.1 Research design

Following the purpose, the study has been conducted as a qualitative interview study. Such research design enables to describe and explore as well as to capture rich data about the studied issue (Bryman & Bell, 2011). We see the need for exploration as little is known about communities consisting of support function employees within an organisational context. Since we had the intention to develop a deeper understanding of the knowledge sharing process within communities of practice, the focus was on the possessors and carriers of knowledge, who are dependent on its sharing, i.e. individuals (Styhre, 2011; Tsoukas, 2008). Two CoPs in a given organisational context were chosen for this study, where the amount of studied CoPs were not chosen intentionally but rather provided by the company to fulfil the thesis requirements for a qualitative study. This has further given a possibility to compare the results to understand what is unique for each of the communities and what is common, contributing to theoretical assumptions (Bryman & Bell, 2011). The idea to include a comparative perspective however was not decided before the thesis execution but rather developed during the data analysis due to identified prominent differences among these DCoPs.

4.2 Research setting

The chosen case company is an international R&D-intensive organisation employing around 100 000 employees across the world. Detailed information about the company and its business operations has been concealed to retain the company's anonymity in the study both upon the company's request and due to a signed confidentiality agreement. The site has been selected based on their proactive interest in the topic of ICT mediated work. Importantly, the criticality of knowledge sharing is obvious in the studied organizational context due to its continuous strive for the leading position on its market. For instance, one of the company's strategic goals is to mitigate boundaries and to flatten the formal organizational structure in favour of cooperation to make use of the full potential in the firm and to enhance its overall effectiveness (The Company's Annual Report, 2014). This in its turn further justifies the importance of our investigation and future implications for the organization and the appropriateness of the chosen setting.

The communities, whose members have been interviewed, are involved within different professional spheres in organization, namely *human resource management* and *regulatory affairs*, belonging to different support functions. More information about the respective community will be presented in the results section. However, in terms of composition, the HR Community includes three men and seven women, whereas the Regulatory Affairs Community consists of one man and seven women. All members, with the exception of one, have a university degree in either a management-related or a science- & technology-related field. All members also have extensive work-life experience.

4.3 Participant selection

Given the purpose of the research, purposive sampling has been applied to construct the population of this study as being most appropriate (Hakim 2000). In other words, the CoPs have been chosen by our gatekeeper at the company based on their ability to provide comprehension to the studied phenomenon, which has been communicated to our contact person prior to this (Bryman & Bell, 2011). We perceive the fact that the choice was made by the gatekeeper as a possibility, since it both resulted in quick access as well as an opportunity to dedicate our time to ground our study instead of contacting potential participants. We think however that this might have also affected the outcome of the study since either the gatekeeper or other parties in the organisation might have had a certain agenda when choosing these CoPs. We are aware that the results might have looked different if another sample was used. In sum, all members of two different communities of practice have been recruited for the purpose of this study providing the base for *eighteen* interviews. The interviewees have been contacted by our gatekeeper supposedly through phone and email to book in time slots for interviews.

It is important however to ensure communities' suitability for being categorized as communities of practice. To do so, we lean upon one of the seminal works of Wenger and his colleagues (Wenger et al., 2002) again discussing three main elements necessary for being ranked as a CoP. As already described in the theoretical section, these factors are formed of a common *domain* of knowledge, *community* of people and an existence of shared *practice* (Wenger et al., 2002). To elaborate, firstly, the chosen communities have an established domain of knowledge, namely human resources in one case and regulatory affairs in another, and thus have the mutual interest in their respective topics. Secondly, they do have common problems rooted within the field of HR or regulatory affairs, which creates antecedents for interactions, where both communities

communicate in relation to the shared knowledge domains. Last, both communities have established ways of doing things, i.e. *practice,* however, to a various extent, captured in tools and documents and in intangible norms such as behaviour, fostering shared understanding and guiding their cooperation. Therefore, the chosen teams can be rendered to as communities of practice according to the criteria. Further, they coordinate their actions and communicate through the broad adoption of collaborative technology, which enables us to study ICT's role in the process of knowledge sharing.

4.4 Data collection

The purpose of the paper together with the levels of the presented theories guiding our study regard much attention to individual's perspectives, therefore the level of analysis boils down to the *individual level*. Therefore, a qualitative method to data collection is most appropriate to elicit descriptions about people's interpretations of and behaviours in relation to knowledge sharing process giving a fine ground for its further interpretation (Hakim, 2000). Indeed, human perceptions require rich qualitative data to capture the essentials (Bryman & Bell, 2011), therefore, the data has been collected using semi-structured interviews. The method is chosen due to its twofold nature: the possibility to stick to structured discussion topics and simultaneously to keep open minds and ask probing questions to retrieve the personal interpretations (Bryman & Bell, 2011; Hakim, 2000). Prior to the interviews we prepared an interview guide (see Appendix 1), where the discussion topics were guided by the chosen theoretical framework. This is particularly appropriate in a qualitative study as it enables to produce a comprehensive description of the phenomenon (Bryman & Bell, 2011).

All interviews have been conducted in March and in the beginning of April 2016 and have varied lengthwise, lasting between 30 min - 1 hour. We have both been present at the interview occasions, alternating the roles of "passive" and "active" interviewers. To specify, while one guided the interview process, the other person assumed the role of an observer, took notes and intervened if necessary. This method entails certain advantages by securing that most of the topics are being covered and evaluating the whole interview process (Bryman & Bell, 2011). The majority of the interviews were held through the means of collaborative technology due to geographical dispersion of the respondents. However, a handful were executed in person at the company's office. Since English is the official corporate language at the case company and thus daily used by all its members, this was the language used to collect the empirical data. To retain

details and to eliminate the risk for translating the conversations into our own words, the interviews were recorded after given consent from the participants and transcribed *verbatim*.

4.5 Data analysis

The data analysis was performed in the qualitative data analysis software NVivo, which helped us to arrange and to examine the data. Already during the transcription phase the analysis process started, where initial observations and themes were written down. Afterwards, the data was approached in the frame of a content analysis to code the empirical data in order to trace patterns (Bryman & Bell, 2011). More specifically, this refers to classifying words or expressions from the narrations of the participants into codes in order to organise the data, which provides analytical direction and detects possible biases (Charmaz, 2014; Collis & Hussey, 2014). Practically, our coding phase was guided by our research question, where we looked for recurring patterns as well as controversies in relation to three dimensions in the respective CoP: internal conditions for knowledge sharing, organisational role and the role of ICT. Importantly, we tried to stay open-minded during the analysis of the empirical data and thus did not use theory as a guidance. Thereafter, we have grouped the codes into broader categories and themes, which means that our data analysis is inductive-driven (Bryman & Bell, 2011). These categories have then been used to present our findings. Further, the categories have guided us to theoretical assumptions through a comparative analysis of identified patterns as they proved to be different during the examination of the data (Charmaz, 2014; Collis & Hussey, 2014). By doing so, we were able to identify both similarities and differences in the studied communities to study how the conditions differ and how it affected knowledge sharing. These findings were further on examined by applying the proposed theoretical framework and described in the discussion part. Importantly, the theoretical framework As a result, we were able to produce theoretical assumptions in relation to knowledge sharing in DCoPs.

4.6 Reliability & Validity

Reliability, replication and validity are aspects that every researcher needs to consider before beginning the research (Bryman & Bell, 2011). If the study can be repeated further on either by other researchers or the same researcher, and show the same results again, it is considered to be reliable (Kvale, 2007). Therefore, reliability resembles the quality of the results and characterises their chance to be repeated under similar circumstances. A pilot study could thus for example be a method to do prior to the main study. However, we did not had the time to conduct one, but we think it could have affected the reliability since it could have helped us to

discover possible strengths or weaknesses with our interview guide and to make sure the respondents understood the questions in the same way. Another important aspect when it comes to a study's reliability is avoiding making assumptions about the respondent's interpretations or perceptions (ibid). We argue that the reliability of this study is enhanced since we tape recorded the interviews and transcribed them word for word, and by doing so, we used the respondents own words and expressions. Further, we also asked all participants the same main questions in order to focus on the same subjects. We find that this therefore enhances the study's reliability, even though we also, as mentioned, asked sub-questions as well.

