

Quan Phan
Nikki Vagelid

Moving towards a virtual world

A case study conducted at Gard

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Abstract

In this age, we are moving towards a virtual world, where Web 2.0 technologies can provide new possibilities for collaboration and knowledge sharing. Furthermore, in the 21st century, the global economy has become more knowledge-based. Companies in today's highly competitive markets, must utilize all available knowledge reasonably and practically. This leads to an emphasize on knowledge sharing and collaboration.

The aim of this study was to explore the interrelationship - virtual phenomenon, knowledge sharing and collaboration. Thus, following problem statement was developed: *“How does the virtual phenomenon affect collaboration and knowledge sharing in an organization.”*

To answer this problem statement, a qualitative single case study was conducted at Gard. Gard is a global knowledge-intensive firm and the leading actor within marine insurance. To gain an in-depth understanding of the unit of analysis, multiple evidence in the form of 17 interviews, two observations, documents and qualitative review of statistics, was collected.

Multiple interesting results were discovered. First, this study suggest that various ICT platforms support a hybrid strategy. In addition, the results suggest that social technologies can support knowledge creation and conversion. However, challenges such as established working routines and lack of computer capabilities in individuals, need to be addressed to fully benefit from social technologies. Furthermore, this study suggest that collaboration is no longer limited by time, space and geographical distance since social technologies enable virtual collaboration. Lastly, a concept, based on the theoretical groundwork and results was proposed.

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Nikki would like to dedicate this thesis to Margrethe;

”Thank you for all the good times. Thank you for all the support and everything you have done for me. You will always have a special place in my heart. As you have always inspired me to accomplish things, this thesis is dedicated to you. I love you endlessly

Sincerely yours, Nikki”

Oslo, may 2016

Quan Phan & Nikki Vagelid

ABSTRACT	2
ACKNOWLEDGEMENT.....	3
1.0 INTRODUCTION	5
1.1 Background.....	5
1.2 Problem statement	6
1.3 Limitations of the study.....	7
2.0 THEORETICAL FRAMEWORKS.....	7
2.1 Collaboration	9
2.1.1 Virtual collaboration.....	10
2.1.2 Social Technologies.....	11
2.1.3 Challenges in Social Technologies.....	12
2.2 Knowledge	13
2.2.1 Knowledge Sharing.....	16
2.2.2 Strategies for managing knowledge.....	20
2.2.3 Communities of Practice.....	23
2.3 Summary - Merging Theories	25
3.0 METHODOLOGY	27
3.1 Research Design - Single Case study.....	27
3.2 Case Study of the Virtual Phenomenon in Gard Assurance	28
3.3. Qualitative Studies.....	30
3.4 Multiple Sources of Evidence	31
3.5 Research Quality.....	37
5.0 EMPIRICAL FINDINGS.....	43
5.1 Systematic overview of Web 2.0 technologies	43
Model 13 - Summary	57
5.1 Virtual collaboration.....	58
5.2 Knowledge Strategies	66
6.0 DISCUSSION AND ANALYSIS.....	70
6.1 Knowledge Sharing in Practice	71
6.2 Virtual Collaboration	78
7.0 CONCLUSION	82
8.0 CONCEPTUALIZATION	84
9.0 REFLECTIONS	87
11.0 REFERENCES	89
12.0 APPENDIX – SEMI STRUCTURED INTERVIEW GUIDE.....	93

1.0 Introduction

1.1 Background

In the 21st century, the global economy has moved from being mainly industrial-based to more knowledge-based. This rapid change has emerged over a few decades and consequently, brings more turbulence, uncertainty and ambiguity (Johannessen and Olsen, 2010). In order for companies to operate in today's highly competitive markets, all available knowledge must be utilized reasonably and practically. Knowledge is the foundation of a knowledge firm's competitive advantage, and ultimately, the primary driver of its value (Luo, 2009). In 1998, Davenport and Prusak (1998) argued that knowledge sharing across time and space raises serious problems due to "localness of knowledge". However, in this digital age such assumptions might be invalid. Since rise of the virtual phenomenon, where people are to a less degree restricted by geographic borders and a physical space, organizations try to create a different scene for how employees interact and share knowledge to keep the competitive advantage in a globalized world.

Due to this emergent phenomenon the importance of rethinking collaboration and knowledge sharing, companies need to provide unique platforms that can be used for collaborative tasks, transferring as well as increasing the overall knowledge in a company. Such platforms are essential for learning, institutionalization and sharing of both experience and knowledge, in order to achieve competitive advantage (Chui et al. 2012).

This thesis will look further into how the virtual phenomenon affects collaboration and knowledge sharing within an organization, and whether different virtual platforms can contribute to more efficient communication, contribution, collaboration and knowledge sharing. Furthermore, this thesis will cover the possibilities that social technologies have created for knowledge sharing in a global organization, and whether old theoretical frameworks of knowledge, knowledge sharing and collaboration can explain some of this emergent way to run a company. Hence, the information above, our main aspect of this thesis will cover knowledge sharing and collaboration in virtual platforms.

1.2 Problem statement

In order to explore the relationship between the virtual phenomenon and collaboration and knowledge sharing in knowledge intensive firms, this study will be exclusively with Gard. Gard is the largest P&I insurer among the thirteen members of the international Group of PI-clubs, and also one of the most important actors when it comes to marine insurance industry. With such a complex and geographically dispersed organization, good communication and collaboration is of high importance when it comes to knowledge sharing. As the company operate in a global, competitive market, the shared information need to be specific, concrete and valuable for both customers and employees. Hence, virtual tools and collaboration platforms might help companies to overcome the time and space barriers mentioned by earlier research (Davenport and Prusak, 1998).

Gard is an old organization founded in 1907, and have been through many eras, differentiating from paper archives to electronic databases. Furthermore, marine insurance is traditional and the average age of employees is higher than in most other business areas. Thus, it might be interesting to explore how such traditional organizations adopted virtual technologies and how the virtual phenomenon has affected the dynamics of collaboration and knowledge sharing.

With all the information above in mind, our thesis will have the following problem statement:

How can the virtual phenomenon affect collaboration and knowledge sharing in an organization?

To help answer our problem statement, three research questions have been provided:

RQ1: How can virtual platforms be used for collaboration and knowledge sharing?

RQ2: Why are these platforms used?

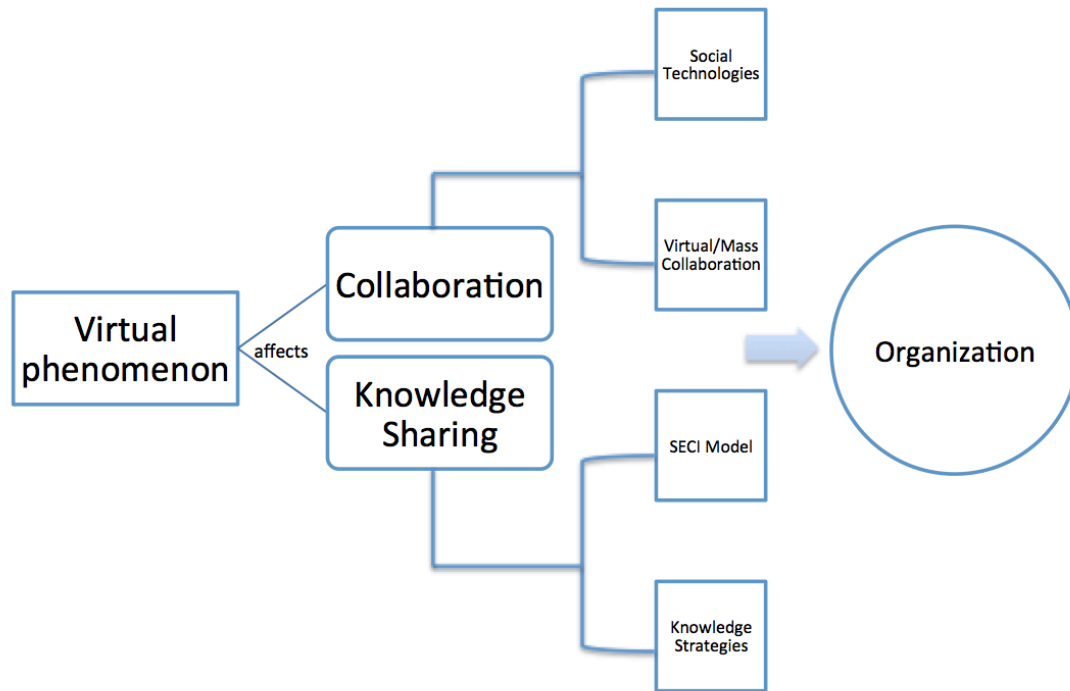
RQ3: What are the challenges regarding collaboration and knowledge sharing using virtual platforms?

1.3 Limitations of the study

The organizational structure at Gard is complex, with “claims” and “underwriting” as two main areas. While underwriters are mainly financial professionals that evaluate risk of insuring and pricing of products, the “Claims”-division teams are most affected by the importance of knowledge sharing. As the “claims”-division is quite large, with over 6 different areas, inter alia Marine Claims, Charterious claims and Energy and Offshore, more focus will be on one claim-area in order to do an in-depth analysis of the knowledge sharing that takes place. However, our thesis will include employees at different offices in different countries, such as Arendal, Oslo, New York, London, Hong Kong and Singapore. This thesis contains data collection from 17 employees in locations mentioned above, with a skewness of the employees working in claims-division.

2.0 Theoretical frameworks

In order to address the problem statement and research questions, this study will mainly focus on two areas in knowledge theory. The first part of this chapter will address virtual collaboration as a phenomenon, hereunder social technologies and collaboration with the help of virtual platforms. The second part of this chapter will cover knowledge and theoretical frameworks regarding knowledge processes and knowledge strategies. This part will cover essential theories regarding knowledge conversion, knowledge sharing and cover different types of knowledge. These theories will help discover how the virtual phenomenon affects collaboration and knowledge sharing in an organization and what challenges might occur. However, theoretical frameworks regarding virtual phenomenon is limited while existing theories of knowledge are extensive as knowledge in its nature is difficult to grasp. Hence, this chapter will naturally consist of more knowledge theory. Hopefully, by connecting these two areas, this study might provide additional understanding of the interrelationship between the virtual phenomenon, collaboration and knowledge sharing.



Model 1: Model of the theoretical frame of references

The model above is an overview of the theory chapter. This study seeks to understand in depth how virtual phenomenon affects collaboration and knowledge sharing in an organization. Collaboration will consist of virtual collaboration and social technologies. Furthermore, in order to understand the concept of knowledge, a chapter regarding the perspectives of knowledge will be presented. Additionally, due to extensive frameworks of knowledge theory, this thesis will mainly cover two fundamental fields in Knowledge Management literature - knowledge conversion and knowledge strategies. These frameworks will provide a better understanding of how knowledge types are converted and which strategies support knowledge sharing in order to address the problem statement.