The validity aspect represents whether the study actually examines what it intends to, and thus resembles accuracy of the results (Kvale, 2007). Here, the subjectivity of the researcher's own interpretations and values might affect the validity of the study, which is difficult to avoid entirely (Hakim, 2000). However, since we are two students interpreting and discussing the data, we argue that the risk of subjectivity is minimised. Important to mention, is however that one might tend to code and categorise only certain themes that might appear more fascinating to the researcher, which could result in disregarding data that too could be helpful to understand the research problem (Collis & Hussey, 2014). In order for us to avoid this, we have chosen to manage the coding separately and thereafter discussing our findings together before categorising.

Further, interviews replicate certain individual's realities, influencing both the validity and reliability of the results (Charmaz, 2014). It can therefore be complicated to generalise the results and state that it might reflect other organisations due to that this intended research is a result of only one specific case (ibid.).

Overall, we believe that being two researchers has been beneficial both to this study and to ourselves as we could mitigate outlined limitations, acquire deeper understandings of the study content and thus discover new approaches by commenting on parts separately and by discussing them together.

4.7 Limitations

Apart from the aforementioned limitations related to aspects of validity and reliability, there are other impeding dimensions that could affect our findings. For instance, language difficulties could both influence the interview itself as well as the results (Bryman & Bell, 2011), which we

have encountered in different ways. However, the organisation in our case is multinational, and English is the corporate language and thus used by all teams. Still, on one hand, for some interviewees the interviews were held in another language than their mother tongue, which could be viewed as a barrier and at times led to certain misunderstandings such as misconceptions of terminology and some questions in general. To overcome this problem we have tried to rephrase questions and alternate used words. On the other hand, we have as researchers experienced language barriers ourselves since some respondents have English as their mother tongue which we do not have. Consequently, in these cases this has possibly put us at disadvantage as we could not express ourselves as freely as some of the respondents. We chose nonetheless to inform the participants that the interviews would be held in English, to prepare them prior to the interview. Also, we find that using semi-structured interviews in our case has been beneficial since it has provided an opportunity to follow up with attendant questions or ask for explanations and clarifications (Bryman & Bell, 2011).

Another aspect that could have affected our results is related to the international nature of this study since it involves respondents from different cultures and backgrounds. Obviously, it can be seen as an advantage as it provides a wider spectrum of experiences and understandings of the investigated issue. However, we have at times experienced certain misconceptions of the interview per se, where we perceived that a few respondents have not fully engaged either due to the lack of time or due to varying comprehensions of conducting theses. In our opinion, this might depend on the cultural context and perhaps different educational systems in certain locations.

It is also important to note that due to time constraints, this report does not involve all communities of practice within the entire organisation, and neither did we conduct comparisons with other multinational organisations.

4.8 Ethical considerations

There are also four ethical conditions according to The Swedish Research Council (*Vetenskapsrådet*, 2002) that the researcher needs to inform the participants about, which will hereafter be explained. According to the consent requirement, all participants has, according to the demand, the right to choose whether or not they want to participate. This could thus imply a risk that candidates might decide to withdraw from the research. By referring to this requirement, we informed the participants that it is up to them to take part in our research. However, we did

not experience any withdrawals from the respondents. The confidentiality requirement concerns the anonymity of the participants, which needs to be kept confidential. The information requirement implies that the participants prior to the interviews need to be informed about the intention of the study and how it will be spread. It is however rarely possible to communicate totally accurate info about the research (Bryman & Bell, 2011). This means that we as researchers were aware that we could have needed to update the participants with new information. The information requirement also implies to inform whether or not equipment such as tape recorders are intended to be used, since it is important that the participant agrees to be recorded. The requirement of use is the last requirement researchers need to consider. It means to guarantee the participants that any information or data, will not be used for other intentions than the intended study.

4.9 Work allocation

Since we are two students conducting this study, we find it important to clarify how we have divided the work between us. We began discussing our individual interests in order to find a common potential research question. Thereafter, we searched for earlier research separately in order to understand the context and what possibly was missing. After discussing our findings, we divided writing certain sections between us, and then switched, so that the other could add and modify parts if necessary, in order for both to be aligned about the text. We also found it important for both of us to participate in all tutor meetings and with our contact person at the case organisation, as well as during all interviews in order for both to acquire a deeper understanding and eliminating the risk of missing potentially important information.

5. Results

The analytical summary of the empirical data will be presented in this section in order to tackle the purpose of this research and structure the findings. To present our findings the most prominent conditions for knowledge sharing will be discussed for the respective community in form of different themes generally analysing cooperation, communication, organisational context as well as ICT. The last subchapter will be dedicated to nuances based both on similarities and differences in both communities. Since the respondents have been guaranteed anonymity and confidentiality, each one of them has been randomly assigned a number between 1-10 in the HR Community and 11-18 in the Regulatory Affairs Community.

5.1 HR Community: a tendency to fragmentation

The HR Community consists of ten members in total representing different roles. The main division is done between human resource business partners (HRBPs) on the local and global levels constituting three and four persons respectively. Local HRBPs mostly work with local, country-specific human resource (HR) issues in a specific site, while those on the global level drive a strategic and global HR-agenda. The other roles include a team manager (senior vice president within HR) and the manager's assistant, a talent manager and a global strategy and operations director. The community member's tenure varies between more than two years to several months, where the last member joined the team in December 2015. It is vital for the members as a part of their roles to work near to the business and support managers on various levels. Therefore, it can generally be described as a support function transcending several geographical areas in the United States, the United Kingdom, Sweden and Finland with clear internal focus towards organisation. The main purpose of the community is thus to streamline the HR agenda throughout the organisation.

5.1.1 Communication as a tool for visibility and alignment

The empirical data shows that members perceive their community being important for consistency of actions, while knowledge sharing is not prioritised. As such, a topic, that permeates the discussions about communication patterns can be defined as a need for visibility.

To be able to cooperate in a virtual setting the community has set up recurring meetings on a weekly basis in order to communicate with each other and to share knowledge. These meetings are organised around a specific agenda and thus serves as a discussion guidance. Importantly, the respondents stress the significance of considering what actually is in focus steered by the

existence of scorecards and agendas. The usage of an agenda might thus imply a dual role for sharing: while it helps to stay focused, it might also lead to some ideas being less prioritised and thus result in knowledge loss. Nonetheless, meetings allow for increased communication and a visibility of each other's work in the community:

"...our meetings tend to have let's say, a topic of sharing knowledge within certain areas. I think it's more about sharing information and kind of verifying and aligning that we are on the same page on certain things. So it doesn't have the, I would say, a typical knowledge sharing purpose, the meeting." (Respondent 5)

The majority of respondents see meetings as focused on sharing information rather than knowledge with the main purpose to provide updates to one another. Interestingly, the perception of the difference between knowledge and information in the community is fragmented, where a few members do not see any distinctions among those two, which might have implications on what actually is considered as knowledge. Many respondents acknowledge the importance of the scheduled meetings since community members are spread through various time zones, have high workload and are quite difficult to reach.

"If you don't have a structure that make you meet and talk and both build the group and the kind of the comfort in the group, so you are actually both dare to share and want to share [...] ok to share your incompetence [...] which in our case could be regular meetings within this group [...] because otherwise you will never have time to do anything and then everybody would grow in their own track." (Respondent 2)

These regular virtual get-togethers build and develop the group for continued knowledge sharing and thus contribute to community cohesion. As a drawback of not being present at these meetings and thus at rigorous discussions, important details might be missed out.

Apart from the meetings, community members widely use emails as another option of communication. This seems to be one of the main tools to overcome community dispersion as time slots for actual interactions are constrained and the amount of options for knowledge sharing are limited:

"...I have colleagues in the US kind of passing on questions or queries and stuff when I'm getting into bed, and then in the morning I can't call, but I need to do something and then you know

email, so there is a delay in the communication. So we need to meet between 2 or 5 or 6 or something. And then we need to find time if we need to talk about stuff. So that's trickier." (Respondent 1)

As implied, to overcome the aforementioned impediment, mutual adjustment is required which sets higher demands on knowledge sharing. Further, the inability to have rich discussions results in misconceptions:

"...if you send only email, especially if it's a challenging issue, there might be a misinterpretation [...]. In some cases you can't interpret the feelings or the emotional part..." (Respondent 9)

As the quotation above implies, usage of emails might have negative implications for knowledge sharing. As exemplified, this seems to be related to the individual's propensity to interpret things according to one's own understanding. The data further revealed that e-mails provide visibility but are used too frequently, which results in information overload and risk of missing knowledge. Interestingly, even though the majority of the informants still value face-to-face interaction, a few community members do not see a significant difference of sharing knowledge virtually versus face-to-face. To specify, although it contributes to increased understanding, seeing the person to get message across is not necessary. As to our observation, this nuance seems to depend on the community members' tenure and experience of working virtually.