2.1 Collaboration

Collaboration is an important part of problem solving in various businesses. In earlier theories, it is argued that collaboration was governed through collaboration hierarchies, where members were supervised by top members, employees were dominated by managers, and customers were controlled by organizations (Tapscott and Williams, 2006). However, new technologies, new initiatives and increased globalization has opened up for a different type of collaboration. This type of collaboration, *mass collaboration* (Tapscott and Williams, 2006), primarily driven by Web 2.0 technologies (O'Reilly, 2005), brings up many possibilities and challenges to an organization. Chui et al. (2012) argue that with internal knowledge and information more available on social technologies, a typical worker could reduce the information searching time by 35 percent. We will cover social technologies further into this chapter. It is, however, important to notice that social technologies are important for mass collaboration, as Tapscott and Williams (2006) argue. Furthermore, Tapscott and Williams (2006) argue that Web 2.0 tools are important for knowledge sharing and collaboration in virtual platforms. Thus, the theoretical framework of *mass collaboration* will be presented.

According to Tapscott and Williams, mass collaboration is characterized by mainly four different principles; *sharing, peering, openness and acting globally*. Peering, gives members an opportunity to participate in product creation, classification, content rating and coactively share in order to enhance the product (Tapscott and Williams, 2006). Sharing, is simply referred to sharing of knowledge, ideas and experience within and outside the organization, implying that knowledge sharing is important for collaboration and knowledge creation. Theoretical framework of “*knowledge sharing*” will be covered further into this chapter.

Openness, according to Tapscott and Williams (2006), refers to having the right boundaries within an organization in order to stimulate ideas, creativity and knowledge. Such companies are often transparent, as well as flexible with members having high degree of freedom. The authors mention that companies with high degree of *openness* are more successful with technological implementations. Furthermore, the authors argue that right amount of transparency and flexibility will increase the overall collaboration and knowledge within an organization.

The last principle, acting globally, is the importance of connecting other users across geographic barriers, in order to access new ideas and solutions through Web 2.0 technologies (Tapscott and Williams, 2006).

2.1.1 Virtual collaboration

Virtual collaboration, brought primarily by Web 2.0 technologies, can be classified as mass collaboration. Tapscott and Williams (2006) argue that while collaboration is mainly for people who share ideas, experiences, goals and abilities, mass collaboration is an opportunity for people with diverse interests to work together across different areas of expertise, multiple knowledge areas and specializations. The authors explain that the implementation of new technologies has brought many possibilities for knowledge sharing, innovation and virtual collaboration (Tapscott and Williams, 2006).

Virtual collaboration is a combination of both collaboration, which Oxford Dictionary defines as “*the action of working with someone in order to produce something*”, and “virtual” which is defined as “*almost, as nearly as described while not physical*”. Combined, virtual collaboration is described as the ability to plan, design, develop, research and manage in order to achieve a common goal, with the help of digital technologies.

Since the accessibility to new customers and world markets has increased rapidly, organizations are forced to both adopt and adapt to rapidly emerging technological age driven forward by digitalization. As some companies might stick to a more traditional way of knowledge sharing, they might overlook Web 2.0 technologies and therefore miss out on the possibilities that Tapscott and Williams (2006) proposed.

While there has been a lot of focus on digitalization, virtual collaboration and social technologies, there has been few research papers on virtual collaboration as a phenomenon - especially in companies that uses such tools in order to stay competitive. However, as later discussed, the phenomenon of virtual collaboration can be stimulated by creation and participation in *virtual communities of practice*, and may in such way increase the overall value and knowledge sharing within an organization.

2.1.2 Social Technologies

As ICT-solutions can be defined as every form of communication that happens through technological measures, all communication by email, telephones and fax machine can be described as ICT-solutions. Hislop(2009) argues that such communication have low richness of information, meaning that the interaction is rather static. Furthermore, it takes some amount of time to build effective interactions between employees. This section will describe the difference between ICT and Web 2.0. ICT-solutions can be defined as every form of communication that happens through technological measures, meaning that communication by e-mail, telephones and fax machines can be described as ICT-solutions. Hislop (2009) argues that communication with such devices has a low richness of information, meaning that the conversations are rather static, and it takes time to build an effective interaction between employees. However, virtual collaboration, virtual teams and virtual knowledge sharing is considered as more interactive ways of communication. Furthermore, platforms that enable many users, enables high richness of information and more interaction. These platforms refers to as social technologies as a part of Web 2.0 technologies and can improve the overall contribution of knowledge (Allen, 2010, referred by Hislop, 2009, p 211).

Web 2.0 is defined by Hislop as:

“Internet-based technologies and systems which facilitate interaction between people and whose content is created via ongoing user interactions and contributions” (Hislop, 2009, p 211)

The accessibility and use of social technologies are essential for virtual collaboration. Chui et al. (2012) distinguishes social technologies through the following three characteristics;

1. Enabled by IT.
2. They provide distributed rights to create, add and/or modify content and communication.
3. They enable distributed access to consume content and communication.

While the main focus on social technologies has been the interaction between people, such as social media, social networks and social gaming, some of the organizations that operate across the geographic context might use platforms for social interaction as their main source of communication. Kubátová (2013) explains that these platforms can be both internal and external, where external platforms are accessible for everyone, while internal networks are only designed to be used by employees in a company. Chui et al. (2012) describes this use of

social technologies as enterprise-wide levers, where companies both use social technologies as a tool for collaboration and communication, and match talent to tasks.

2.1.3 Challenges in Social Technologies

As mentioned above, social technologies can improve the overall knowledge within a company. However, some challenges need to be addressed properly in order to achieve a solid platform for collaboration and knowledge sharing. A study by Paroutis and Saleh (2009) focused on challenges in such technologies. Researches explained that some of these challenges are directly linked to participants experience, routines and ideas regarding the implemented system. An important factor, according to Paroutis and Saleh (2009), are the established routines that lies within a firm, meaning that employees might prefer more traditional methods for knowledge transfer, such as emails. In addition, the researchers argue that most employees might stop using social technologies if few members are active. Thus, miss the opportunities of such technologies. Moreover, Hislop (2009) argues that ICT-enabled knowledge management initiatives have been unsuccessful due to over focusing exclusively on technological issues rather than on social, cultural and political factors.

Kotlarsky and Oshri (2005) explain that trust issues, either between participants, supervisors and managers, or between all of them, can affect group dynamics and knowledge sharing process itself.

To summarize, challenges are various regarding Web 2.0, and these challenges reflect the ability to share knowledge. However, it is hard to describe knowledge due to its nature. The next chapter will cover knowledge in the light of earlier theoretical frameworks, and seeks to address different aspects of *knowledge management* that are important to answer the problem statement.

2.2 Knowledge

At present, literature on knowledge management have two main perspectives or philosophies of the term *knowledge* that stand out; “the epistemology of possession” and “the epistemology of practice” (Cook and Brown, 1999, referred in Newell et al., 2009).

“Epistemology of possession” treats knowledge as something people *have*, whereas the epistemology of practice treats knowledge as something people *do*.

Furthermore, the epistemology of possession views knowledge as a possession of the human mind and treated as cognitive capacity, or resource that can be developed, applied and used to improve effectiveness in the workplace (Newell et al., 2009). Hence, this perspective describes knowledge as something that can be given away, like any other possession an individual might have.

On the other hand, the epistemology of practice opposes possession epistemology, and claim that knowledge is constructed and negotiated through social interaction. Knowledge is, therefore, intrinsic to the localized social situations and practices that people actually perform, such as a chef's apprentice working closely with a master in the kitchen, in a situation and practice that can create the necessary personal knowledge (Newell et al., 2009). Hislop (2009) refers epistemology of possession as objectivist perspective, and epistemology of practice as practice-based perspective. These terms will hereafter be used throughout this thesis.

Although two main perspectives exist, it is hard to place collaboration into only one of these. In terms of collaboration, people have multiple ways to interact and solve challenges. Employees might, for instance, use different tools to observe how others work, while other Web 2.0 solutions might enable people to share their knowledge as a possession, for instance with Wiki-technologies, e-mails and forums. However, since collaboration is a social interaction, it is hard to categorize different types of collaboration into these two perspectives.

The introduction of the two perspectives gives an understanding of why there are many definitions of knowledge. However, one of the oldest definitions of this term is introduced by Platon, where he defined knowledge as “Justified true belief”. “Justified true” means that the knowledge claim needs to be based on evidence which objectively proves its truthfulness, and withstands all tests which attempts to disprove it. “Belief” thereby means that the knowledge

holder needs to believe in the truthfulness of the knowledge claim. Nonaka and Takeuchi (1995) adopt this definition whereas they state that their stress lies on “justified belief”, opposed to Western philosophy stressing the “truthfulness”, where the “truth” can be driven by personal justifications of those who hold positions of authority. As a result, they see knowledge as a “dynamic human process of justifying personal belief towards the “truth”” (Nonaka and Takeuchi, 1995, p.58).

A much broader definition by Swan (2008) defines knowledge as “the ability to discriminate within and across contexts” (referred in Newell et al., 2009, p.5). Which can be interpreted as how individuals recognize and interpret a situation, considering the social context they are in. This definition of knowledge is broad enough to include the cognitive aspects as well as the social nature. In addition, this definition suggests that it is important to consider the roles of artefacts in managing knowledge work, such as technologies, tools, computers, physical spaces, clocks, schedules and the like. This definition works well with our problem statement, as such artefacts play an important part for both collaboration and virtual collaboration. However, these tools are only supplementary for knowledge sharing, and while a variety of tools might stimulate the knowledge sharing process, it is important to note that some types of knowledge are easier to share than others.

Moreover, knowledge management literature do agree that knowledge comes in two dichotomy forms, explicit and tacit (Newell et al., 2009; Hislop, 2009). Explicit knowledge is knowledge which an individual is able to share, transmit and communicate to another part or individual. This includes knowledge that can be articulated, codified, accessed and verbalized. Tacit knowledge, however, is impossible or difficult to communicate and transfer to others due to its nature. This knowledge can be very individualized and often stem from personal experience. Furthermore, it depends on the individual if it is in their ability to share their knowledge.

However, Hislop (2009) discuss that even though some authors advocate that knowledge can only ever exist at an individual level, there are others who dispute this very idea. Several writers (Collins, 2007; Ebbers and Wijnberg, 2009; Hecker, 2012) argue that, while much knowledge does reside within individuals, there is a sense in which knowledge can reside in social groups in the form of shared work practices and routines, as well as shared assumptions or perspectives. This insight is used as a basis for a further dichotomy of knowledge types;

into individual- and group/social level knowledge. Spender (1996) is one of the most well known advocates of this perspective, who combined the tacit-explicit dichotomy with the individual-group dichotomy to produce a two-by-two matrix with four generic types of knowledge.

	<i>Individual</i>	<i>Group/Social</i>
<i>Explicit</i>	Conscious	Objectified
<i>Tacit</i>	Automatic	Collective

Model 2 - Spender, J. C. (1996). "Making knowledge the basis of a dynamic theory of the firm." *Strategic Management Journal* **17**(WINTER): 45-62.

According to Spender (1996), objectified knowledge represents explicit group knowledge, for example a documented system of rules, operating procedures or formalized organizational routines. On the other hand, collective knowledge represents tacit group knowledge, which is knowledge possessed by a group that is not codified and examples of this include informal organizational routines and ways of working, stories and shared systems of understanding, for example a moral code with similar values and ideas which people share.