5.1.2 The inadequate community structures as a hinder

Many respondents bring up the issue of community structure as something hindering cooperation. The results show that the community structure, mostly expressed through work allocation and diverging goals, can have a negative impact on a community's unity.

According to the empirical data, this intensifies the community members' independency. As a consequence, the members have today diverging goals with little reasons for actual interaction. Some respondents pointed out to the existence of a fire-fighting mentality caused by the current work distribution. This, as expressed, hinders cooperation and cohesion leading to continued autonomous work:

"Some of the goals are different, but we may have a similar goal but we have a different audience that we may execute that plan or goal with, so the interaction in the execution is not strong

because we all support different teams […] few of us have the same goal in terms of the similar deliverable." (Respondent 6)

The data shows that community members do not have many touching points as they support different audiences, which creates less possibilities for knowledge sharing. This even applies to community members in physical proximity: it does not necessarily contribute to increased collaboration. However, many respondents believe that having mutual goals would yield better cooperation due to improved reasons for community interactions and common problem-solving. For instance, the interviews indicated the existence of the informal subgroups based on roles similarities due to the existence of synergies of interests and working areas and thus comparable objectives. This in its turn facilitates cooperation and knowledge sharing as expressed by respondents. On the other hand, subgrouping based on role similarities at the current stage enhances fragmentation in the community since knowledge tends not to be shared properly among all the members.

Not only the current role and work division increases independency but also results in confusion stemming from misunderstanding of the role boundaries, which has been discovered during the interviews:

"...there is unclarity which we are currently working on clarifying in the relationship between global business partner and local business partner on who does what, because that is not fully consistent and it is not 100 % clear, so we do things slightly differently and there could be misconceptions of expectations…" (Respondent 1)

According to the quote, it results in tensions caused by various expectations and is prominent between local and global HRBPs. Thus, it causes misalignment in actions and acts as another aspect disturbing knowledge sharing and cohesion.

Further, the data revealed that long experience of working within the area might negatively impact attitudes to the possibilities of sharing knowledge:

"The team is a bit mixed and the level of experience is quite high I would say. So I'm not entirely sure if any of the members can bring in knowledge that we don't already know about, so I'm sure there is, but I can't think of anything right now what that would be." (Respondent 5)

We see it as an interesting statement, pointing out to the absence of the perceived possibility to exchange and acquire knowledge within the community. Obviously, it might be connected back

to the perception of knowledge and the old habit as well as structure of working independently. Interestingly, some respondents exclaimed that uncertainty about how to perform a task, i.e. one's lack of knowledge or experience, leads to more knowledge sharing. Still, the majority of the respondents acknowledge that experience present in the community is valuable as it may challenge the ways community does things and result in novel approaches of integrating ideas and experiences. Therefore, such diversity gives prerequisites for personal development and creates preconditions for knowledge sharing.

As a precondition to improved cooperation, all respondents discuss the relevance of structure around the community. However, the opinions are divided: whereas some indicate that arranging a structure around the community is necessary for the sake of business, others perceive structure enforcing knowledge sharing. The most expressed reason for the necessity of a community structure is associated with the delivery consistency towards stakeholders and a better community integration. Even though they already have meetings as one of the structuring mechanisms as discussed earlier, they still need to become more integrated. The disclosed intention is to cooperate more intensively within the community and not only being limited to the updates during the meetings as discussed elsewhere. To deal with this, the community has a specific person who is in charge of cultivating the community:

"I think more and more so, that we are starting to be more cohesive with better focus on the goals and things like that. I think that we are progressing in the right direction. There is of course the opportunity to improve in certain areas and to have more alignment." (Respondent 8)

By contradiction, the quote indicates that the HR Community is not fully perceived as a community today. Indeed, the data reveals the community being rather perceived as a group of individuals, where it seems to be little alignment in actions causing disturbances in cooperation and a negative impact on knowledge sharing. Such a view might relate to the relative novelty of the community constellation that has not found its ways of working yet.

While structure seems to be needed to become more integrated as a community, some respondents assign negative influence to the structure in relation to knowledge sharing:

"We haven't created ourselves the systematic platforms to do it, but part of me doesn't believe in that because I don't think it happens in a good way when you kind of come together forced, like you know every Thursday." (Respondent 9)

Having too much structure in the community seems to lead to a feeling of an enforced knowledge sharing procedure. However, the majority of the community members agree that good interrelations and trust are needed for a well-functioning cooperation and knowledge sharing, and the community needs to work more upon it. To uplift the community capabilities and create an improved common ground for continued cooperation in terms of interactional patterns and more efficient utilization of the existing competencies, the community has performed training sessions during the past fall and winter. These meetings were executed during a couple of face-to-face sessions and complemented by a virtual session. As a result, many members see today more willingness to share knowledge in the community. The data disclosed that the community is under-resourced, which is why they probably see more necessity in a tighter cooperation and more efficiency.

5.1.3 The organisation as a twofold player for knowledge sharing

The empirical data reveals a dual role of the organisational context within the knowledge sharing process in the HR Community. This is mostly expressed through the existence of rewards and technology but also through a confusing line structure.

The respondents indicate it being an impediment and an enabler for knowledge sharing. For instance, the organisational structure cannot satisfy both business and employees in relation to knowledge sharing:

"It's not the best but that's how it has to be so how do we mitigate, how we support things happen in a new way. [...] I don't know really if the structure is ... because you can't really set up a structure where it just is really good for knowledge sharing but doesn't support the business." (Respondent 2)

As it can be understood, the organisational structure actually impedes knowledge sharing in favour of business. There does not seem to exist any certain way of turning it around and fulfilling both business and knowledge sharing purposes. Other informants support the opinion indicating that that the line structure is not always similar throughout the organisation, which brings in multiple stakeholder demands which negatively affecting knowledge sharing.

However, the organisation also enables knowledge sharing through its culture, rewards and investment in the technology. To exemplify, many respondents feel that by investing in the technology, knowledge can be transferred swiftly and smoothly since various perspectives and backgrounds can be brought together without necessarily meeting each other face to face. Further, a culture of cooperation, an enterprise leadership philosophy, named by some interviewees, provides well-articulated vision for various functions to follow:

"...he [the CEO] is talking quite a bit about enterprise leadership and [...] that we are not only focusing on our own functions and silos, that we also open up our eyes to wider organization and [...] try to sort of understand instead of sort of debating fiercely [...]. So, I think this company is very much encouraging for collaboration." (Respondent 9)

Interestingly, with the implementation of the philosophy a couple of years ago, the HR Community's cooperation started to be more integrated for the sake of business. Another dimension of organisational support is based upon the vitality of compensation and benefits as a driver for knowledge sharing within the community:

"I am being compensated well to be an active member of the team and for all of these reasons and more I take my role on the team seriously and I feel like it's an obligation to make the active participant and to share..." (Respondent 7)

By being paid, community members seem to feel appreciation and certain obligation to "justify" the reason they are paid for by bringing their knowledge to the table. All respondents negate the chance of withholding knowledge due to the lack of benefit for the community, even though it has been a tendency before according to some informants. This might however partly depend on the necessity to be seen as a community today due to the new philosophy and business requirements.

5.1.4 The inconsistent usage of technology as a barrier for knowledge sharing
The empirical data indicate patterns of high reliance on the technology for virtual cooperation to function. What we have found to permeate the respondents' answers is inconsistent usage of technological tools, which negatively influences knowledge sharing.

Interestingly, technology does not affect knowledge sharing per se but rather through interaction with individuals unless it functions properly. Some of the informants argue that ICT creates commitment in the absence of face-to-face contact in the community and enables knowledge

sharing. Many interviewees expressed strong convictions of technology being up-to-date to be utilized in the meetings and file exchanges.