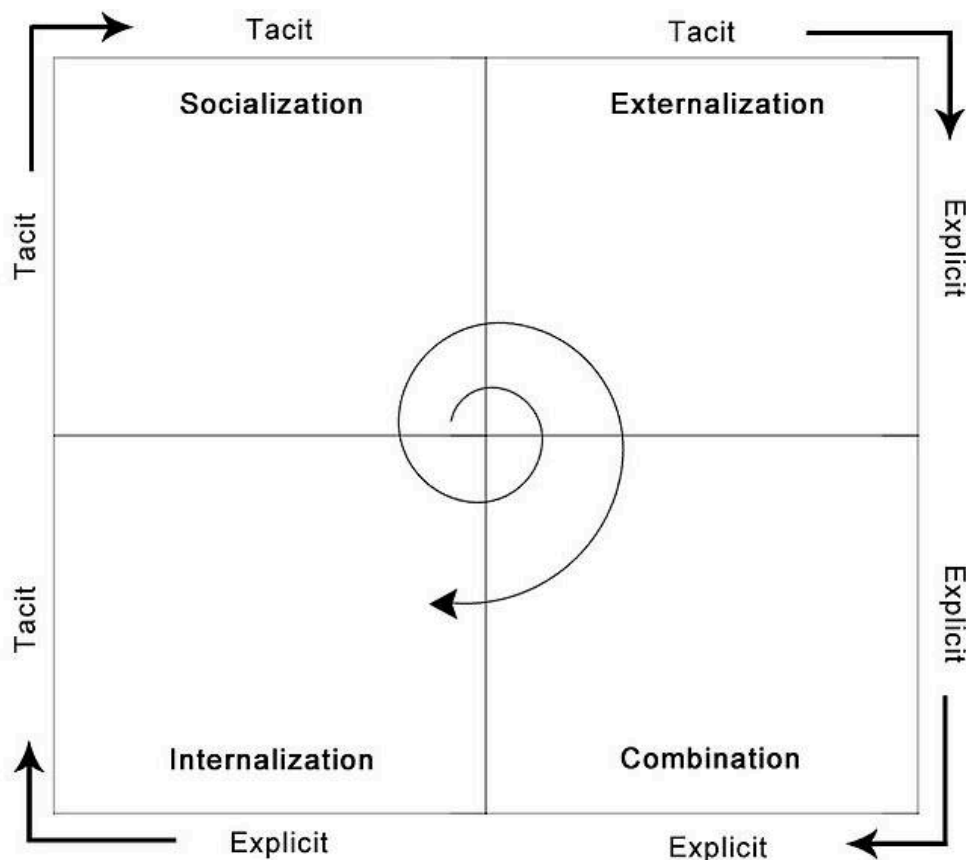
Relating this framework to collaboration, it is possible to think that collaboration fosters both individual and group knowledge. It is a two way relationship, group level knowledge can set prerequisites and facilitate collaboration, and at the same time create or increase individual and group level knowledge.

2.2.1 Knowledge Sharing

Hendriks (2004) defines knowledge sharing as an interaction between at least two individuals, a sender and a recipient of knowledge. Knowledge sharing is a process to make knowledge, explicit and tacit, available to the rest of the organization through communication and reflection based on the personal experiences of individuals. While it might be difficult to quite understand the difference between sharing and other forms to exchange information, such as reporting, it is more clearly defined by Davenport and Prusak (1998) that sharing is an autonomous act, which differentiates it from reporting. Reporting involves an exchange of information based on routines and structural formats, while sharing, on the other hand, is an intended and autonomous choice by an individual to participate in an exchange of knowledge.

Moreover, sharing can occur as both formal and informal at a workplace, the former often close associated with the workplace. The latter is characterized as something that happens through the daily work beside formal interventions. Examples of formal and informal knowledge sharing can be meetings and discussions by the coffee machine. In addition, knowledge sharing between individuals requires high degree of trust (Newell et al., 2009). The degree of trust is the basis of how willing individuals are to communicate and share knowledge with each other. Furthermore, Newell et al. (2009) argues that individuals are most likely to be vulnerable of another individual's behaviour, especially when it comes to trusting their competence, actions and integrity, due to the high degree of trust involved. In addition, Newell explains that it takes a significant amount of time and social interactions to achieve a high degree of trust. Lastly, it is important that colleagues feel they can trust each other, and they must be motivated and willing to share knowledge, rather than opting for individual problem solving.

A well-cited framework to further understand knowledge sharing is by Nonaka's (1994) "SECI"- model. It is important to notice that the model originally seeks to explain knowledge creation rather than knowledge sharing. However, Wallace (2007) proposes knowledge sharing as a precondition for creation of new knowledge. The "SECI" model views knowledge creation as a spiraling process of interactions between tacit and explicit knowledge (Newell et al., 2009). Nonaka identified four distinct knowledge conversion processes through which knowledge creation could take place: socialization, externalization, combination and internalization. A fundamental difference between Spender's framework is that Nonaka believes organizational knowledge creation stems solely from the individual, but is made explicit through the model. However, Nonaka points out that organizations and their managers do have an important role in knowledge creation, which is to provide and facilitate necessary enabling context for individuals to share and create knowledge.



Model 3 - SECI model Nonaka, I. and Takeuchi, H. (1995). *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*. New York: Oxford University Press, Inc

Figure above shows different dimensions of SECI model. These dimensions cover the knowledge conversion process from socialization to internalization, and moves in a spiral through all dimensions.