Another aspect of significance of the usage of ICT is connected to the storage of knowledge. Some respondents expressed their concern about knowledge being stored in the individual's head, which exerts a risk of losing it if the person quits. However, it seems that in order to codify knowledge, guidelines should be in place, which do not seem to exist at the current stage. Otherwise, this results in information overload and its fragmentation:

"And if we use that technology, that could perhaps increase knowledge sharing and the effectiveness of work. We spend a lot of time looking for stuff currently. I don't even find things that I have written myself all the time, because it's kind of all over the place in folders and I don't know from what year, which folder…" (Respondent 1)

The quote is representative of the majority of the respondents in the community and underlines the importance of having consistency in information and knowledge storing. As it is now, they spend too much time searching for documents, which are all located in different places. This is perceived to be inefficient as they would actually prefer having everything gathered and easily accessible. As we understood during the interviews, this might be related to low awareness and inconsistent usage of ICT, which affects knowledge sharing possibilities. According to some respondents the technological possibilities are many more than the community members are aware of. This is further complicated by multiplicity of tools today in the community, where many agree that becoming well-aware of a few tools rather than utilizing minor capacities of many tools, is more beneficial. The inconsistent usage of ICT in its turn is expressed to be caused by community members' own preferences and generational belonging. For instance, some members tend to utilize a tool similar to social media based on the generational cohort due to better experience of the similar tool since before. Further, there is an indication of the higher propensity of utilising certain tools when finding them useful personally. This is probably an explanation to different responses about the usage of emails since a couple of respondents indicated rare usage of those. This is an interesting finding especially in the conditions where a lot of knowledge is exchanged through e-mails.

However, being consistent is not enough as technology might deceive you since knowledge does not only has to be shared but also acquired and absorbed by the receiver:

"...technology can fool you think that you have shared knowledge, but what you have done is kind of download it or un-load it yourself. But knowledge sharing I would say then would require that you also get a receipt, or you have a receiver so you really share knowledge." (Respondent 1)

As we understand the quote is especially true for e-mail and other asynchronous tools, which require one being reliant on the community members. In other words, virtual cooperation demands members being responsible for taking part of the shared knowledge.

5.2 The Regulatory Affairs Community: a tendency to cohesion

The Regulatory Affairs Community, which hereafter will be in focus, consists of eight members at the moment who are spread in Sweden, United Kingdom, United States and China. However, the community is within a recruiting process and will be increased by two more members. The community together with a Product team constitutes a Compliance Department, where the Regulatory Affairs Community serves as a support function to the Product Team and is responsible for regulatory intelligence and securing a current understanding of regulatory requirements in different regions and in different markets. The members in the Regulatory Affairs Community therefore support different markets and regions, and thus represent different roles; the community structure consists of three main role types, a team manager, three members who are project managers, responsible for the delivery and four members are regional account managers, responsible for collecting market intelligence. The community member's tenure in the community varies between approximately six months to nine years.

5.2.1 Communication as a tool for expertise enhancement and continuous knowledge flow

The empirical data indicate patterns of communication being significant for developing community members' professionalism as well as a way to secure an uninterrupted process of knowledge exchange both in verbal and written forms.

In order for the Regulatory Affairs Community to be able to communicate and engage in real time discussions as a community as well as to share knowledge, they have set up weekly community meetings with a standardised agenda. The agenda could incorporate subjects such as ways of working as a community, risk management, new legislation, upcoming projects etc. and is described as a knowledge sharing occasion. As a consequence of the presence of various

backgrounds within the community, team meetings invite different opinions which lead to rigorous discussions.

Another additional aspect found in the empirical results concerns how much should be communicated when sharing knowledge. The results differ somewhat between the respondents, which is explained in the two quotations below. While some members find detailed sharing important as it eliminates the risk of missing important knowledge, others perceive detailed knowledge sharing being a reason for information overload and thus both time consuming, stressful and difficult to manage. Being globally spread and working virtually, are therefore according to some impeding knowledge sharing due to the lack of possibility to share at any time:

"... I try to raise and share as much as possible even if things might seem to be rather trivial. You might find out suddenly when you are talking with the colleagues in other parts of the world, that actually yes, everybody's seeing this, and then your initial kind of assessment, which is trivial, suddenly becomes a very large issue." (Respondent 11)

"Yes, I probably prioritize and consider the kind of information or knowledge that I share with the rest of my team before I do it. [...] And the meeting is restricted to the amount of time we have. We have weekly meetings, we have one hour weekly meetings, so, we have to prioritize between different types of information or knowledge that you want to share." (Respondent 13)

Importantly, information and knowledge are two undeniable terms used by all respondents when discussing sharing. The interviews revealed that most respondents seem to be aligned about the knowledge definition. This might relate to the fact that the team does not only share knowledge internally, but also coordinates knowledge sharing sessions within their organisation with stakeholders. However, even though most respondents argue that information is mostly written while knowledge is more complex, community members have diverging views about sharing methods of knowledge and information, which in its turn impact approaches to sharing.

Despite the weekly meetings, the Regulatory Affairs Community use emails to communicate with each other and to make sure that the whole community is involved even outside the scheduled meetings. Emails are however considered by the majority as more related to information or descriptions, rather than sharing rich knowledge:

"I think some knowledge you can share via email and systems where you log it into, but the most powerful in knowledge sharing with knowledge sharing is vocal, people can apply it and try it out." (Respondent 16)

Therefore, e-mails enable to provide updates and follow up on each other's actions instead of engaging in rich discussions. Even though some community members have met each other on certain occasions, the whole community has not gathered face-to-face. Nevertheless, a majority of all respondents would however prefer face-to-face meetings on a regular basis, where they could be able to meet without technology mediation. Potential benefits with meeting in person is expressed as increased understanding of one another and enhanced trust, which could result in increased knowledge sharing in general. However, a couple of respondents do not see face-to-face interaction as necessary for knowledge sharing:

"I would not say so. I mean I do not feel that the knowledge is any deeper or richer in our meetings face-to-face, I would be able to share the information with the rest of the team virtually." (Respondent 18)

Accordingly, face-to-face communication does not necessarily make knowledge sharing easier or more efficient. According to our assessment, this seems to be related to personal preferences and the ability of being consistent when sharing virtually.

5.2.2 Cooperation as a strive for an improved cohesion for the sake of business
The results show that the community's aspiration for an increased cohesion best describes its cooperation patterns. This is achieved through mitigation of distances and recognition of the present differences among the members.

In the Regulatory Affairs Community all respondents underline that apart from working with assigned regions, they also share the work burden and collaborate across regions, which is seen as positive since it results in an increased cooperation. Further, working across regions is set as an objective in their scorecard and contributes to an overall improved community cohesion. This does also however imply that the community members experience an increased interdependency in their roles, since they must put effort on supporting their colleagues, while simultaneously focusing on their own region and tasks. Still, this aspect is described as something that has developed during the latest years. A majority of the respondents experience that they used to

work more separately as opposed to nowadays, when they have a set-up structure and all strive to collaborate to a greater extent:

"We do, I think we do need to be a bit more flexible than we are today, and to try not to work as independently as we have been in the past." (Respondent 17)

According to some respondents, the interdependency is required not only to work consistently as a community but also to be able to have a "helicopter view" and comprehension of the whole community's processes to respond to stakeholders' queries regardless of the working location.

Nevertheless, working across regions is challenging, as emphasised by the whole community, since it implies working across various time zones. The community has adapted to this fact and have found ways to overcome this barrier as earlier described, in form of scheduled meetings and emails. However, the difficulty of gathering the community members together sometimes result in one-on-one knowledge sharing sessions and ad-hoc discussions, which at times result in the exclusion of other community members and a difficulty in creating cohesion. Further, the Regulatory Affairs Community, as the empirical data disclosed, is sub-grouped based on temporal correspondences and physical proximity of the members. Therefore, it seems that mitigating the distance becomes one of the major tasks. To shorten the distance, the community manager engage in frequent updates especially with the most distanced locations in order to eliminate a feeling of isolation. As such, working across multiple time zones requires special working approach to include all areas.