Socialization is described as social interaction between employees where they share tacit knowledge, either through face-to-face conversations or experience sharing. This dimension covers the “tacit to tacit” knowledge conversion. The next dimension of this model, externalization, covers the conversion from tacit to explicit knowledge. This can be done either through concepts, images or written documents. This knowledge will later on be important for the emerging of new knowledge. The third dimension of SECI model, combination, is a process where the conversion of explicit to explicit knowledge takes place. Finally, the last dimension, internalization, explains the conversion from explicit to tacit knowledge, where explicit knowledge becomes an important factor for how employees perform and create new knowledge (Nonaka, 1994). Nonaka describes that interaction between employees are of high importance when it comes to circulating knowledge. On a more virtual, collaborative level, the four principles can be illustrated with following examples provided by Chatti et. al (2007):

- Socialization - Online communication such as formal and informal forums where people can share their experience
- Externalization - Online blogs can for instance capture individual knowledge and give others opportunities to comment, annotate or discuss that given information.
- Combination - Different way of capturing online information into knowledge system. This can be done by podcasts, vodcasts, blogs and wikis
- Internalization - Learn by doing through multi-user simulations, online multiplayer games etc.

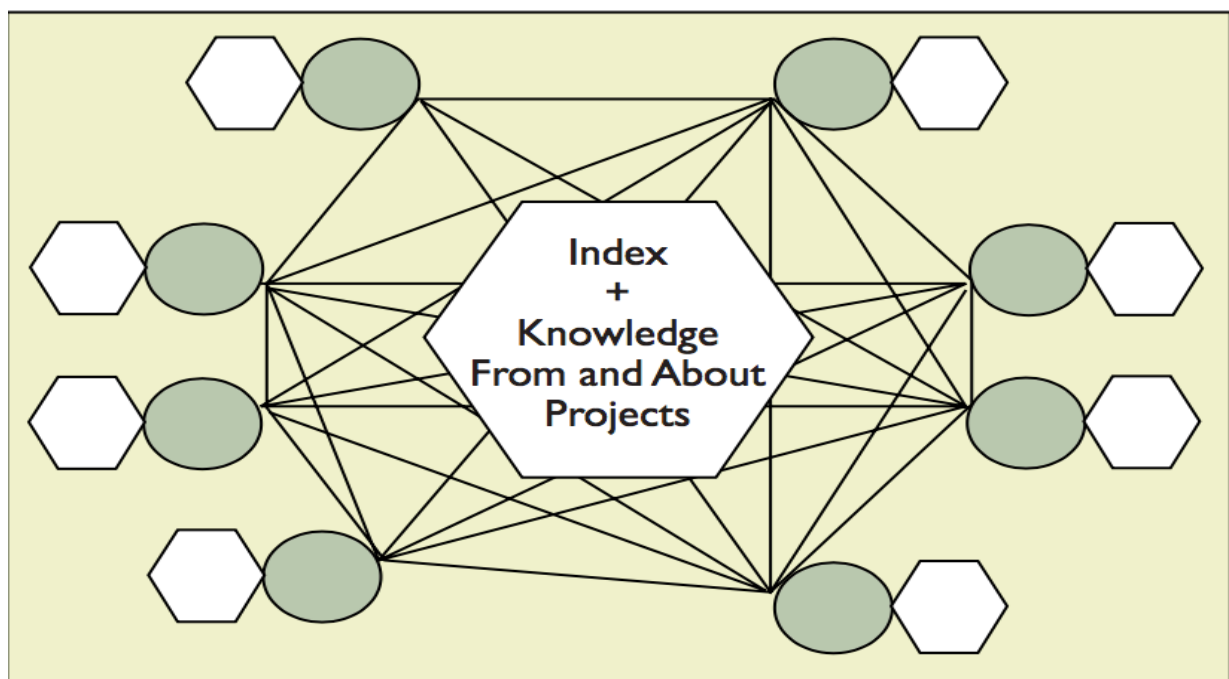
Even though Nonaka (1994) describes different types of knowledge in the “SECI” - model, it is difficult to analyze all sorts of virtual interaction. Since virtual collaboration can appear in different web tools, and are fully dependent on group dynamics, it is challenging to categorize collaboration into only one of the four characteristics. Bereiter (2002) argues that while Nonaka address knowledge as originating in individual minds, this view can prevent the conceptualizing knowledge that arises from collective actions. Since knowledge-intensive firms thrive to engage employees in knowledge sharing and collaboration, it will be

interesting to investigate the virtual aspect of collaboration and knowledge sharing in the light of the “SECI” model.

Furthermore, Spender’s framework (1996) mentioned in the previous chapter and Nonaka’s “SECI” model have met critique since they assume an objectivist perspective, and thus failing to take sufficient account of the more subjective, highly equivocal and dynamic nature of knowledge (Newell et al., 2009). The critics claim that the two knowledge types are inseparable. Explicit and codified knowledge will always be incomplete or partial because of the tacit knowledge which was not able to communicate (Gourlay 2006, referred in Newell et al, 2009). For example, a person reads a codified step by step manual on how to juggle three balls and it seems easy enough. However, the manual does not transfer “the feeling” of timing and the hand-eye coordination required. This is only acquired through practice and the task of juggling balls will only be accomplished when acquiring and understanding knowledge of both types. Furthermore, an objectivist perspective view knowledge as a resource, to be accumulated and moved around like other resources, such as money. With this in mind, one might think that more knowledge is strictly positive, however, too much knowledge might cause an information overload, or embedded knowledge might constrain attempts to innovate. McDermott (1999) argues therefore that knowledge, unlike money, is not valuable in and of itself, but only where it is applied to specific tasks. Lastly, these frameworks do not address important issues such as power and conflicts in the organization, as well as the social relationship between sender and recipient (Newell et al., 2009). The “SECI ”model can also be difficult to generalize as this model has been developed through observations of Japanese businesses. Andreeva and Ikhilchik (2011) argued that the “SECI” model is partially applicable when it comes to their study of Russian companies. Since not all necessary cultural conditions and business practises are met in Russia, especially factors such as collaboration and trust, the knowledge creation theory can be difficult to apply in all cultures.