Importantly, the majority of community members see cultural differences as a vital dimension of cooperation, which affects knowledge sharing. These differences are expressed as the existence of language barriers and a difficulty in creating a cohesive community environment. One respondent explains:

"... it can also be quite challenging in how you discuss problems, the information that you share, how confident people are speaking the second language compared to others. So, the culture differences even though beneficial in some case, is also a bit of a challenge, it also makes it may be more difficult to get into the trust zone because all the different cultures have different perceptions on what trust is and what you need to do to gain trust." (Respondent 13)

Although respondents see it challenging to cooperate in the heterogeneous community, the environment tends to hold a sense of appreciation and respect to outweigh the outlined difficulties. Therefore, to be able to benefit from this diversity, to evolve cohesion and to utilize each other's knowledge, community members see the necessity to recognize each other. However, despite certain challenges with being geographically spread and sharing knowledge, it also seems to actually create a precondition for even knowledge contribution among the community members:

"I think of our team; we contribute with knowledge evenly because we are located in different locations. Actually we have different contact person for different markets, I think we share evenly because we take the responsibility for different market." (Respondent 14)

The quote above underlines a certain need to contribute with knowledge to make other community members aware of one specific market's situation. Nonetheless, the ability to acquire this knowledge depends however on one's perception of applicability of the shared knowledge. What we understand is that even contribution with knowledge does not guarantee its absorption, however, willingness and a need to share seems to be encouraged by geographical dispersion. Interestingly, the interviews showed, that the community generally seems to turn dispersion disadvantages around to see it in a positive light. For instance, having a destination in between two disparate time zones, creates a linkage for communication and cooperation keeping the whole community updated with the relevant knowledge.

As mentioned earlier, community members' roles also include collaborating with other functions and stakeholders in the organisation. This is not something deeply discussed during the interviews, but some respondents express awareness that external parts sometimes might be frustrated that the community does not have time to be more proactive and available due to high workload.

The results thus imply that cooperating with geographically and culturally spread community members is expressed as both challenging for knowledge sharing and simultaneously profitable and developing, not only for the community members themselves, but also for the organisation as such, since it provides a wider range of experiences and perceptions.

5.2.3 The organisation as a provider of an enabling and impeding infrastructure

The empirical data reveals a somewhat differing perception of the organisational role in relation to knowledge sharing. The respondents described the role of the organisation as both advantageous as well as distracting or even insignificant.

Most respondents argue that the organisation expects the members to share knowledge and shows its support through investments in technological means and up-to-date tools. Consequently, this type of support results in the possibility to communicate and share knowledge virtually without meeting face-to-face, and it also helps to set up a setting for how and where the knowledge should be shared. Even though others agree that the organisation is supportive of knowledge sharing, some members still find it difficult to exemplify how the possible support is presented, which might indicate that the support is not clear and distinctive or might even be considered as insignificant for cooperation. Interestingly, one respondent claims:

"It does not always feel that way; it feels the other way around that we are the ones who are pushing the knowledge sharing internally [...] I do not see any specific examples besides of the implementation of new technology..." (Respondent 17)

Surprisingly, even though all members are compensated for being part of the community, only one respondent attributed it to organisational support. The empirical data further shows that a few respondents do not necessarily perceive that the organisation supports the community when it comes to knowledge sharing in any specific way, but rather that it is the community itself that strive to share knowledge between each other, as the quotation above suggests. Some respondents thus indicate that there is a lack of obvious support from the organisation per se, and they perceive that it is rather encouraged from other communities or functions within the organisation. This seems to be mainly related to the criticality of the possessed knowledge by the community and its value by stakeholders.

Importantly, most respondents attribute an influential role to the formal organisational structure, which affects knowledge sharing. The empirical data from the majority of the respondents reveal that the organizational structure could both enable and impede knowledge sharing within the community. While some perceive the organisation being flat and well-structured which results in quick responses as well as facilitates knowledge sharing, others see impediments expressed through the community itself either being too dispersed or the alignment being not well

structured. The latter creates multiple stakeholder demands which can negatively affect knowledge sharing:

"... and that makes it a little bit difficult that we are all not aligned in the way that we are organized, because then we do not have a good sense what the priority is. We can get competing priorities depending on which function in the organization you are coming from. […] So, my wish is that the organization would be more aligned in the way it is structured so that we could have a better sense of what the priorities are […] Personally it could be better managed if we went from a global type of organization to a more regionalized […] I wish we would work more sort of teams within regions rather than trying to tackle the whole world." (Respondent 17)

An absence of a structural alignment across functions results in diverging expectations from stakeholders, which creates confusion in the community.

5.2.4 Technology as a tool to mitigate boundaries and to make knowledge accessible

The empirical data shows that different technological means and tools are used daily by the whole community in order to share knowledge, and thus they are all reliant on ICT. The respondents mostly attributed a positive role to the technology with the exceptions of when it does not function. The important patterns can be described as technology being a boundary mitigating tool.

The expressed advantages technology provides, are perceived in the ability to share and update information immediately and making it accessible to the whole community:

"So I guess we are heavily reliant on Skype, instant messaging and I guess people don't use telephone anymore but Skype to talk to each other and they are sharing computer screen so that we can show each other what we are up to, so that will be the major tools that we have. We have SharePoint as well where we have common documents. We started using Box a little bit again for more informal sharing of documentation." (Respondent 11)

Further, we have found that the Regulatory Affairs Community feel convenient working in virtual settings and thus using technology as a medium for knowledge sharing. Consequently, a negative reflection expressed by the majority of the respondents mostly concerns a frustration when technology is not working properly since it is time consuming and impedes proper knowledge sharing.

Also, the respondents pointed out, as mentioned, that the company has provided various tools for them to utilize in order to share knowledge. It appears that several of the respondents have an interest in different tools and are positive to learn new ones. However, how one chooses and utilizes tools might depend on one's own interest in technology:

"I think we got, quite a number of different opportunities and possibilities to share information but I do not know whether we are utilizing all of them right now. But probably there is more out there in the company that we could use." (Respondent 13)

Apart from the weekly meetings or emails, all respondents seem to be consistent with the idea that knowledge needs not only to be shared but also stored in order for keeping it in the company and making it accessible for the ones concerned. Here, the respondents have a common understanding that even if knowledge can be shared verbally, it cannot be stored without the help of ICT. For instance, the Regulatory Affairs Community have a so-called regional bulletin for purpose of storing knowledge and sharing it with a wider audience. In the bulletin, the community publishes regulatory intelligence to the whole department. This way of working and including others, increases the knowledge sharing as well as it can be seen as a way to structure the knowledge. Importantly, the community also has an objective to store knowledge and keep it up-to-date due to high reliance on it by the business, which might explain the existence of clear guidelines and overall consistency in storing.

According to the respondents, the community members encourage each other to share knowledge at any time and to always raise their opinions. Therefore, most respondents do not perceive any risk of exclusion from certain knowledge. The empirical data does however indicate that the members perceive it is not only up to the community, but also each individual must strive to keep up with information themselves. Hence, the risk of knowledge exclusion is more likely from the individual perspective:

"I think there's a huge risk. I notice that we are reliant to an extent on people need to read e-mails. […] you need to have a certain type of person within the team, particularly in the remote locations, because I think there is going to be more emphasis on both individuals to be more proactive in terms of trying to stay in touch..." (Respondent 11)

5.3 Comparison of findings: main similarities and differences

By analysing the communities we have identified some noticeable similarities and differences, which we consider are significant to outline to provide a holistic picture of the analysis (see Table 1). Both communities are expected to collaborate and share knowledge between each other in the respective communities under the conditions of dispersed work arrangements. Although cooperation in both communities has improved during the last couple of years, it is structured differently: the HR Community still emphasizes a significance of structuring their ways of working in contrast to the Regulatory Affairs Community, which seems to have found a well-functioning structure. A possible explanation for the HR Community seem to be changes in the community constellation, as well as different arrangements between community members, which are experienced by many as unclear and at times destructive for knowledge sharing. To enable direct interactions both communities have recurring scheduled meetings, however, with somewhat varying set-up. Whereas the HR Community share information and updates, the Regulatory Affairs Community perceives it being knowledge sharing sessions. Importantly, respondents in the HR Community seem to lack a comprehension of what knowledge actually means and implies for the community. Overall, there seems to be fewer touching points in the HR Community as a consequence of diverging goals among the majority of community members as opposed to the Regulatory Affairs Community, where the same goal is pursued by the respondents. Interestingly, cooperation in the second community seems to be closer despite the community's wider dispersion, where cultural differences are more prominent.

As a consequence of fewer communication options, there is an absence to rich discussions and detailed knowledge sharing sessions. Therefore, technology serves as a vital steward for communication enabling knowledge sharing, where the organization supports the process in both communities through investments in ICT. Both communities are provided with various tools, however, we have noticed a certain inconsistency in the usage of emails and information storing in the HR Community as opposed to the Regulatory Affairs Community. Nevertheless, this can be attributed to the relative novelty of the HR Community's constellation and as a consequence lack of proper processes.

Further, both communities perceive the organisation having a dual role in the process of knowledge sharing. The respondents implied that the organisation supports knowledge sharing through for instance rewards and investments in the technology. On the other hand, we have understood that the organisational structure is at times perceived by the members of both

communities as confusing and misaligned throughout the organisation, which might hinder knowledge sharing

In the table (see Table 1) below we have summarised the aforementioned findings for the respective community to clarify and to structure the main differences and similarities, which we think provides a better overview.

Table 1. Summary of similarities and differences between the communities

Conditions for knowledge sharing	HR Community	Regulatory Affairs Community
Dispersion	Dispersed work arrangements (two continents)	Dispersed work arrangements (three continents)
Cooperation	Evolving structure	Established structure
- *Goals*	Diverging goals	Same goals
- *Work allocation*	Unclear and confusing	Clear and aligned
Communication	Information and regular updates	Knowledge sharing sessions
Technology	Multiple tools are provided	Multiple tools are provided
- *Usage of ICT*	Inconsistent usage	Aligned usage
The role of the organisation	Dual role	Dual role

Conclusively, we have found out that there is a difference in how knowledge sharing conditions are generally perceived by members of the both communities. While the HR Community experiences many issues and difficulties, the Regulatory Affairs Community turns disadvantages of dispersed work arrangements to advantages.

6. Discussion

In this section the results will be discussed together with earlier research as well as our theoretical departure in order to answer the research questions and produce theoretical assumptions. First, community conditions for knowledge sharing will be discussed guided by CoP theory, followed by the discussions about the organisational role and the role of ICT.

6.1 Community conditions for knowledge sharing

The intention of the following subchapter is to depict the empirically derived community conditions for knowledge sharing. Earlier literature and theory imply that even though CoPs are cultivated by organisations as knowledge sharing entities, they still retain their informal status (Wanberg et al., 2015). However, the communities in our case have gained their official status in the organisation. This is something not necessarily outlined by the original theory, but something we consider is vital in our context. Still, since we build our theoretical departure upon main constructs of the CoP theory (Wenger et al., 2002), each main element constituting community of practice will be separately analysed from a knowledge sharing perspective. As such, this will provide us with a rounded comprehension of the existing conditions in both communities.

6.1.1 The nature of knowledge domain as an antecedent to community's identity

The theory states as mentioned, that the *domain* is particularly important to knowledge sharing as it fosters engagement and dictates what kind of knowledge should be shared (Wenger et al., 2002). Our findings disclosed that one of the conditions of becoming a member in respective community requires certain knowledge and competence in respective areas as well as having a business-oriented mindset. Hence, we can assume that all community members already feel engagement towards their knowledge area and that they are all focused on forming organisational practices, which also forms a shared community identity. The domain is further also about the interrelation of working conditions and alignment of the CoPs actions (Wenger et al., 2002). We do experience that there are differences in the knowledge domains in the respective communities; the HR Community seem to drive their HR agenda both locally and globally which results in different focus, whereas the Regulatory Affairs Community seem to have a more uniform and transparent goal with the aim to deliver market intelligence to ensure business compliance. With these respective domains in mind, these communities also seem to have diverging focus: the HR Community seem to be mostly formed around certain roles rather

than the knowledge domain itself, while it can be understood that the Regulatory Affairs Community are more focused around their mission. Having clear goals can thus benefit the community members when it comes to both sharing and acquiring knowledge. On the contrary, lacking a clear mission seem to make knowledge sharing more difficult, as the results imply in the HR Community.

To conclude, we perceive that the members are brought together to become more efficient, and that they all engage in their respective domains in one way or another, even though we experience different developments in the CoPs. It is however said that knowledge is bound to its specific context and thus difficult to disperse throughout the organization (Tsoukas, 1996; Von Krough et al., 2000). This does not on the other hand imply that the knowledge is irrelevant to other functions. On the contrary, the knowledge domain and expertise in the respective communities are valued by others outside the community boundaries, and is shown through requests, collaboration and joint enterprise which we can see happening in both communities.

6.1.2 The sense of community: implications of common goals

In order for knowledge sharing to occur within both communities, as depicted in this study, members participate in discussions, reply to questions, contribute with ideas as well as provide visibility within the respective community of the ongoing issues and processes. Thus, to drive their respective domain, community members engage in common activities, as suggested by theory, and also as underlined by earlier research (Wenger et al., 2002; Bartol & Srivastava, 2002; Rosen et al., 2007). In other words, this fosters a sense of community and creates a participative climate favouring continued knowledge sharing (Styhre, 2011; Wenger et al., 2002). Our findings have for instance indicated a presence of recurring scheduled meetings in both communities, which are organised around specific agendas in both cases, which enables the members to stay focused. As such, knowledge sharing is ensured to be limited to the community's domain of knowledge. As suggested by the theory, knowledge sharing is a key process for communities to be able to enhance each other's professionalism, improve practice and develop coherence in the community (Duguid, 2005; Lippert, 2013; Wenger et al., 2002). However, what we have found to be prominent, is how community members engage in these common discussions. The Regulatory Affairs Community is found to share know-how and experience both internally in the community but also externally with stakeholders, which contributes to the creation of a shared community identity and further improves its practice. The HR Community, on the other hand, engage mostly in information brokering in order to provide

updates on statuses in each other's working environments and they also express lack of actual knowledge sharing occasions. We have found that the existence of trust, which contributes to the sense of the community, affects the quality of the shared knowledge, consistent with previous findings (Wasko & Faraj, 2000). According to our interpretations of the results, the HR Community has not built a firm community trust yet due to its recent formation, which results in frequent updates and at times less content-rich knowledge. In contrast, the Regulatory Affairs Community has worked with each other for a longer period of time and established an increased sense of trust, which makes the shared knowledge more qualitative. Another identified difference between the two communities seems to stem from whether an aligned community goal exists. The knowledge sharing process is rather influenced by the attributed value to the shared knowledge, than by personal motivation (Israilidis et al., 2015). To exemplify, our findings suggest personal motivation being less prominent, when a community is perceived as a formal organisational entity by its members, where knowledge sharing is expected by the organisation. In that case, knowledge is shared and acquired if it is considered to be applicable to the community knowledge domain. However, if a domain is vaguely defined due to diverging community goals, knowledge sharing seems to turn to information brokering.

The results have implied that the presence of differently defined roles promote member autonomy and limit opportunities for engaging in common activities. Accordingly, brokering of information, as in the HR Community, is not in favour of fostering community coherence, but is rather necessary to manage and keep the existing boundaries among the members within the community per se. By keeping the role boundaries, the interaction occasions lack a common reference. To stick together as a community, a more intensified and frequent approach to updates is required, otherwise, we see a risk of members' going in different directions. In contrast, the Regulatory Affairs Community is described as already having reached community integration and thus established clear boundaries around the CoP per se. We see this finding, the existence of a mutual community goal, as being a precondition for successful community cooperation and thus knowledge sharing. However, since communities evolve through times, their goals and thus approaches to knowledge sharing will also develop (Wenger & Snyder, 2000).

6.1.3 Common practice versus bundle of different practices

As mentioned, the theory describes *practice* as something built upon norms, rules and tools, which is an outcome of knowledge sharing, forming a common ground for CoP (Wenger et al., 2002). The practice of the HR Community is expressed as to share information and experiences

between each other to a higher extent rather than knowledge in weekly meetings. As mentioned, the community is however quite scattered since it consists of different roles with different focus and thus they do not seem overly dependent on each other's knowledge at this stage. This might affect being more engaged in the knowledge concerning one's own working area and thus being less recipient to knowledge from others. We see that this is in line with the theory, stating that a community does not necessarily lead to uniformity among the members, but rather to the enhancement of their identities (Lippert, 2013). The Regulatory Affairs Community, being more geographically dispersed than the HR Community, is on the contrary highly dependent on sharing knowledge than information, as well as acting as a coherent unit. The knowledge is not only exchanged for the community itself, but also for other stakeholders within the organisation. They have explained that their common ground, where they are able to discuss and include each other, consists of internal weekly meetings, recurring knowledge sharing sessions they host for the whole department as well as a regional bulletin where they are able and encouraged to share knowledge, information and updates. Therefore, our results suggest that we have examples of two various practices, where one boils down to instrumental practice of regulatory compliance found in the Regulatory Affairs Community, and the second encompasses various bundles of practices related to the HR area as illustrated in the HR Community. This influences the respective community's consistency in actions both internally and externally (Wenger et al., 2002). This is in line with the theory, where the common ground and shared practice, co-created through interaction, is said to facilitate knowledge sharing (Cramton, 2001), whereas multiple practices related to the same area might hinder it. Further, co-creation of shared practices is not affected by geographical dispersion.