2.2.2 Strategies for managing knowledge

In 1999, Hansen, Nohria and Tierney (1999) published an article uncovering that there are no universal practice to manage and share knowledge in the consultant industry. The authors researched knowledge-intensive consultant firms and affirmed the most often adopted strategies; codification and personalization. The former relies heavily on coding and storing knowledge, using information communication technologies to make it quickly searchable and available for the organization to reuse. The latter views knowledge as closely connected to the individual, and knowledge sharing is a direct interaction between two or more participants. Desouza and Evaristo (2004) draw parallel with the aforementioned strategies to two popular models of computing; centralized and peer-to-peer approach, and point out limitations and benefits of these two, while simultaneously proposing a third hybrid strategy which integrates both strategies. This hybrid strategy includes a more general data repository and a directory of experts which leads to peers (knowledge sources) who have control of their own data repository, i.e. a blog.



Model 4 - Desouza, K. C. and J. R. Evaristo (2004). "Managing knowledge in distributed projects." *Communications of the ACM* 47(4): 87-91.

Furthermore, Gammelgaard and Ritter (2005) addresses the fragmentation, overload and de-contextualization (retrieval problems) issues regarding codification and personalization strategies. They propose virtual communities of practice as a strategy for internationally-operating corporations that cannot develop regular face-to-face contact between employees, but still need some degree of personalization for efficient knowledge transfers. Additionally, virtual communities within an organization can aid the employee to restore context where it is missing from information, and also better navigate through the massive amount of data offered through the corporate intranet. By joining a virtual community of practice, the employee takes advantage of the simultaneous use of several channels that connects communities (boundary objects) together with conversations with colleagues through e-mail, telephone, forums and videoconferences.

These proposals opposes what Hansen et al. (1999) first discovered; that even though firms often used both strategies, the effective firms excelled by focusing on one of the strategies and using the other in a supporting role, rather than attempting to use both approaches to an equal degree. Furthermore, Hansen et al. (1999) do not propose any other theoretical strategies, and as their article was published before the digital boom, it does not consider the possibilities given through Web 2.0 technologies that have risen in this age. Nonetheless, Hansen et al. (1999) emphasize that a company's strategy for knowledge management should reflect its competitive strategy, which is applicable in any age.

In regard to virtual collaboration, Earl's (2001) seven schools of knowledge management are perhaps more suited to see an explicit connection. In comparison to Hansen et al. (1999), Earl (2001) proposes seven schools which are organized in three broad approaches; the technocratic, the economic, and the behavioural. In practice these schools might overlap, and organizations might emphasize several. Therefore, in regard of our thesis, it might be beneficial to look closer at what Earl (2001) call the school of spatial, creating a space, both physical and virtual, for collaboration and knowledge sharing. McKinlay (2002), in his research on a global pharmaceutical company, provided an example of this. The company created an online virtual café for workers to share knowledge informally via discussion boards and chatrooms.

Category	School	Core principle	Basic Ideas
Technocratic	Systems	Knowledge Codification of a specific domain	Codification of specialized knowledge in knowledge bases to be used by other specialists or qualified personnel
	Cartographic	People connectivity	Identification and mapping of the organizational knowledge for its promotion and utilization, ensuring that people with knowledge in the organization are accessible by others for consultancy and queries
	Engineering	Flows of knowledge to improve central capabilities of the organization	Supply staff with enough knowledge about their work Processes formalization of provision of contextual knowledge and better practices to the administrative and management staff
Economic	Commercial	Marketing of Intellectual or knowledge property	The protection and exploitation of the intellectual or knowledge assets in an organization to produce incomes
Behavioral	Organizational	Increase of the connectivity between the workers of knowledge	Use of organizational structures or networks to share knowledge Communities where knowledge is exchanged and shared in a, not common, personal and less structured way
	Spatial	Design of physical spaces to boost the contact and the activity of knowledge	Design and use of spaces to facilitate knowledge exchange Promotion of socialization as a way of knowledge exchange
	Strategic	Become aware about possibilities of value creation by recognizing knowledge as a resource.	Knowledge like an essential dimension of the competitive strategy The company is conceptualized like a business of knowledge The actions of knowledge management are varied and can frame in the other schools

Model – 5 Earl, M. (2001). "Knowledge Management Strategies: Toward a Taxonomy."

Journal of Management Information Systems **18**(1): 215-233.

After reviewing the strategies above, more theory on community of practice will be discussed. Since Gammelgaard and Ritter (2005) proposes virtual communities of practice as a strategic approach on knowledge management, it is important to understand the importance of these communities. As such, the following section of this chapter will cover the theoretical framework of *communities of practice*.

2.2.3 Communities of Practice

The term *communities of practice* was first introduced in 1991 by Lave and Wenger, and extended for organizational purposes later on. Wenger defines communities of practice as “Groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly” (Wenger, 2015). The mutual factor for these two frameworks is the importance of participants’ experience, work routines, helpful tools and ways of handling certain problems.

Recent contributions to communities of practice concept suggest that such communities can be cultivated and leveraged for strategic advantage (Saint-Onge and Wallace, 2003). Some research shows that managers who are strongly seeking to develop and support such communities, will increase the overall performance and value creation (Lesser and Storch, 2001). Some recent research also shows that virtual organizations are strongly influenced by communities of practice literature in the way they transfer both knowledge and information (Roberts, 2006; Pan and Leidner, 2003).