As results have proved, even under the conditions of different individual practices and diverging goals in the community, members can still hold together, by putting more effort on updating each other. This leads however to a limited knowledge flow. To conclude, the amount of shared practices and the existence of common goals do not necessarily affect a community's possibility to become a coherent unit, but rather its capacity to share knowledge.

6.2 Organisational context: implications for knowledge sharing through a development of a shared identity

The *organizational context* seems to be important for promoting knowledge sharing within both communities in the organisation. The organisation facilitates arranged meetings, where the

concerned employees are expected to interact and share knowledge between each other. Further, the organisation also encourages knowledge sharing through rewarding employees, mainly in forms of wages. Hence, the respondents experience they cannot withhold their knowledge because it is a part of their job to share. A positive influence of rewards on knowledge sharing has also been detected by earlier research (Fey & Furu, 2008; Israilidis et al., 2015). Further, this creates a feeling of obligation to contribute and thus does not count for one's willingness to participate as expressed by some research (Israilidis et al., 2015).

Based on the results, the organisational context has primarily shown to be important for the development of a *team- or community identity*, which seem to have an impact on knowledge sharing in both communities. By participating and engaging in knowledge sharing within a community, a shared community identity is fostered, which contributes to the development of practice and continued community coherence. A community identity is further enhanced through provided possibilities to interact and meet, established goals, assigned roles and allocated work. The results further revealed that both communities have limited interaction opportunities in form of weekly set meetings and through ICT. As it is implied, individuals are more prone to cooperate with others if they understand who actually are members of the community, as well as if they identify themselves with others (Ashforth & Mael, 1989). The members in the two communities are aware of who is part of their own community, although many indicated they do not know several of their colleagues in person and they have neither had the possibility to meet all members face-to-face. However, as the results render, members do not need to meet in order to learn to know each other and thus to develop a community identity.

As mentioned, the results show that the HR Community inclined encountering various goals within the community from different stakeholders and functions resulting in focus on different types of knowledge. As suggested, if a company encourages competition among business units and functions, it produces diverging practices, building boundaries (Wanberg et al., 2015). The members have not expressed any clear competition in the community, however we understand there might be differing practices in the community as a result of the organisational context. Therefore, a connection with the same knowledge domain does not guarantee cohesiveness in the community. However, since DCoP's are continuously developing, antecedents for knowledge building are also developed over time (Wenger & Snyder, 2000).

Further, as theory suggests (Eckel & Grossman, 2005; Kimble, 2011) the existence of various roles might further impede the development of the sense of the community. This seems to be especially applicable in the HR Community since various roles exist, which makes knowledge sharing somewhat difficult. The absence of a *common ground* rooted in the organisational structure and design impedes knowledge sharing which can be clearly seen in the first community (Caimo & Lomi, 2015). Once again, even though they belong to the same HR Community, the organisation has already created discrepancies for knowledge sharing due to the various roles (Wanberg et al., 2015). This pattern is not distinctive in the Regulatory Community where the roles seem to be rather similar, which makes knowledge sharing easier. To conclude, having similar roles in a community facilitates understanding who your community members are and thus create a sense of common identity to share knowledge. At the same time, it seems that the dispersed communities has plenty of possibilities and reasons to talk to each other since the existence of various roles create certain gaps in each other's expertise and experience, which needs to be filled in with the knowledge and creates perfect preconditions for knowledge sharing.

Therefore we might conclude that the development of a shared identity is challenging in both communities, but perhaps more so in the HR Community due to a weak common ground. When a dispersed CoP has a shared identity, community members are more concerned about promoting the best interests of the whole group rather than subgroups based on geographic location or role similarities. Further, having a shared identity team members are more inclined to cooperate to solve problems that arise, contributing to the development of the community.

6.3 The role of technology and knowledge sharing: importance of community structure

The overall results have attributed a positive and important role of ICT in the process of knowledge sharing expressed by both communities. Consistent with previous research (Daim et al., 2012), the existence of such dispersed communities and the possibility for global work allocation is accredited to the usage of ICT. As supported by our findings, technology provides opportunities for virtual meetings and knowledge exchange and thus facilitates the development of the respective communities' practices and helps keeping it together. Additionally, it fosters both in-community knowledge sharing as well as helps to reach out to external stakeholders mitigating the community boundaries. We have seen this in both communities, and it has also been outlined earlier by other scholars (Hwang et al., 2015). As such, ICT partly determines

interactional patterns through social structures, or technological feature, provided by technology (Lippert, 2013).

Even though both communities use technology to a great extent, the results reveal various patterns of technology's application. To exemplify, the HR Community members perceive somewhat misaligned usage of ICT, where members spend time searching for documents, they seem to simply utilize the tools they personally prefer and have various strategies for approaching knowledge storing depending on their awareness and experience. As referred to by the theory this is rendered as judgemental actions, where members either neglect or accept the tools (ibid.). In contrast, the Regulatory Affairs Community members have more consistency in utilizing various tools and even have a policy for how and when documents should be updated. Here we can see dimensions of direct usage conditioned by clear practice (ibid.). Important to mention is that both communities, as informed by the respondents, are provided with similar tools and technological features, meaning that they have similar technological conditions. As previously argued (Israilidis et al., 2015; Watson-Manheim et al., 2012), the existence of technological means does not act as coordination tools for knowledge sharing per default, but rather in combination with human interaction, which seems to be relevant in our study (Lippert, 2013). Thus, there is a clear evidence of reciprocal dependency between ICT and CoP, which mutually influences and shapes one another (Oborn & Dawson, 2010; Wenger et al., 2002). It is apparent to us, that opportunities provided by ICT cannot be fully and consistently utilised given the lack of transparent processes, as depicted in the HR Community. Consistently, we have found, that the notion of the CoP structure appears to be a common denominator in both communities in the context of this study, which is related to the community's respective practices, and determines the usage of ICT (Lippert, 2013). Thus, the quantity of codified and shared knowledge does not matter, but rather its applicability for supporting CoP's practice, otherwise it will not be utilised and will lead to information overload.

Our findings have however identified two significant conditions, which we find being omitted by the outlined theory but important in the studied context. As implied, both CoP and ICT structures influence each other, which can be seen in the Regulatory Affairs Community. However, the lack of structure in the HR Community, where cohesion is not fully developed, it is rather community members who exert influence over ICT guided by personal preferences. Therefore, the theory seem to only explain ICT usage in developed CoPs, which already have their structures in place. As such, it does not account for newly formed communities, where ICT

is interrelated with individual community members rather than with CoP as an entity. Further, as our findings imply, reciprocal dependency overall can only take place if technology functions properly. Otherwise, technological malfunctioning causes frustrations and hinders knowledge sharing, and appears to serve as the only term for technology's sole dominance as revealed in the findings.

In the absence of shared practices and established ways of working, community members use technology inconsistently and broker information among each other to remain as unit. To conclude, even though ICT provides opportunities for coherence and knowledge sharing, it cannot guarantee it.

7. Conclusion

This last section will summarise the main deductions from the study answering the research question. Further, we will present contributions and recommendations for future research as well as shortly outline recommendations for the concerned communities.

As outlined earlier, the aim of this paper was to comprehend conditions for knowledge sharing in distributed CoPs in the context of a multinational corporation according to community members' perceptions, in order to understand how the process of knowledge exchange can be maintained. Consistent with the results, achieving successful knowledge sharing in such settings still remains challenging for organisations. Therefore, by having studied conditions for *knowledge sharing*, we have seen that organisations cannot solely bring disparate professionals together in the CoPs without providing appropriate antecedents for cooperation and knowledge sharing.

We have found that the condition of physical distance is still perceived as a difficulty of achieving mutual understanding, where the frequency of communication is not primarily at stake, but rather the understanding of what the focus should be and the ability to share provided by the community structure. Further, the members perceive that with an established structure for cooperation, the DCoP becomes more integrated and gains transparent approaches to knowledge sharing. We have found that this is supported by the condition of clearly-articulated shared goals since they create antecedents for common discussions among the members, foster mutual engagement and trigger active knowledge sharing. As such, the sense of community is supported, and common community practices can be co-created. On the other hand, our study has shown that the condition of diverging goals leads to information brokering, which in its turn maintains internal community boundaries and thus results in the establishment of dispersed community of practices. Therefore, maintaining cohesion is still possible but requires intensified updates and visibility, which is not sustainable in the long run. In turn, the existence of diverging goals affects the way of cooperation and member's ability to share knowledge.

We have found that since the organisation allocates employees to certain areas or communities, different practices are appearing, which affects conditions for knowledge sharing. Therefore, the sense of a coherent unity is influenced as well as what kind of knowledge is shared and how. The advantage of bringing community members together is the possibility to actually share knowledge with others instead of keeping it to oneself. As a result, a community identity can

emerge through the community members' participation and engagement in knowledge sharing. Mutual engagement can further be enhanced through clear definitions of community members' roles and responsibilities.

Further, technology is perceived as an enabling condition for knowledge sharing providing a link between community members. However, ICT does not coordinate knowledge sharing alone but through the interaction with community members. Importantly, the usage of technology is tightly related to the existence of structure and shared practices in DCoPs. If ICT is used consistently within a community, it can foster knowledge sharing and mitigate information overload. Therefore, we argue that no matter how much knowledge is stored and shared within a community, it will not be utilised until it is applicable for a DCoP.

To conclude, the results have shed light on what conditions seem to play a key role in the knowledge sharing process in the studied context, and thus suggest how to better leverage knowledge through distributed CoPs. We argue that no matter the conditions, knowledge can still be shared although in different ways. However, what is prominent is that if an organisation does not create a thorough ground for knowledge sharing, the process seems to become unsustainable in the long run, and the community coherence is put at stake. As such, opportunities for employee's professional development might become constrained as well as the company might risk losing vital knowledge. As an overall result, it might disturb the organisation's operations.

7.1 Main contributions

This study extends previous research in several ways. For instance, by looking upon perceptions of community members belonging to organisational support functions, we provide a different scope for studying knowledge sharing conditions. As we have found, knowledge sharing among studied DCoPs is primarily required due to an organisational strive for consistency and cost-efficiency rather than creativity and innovation. Further, the study provides a more rounded approach towards knowledge sharing conditions not only by looking upon single aspects but rather taking into account a more integrated context. We believe that our findings might serve as a future basis for practice and support for managers when organising and sustaining DCoPs.

Importantly, our analysis broadens and adds to theoretical implications as well. Firstly, the CoP theory seems to depart from communities already having a clear structure of engaging in

knowledge sharing occasions to develop a community's domain of knowledge. We argue however that the theory omits the necessity of having clear goals, especially in the conditions of dispersed work arrangements. For instance, we have found that clear goals are vital for engagement in joint community activities and contribute to continued knowledge sharing and consistency. Secondly, even though ICT and DCoP are interrelated and mutually dependent, this reciprocal relationship can only evolve if two conditions are fulfilled: the technology functions properly and the DCoP structure is in place. To specify, in the lack of a DCoP structure, reciprocal dependency exists only among ICT and an individual community member rather than the community as an entity. If ICT malfunctions, there is a lack of an interdependent relationship, where the technology will solely impede knowledge sharing. In other words, these conditions are omitted by the theory, but we argue that they are important.

7.2 Future research

Even though research about knowledge sharing is continuously expanding, we experience that there still is a lack of studies about knowledge sharing in DCoPs. Since our study only covered two DCoPs in a single organisation, we find it interesting to see if the same study could be made in similar conditions and if the results then would be similar. As mentioned, our study looked upon conditions and presented some that are apparent for these two DCoPs. However, we believe that there might be other conditions in other contexts that are also of interest for the research area. We also suggest that further research could for example be done by using a quantitative study, and thus examine whether the existence of mutual common goals is important in dispersed communities to confirm or contradict our study. Another possible angle could be to look upon whether the usage of technology always is fragmented in the absence of clear structures. In addition, another suggestion could be to conduct longitudinal studies, and thus look upon how conditions for knowledge sharing in DCoPs are perceived over time as well as how they are affected by the developmental cycle of a DCoP, which could result in a more versatile picture of the studied theme.

7.3 Case company recommendations

Since the organisation itself expressed an interest in our study and allowed us to interview members in the two DCoPs, we would like to conclude with some recommendations for the respective communities. Firstly, in both DCoPs the employees show appreciation of the provided technological means. It could however be beneficial to revise the technology usage by defining which tools should be used for which purpose and thus ensure consistency, since there

is, as mentioned, some expressed confusions about this. Another recommendation is to record meetings due to the risk of individuals missing information and/or knowledge if not being able to participate in a certain meeting. Secondly, the HR Community could benefit from "replicating" the Regulatory Affairs Community which uses certain tools to create visibility and share information and knowledge between each other. Therefore, it allows the weekly meetings to focus on sharing knowledge rather than updating each other on informative matters. Thirdly, we believe it would be favourable to frame more defined common goals, which could result in increased cooperation and knowledge sharing rather than risking the employees working too scattered. Last but not least, the organisation could consider to clarify roles and also perhaps responsibilities to the concerned community members in order to increase the community identity as well as to create a common ground where knowledge can easily be shared.

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Appendix 1 - Interview guide

Introduction
- *Begin the interview with introducing ourselves and the topic of our thesis.*
- *Inform about anonymity and confidentiality in the research, voluntariness and the ability to choose not to answer some of the questions.*
- *Before the interview starts, tell that we would like to tape-record it and ask whether this is ok with the interviewee.*

Background questions
1. What is your educational background?
2. What is your occupation?
3. What business unit do you officially belong to?
4. How long have you been participating in this network?
5. How would you shortly describe what your team is doing?

CoP context
6. How has this team been initiated?
7. What topics and issues do you generally cooperate upon in the team?
8. What influence does your team have in the organisation?
9. Do you have roles in your team?
    a. Are they clear?
    b. Do you think it affects the cooperation in the team in any way?
10. How do you communicate?
    a. Do you meet each other face-to-face? How often?
    b. Do you think such meetings contribute to knowledge sharing in your team? *or* Do you think they could contribute (if no answer)?
11. How would you describe the interrelations among the colleagues in the team?
    a. Would you say that you trust each other in the team?
    b. Does it help you to cooperate? How?
12. How do you share knowledge in your team?
    a. What knowledge do you share?
13. What is the reason for sharing knowledge in the team?
    a. Do you have standardized processes for it?
    b. What obstacles do you encounter in your team when sharing the knowledge?
14. How do you decide which knowledge is valid?
    a. Have you had diverging views about this matter? How have you solved this?
15. How do you organise the shared knowledge (store it) to make it accessible further on?
16. How do you perceive contributions within knowledge sharing activities from your colleagues?
    a. Do you think your colleagues contribute evenly?

Individual-related factors
17. How would you describe your reasons for taking part in the team?
    a. What motivates you to contribute?
18. How do you perceive your ability to share knowledge in the team?
19. How do you decide what knowledge you share?
    a. What affects your decision?

20. How do you benefit from sharing knowledge and acquiring it from your colleagues in the team?

Organisational context and its implications for knowledge sharing
    21. Do you think that the organisation supports knowledge sharing?
        a. How?
        b. Does it facilitate knowledge sharing in your team?
    22. Do you think that the knowledge of your team is valued and utilized in the organisation?
        a. How?
    23. Are you being part of several teams?
        a. How does it affect your cooperation in the discussed team?
    24. How do you balance the various needs of different business areas, which your members belong to?
    25. Does the hierarchical structure in the organisation affect knowledge sharing in your team?

ICT's role in the process
    26. How often do you use technology in your team as a communication tool?
        a. What kind of tools do you use?
    27. What opportunities are provided by technology for knowledge sharing?
        a. When is it especially useful?
    28. How do you perceive the usage of ICT in relation to knowledge sharing: does it impede or enable knowledge sharing? Please, elaborate.

Future improvements
    29. Do you have any suggestions for how to support your team?
    30. Do you have any further comments about what we have discussed?
    31. Can we contact you again if we have any further questions after this interview to get some further clarifications?