However, Wenger, McDermott and Snyder (2002) mentions that the same qualities that make communities of practice successful, can be a downside for an organization due to its history and earlier achievements. Meaning that communities of practice have some limitations and certain issues. Roberts (2006) argues that *power*, *trust* and *predispositions* are important aspects that can limit communities of practice. Some of the earlier research did not consider the *virtual* aspect of such communities either. Since communities of practice have a variety of members with different experience, expertise, age, personality and authority, the degree of participation can somewhat relate to the power of the participants (Roberts, 2006). In virtual communities, especially forums, participation might be more obvious to spot, hence the fact that participants are only “one click away”. Lave and Wenger (1991) mention that power might influence the dynamics in communities of practice, however, they fail to address the implications of power distribution. Neither did this framework focus on the importance of Web 2.0 technologies that developed years later, which lead to the development of *virtual communities of practice*. However, Wenger (2012) does argue in his recent studies that internet expands the possibilities for such communities, and calls for new communities based on shared practice beyond the geographical limitations of traditional communities.

According to Dubé, Bourhis and Jacob (2006) are virtual communities of practice different in their nature and every community has unique “personalities”. Thus, researchers and practitioners need to identify challenges, strategies and practices related to different characteristics of virtual communities of practices. Furthermore, the authors argue that even though Wenger mentioned the important characteristics of communities of practice based on its purpose and stages, the importance of ICT-tools within virtual communities of practices were not taken into consideration.

Furthermore, as communities of practices were originally considered as self-organized and spontaneous, the importance of nurturing such communities was not necessary. However, Brown & Duguid (2001), Swan, Scarbrough and Robertson (2002) and Thomson (2005) all argue that organizations play an important part in nurturing such communities. With the emergent use of Web 2.0 solutions, organizations need to provide proper tools and engagement in order for virtual communities of practice to function efficiently. In a way, the framework of *communities of practice* is related to the concept of *peering* by Tapscott and Williams (2006), as both theories describe members as individuals who are passionate about something and thrive to learn, share and improve.

2.3 Summary - Merging Theories

In the previous subsections of this chapter, the essential theoretical frameworks of collaboration, knowledge, knowledge sharing and knowledge strategies were presented. In addition, theories regarding communities of practice were included. While there are many interesting areas within the Knowledge Management literature, this study seeks to connect the virtual phenomenon with some of the most influential theoretical frameworks.

Furthermore, mass collaboration is presented by Tapscott and Williams (2006). The authors characterize this new type of collaboration by four main principles;

sharing, peering, openness and acting globally

Mass collaboration enables people with diverse interests to work together across different areas of expertise, multiple knowledge areas and specializations (Tapscott and Williams, 2006). The authors explain that the implementation of new technologies has brought many possibilities for knowledge sharing, innovation and virtual collaboration.

Nevertheless, there seems to be a theoretical gap involving various perspectives, strategies and knowledge sharing in regards of virtual technologies. Furthermore, the virtual phenomenon seems to enable the knowledge perspectives to glide into each other, blurring the lines of the two. Moreover, it is thought that ICT embraced the objectivist perspective, where knowledge could be transferred as an object in a codified form (e.g. emails, fax and documents). On the other hand, practice based perspective argues that codified knowledge is incomplete on its own and complete sharing of the knowledge can only be accomplished by social interaction. However, Chatti et al. (2007) support the assumption that both perspectives might to a degree be enabled by the virtual phenomenon, making it possible to share tacit and explicit knowledge through both codified and social interaction.

In addition, Chatti et al. (2007) provide examples of how various social technologies might create and convert tacit and explicit presented in the “SECI” model (Nonaka, 1994). This can contribute to a modified version to highlight the importance of knowledge creation and knowledge conversion provided by social technologies and virtual tools.

Furthermore, Hansen et al. (1999) provides necessary understanding of codified and personalization strategies. However, other strategies using ICT and social technologies are presented (Desouza and Evaristo, 2004; Gammelgaard and Ritter, 2005). Desouza and Evaristo (2004) proposes a hybrid strategy enabled by ICT and integrate codification and personalization into one system, while Gammelgaard and Ritter (2005) suggests *virtual communities of practice* to address issues regarding codification and personalization. The latter is compatible with Earl's School of Spatial proposing the creation of a virtual space to enable collaboration and knowledge sharing within an organization.

By merging these theories and looking at them as a whole provides an insight on how the virtual phenomenon enables new ways to collaborate and share knowledge. Collaboration and knowledge sharing, especially in virtual space, goes far beyond limitations of time, space and distance (Tapscott and Williams, 2006). With technologies like Wikis, blogs and social platforms, companies thrive to find virtual platforms that can support their knowledge strategies in order to improve collaboration, knowledge sharing and the overall knowledge within an organization, ultimately leading to competitive advantage. While there have been some research on virtual collaboration in the IT industry, this study seeks to provide additional empirical findings in this ambiguous field.

3.0 Methodology

This chapter will discuss the chosen research method, design and data collection to support the research question by providing solid and logical argumentation based on literature review and empirical findings. Furthermore, the validity, reliability and applicability/generalization of the thesis will be discussed and in the end, there will be an ethical assessment.

3.1 Research Design - Single Case study

While there are different methods to address a research question, such as experiments, surveys, archival analysis, and history (Yin, 2009), this thesis will be a case study. We have chosen a case study since our research questions are trying to answer how or why questions (Yin, 2009). This method gives a rich and in-depth view at a particular phenomenon, which in this case is interrelationship between virtual phenomenon, collaboration and knowledge sharing. A case study will give us the possibility to explore specific concepts and theories regarding collaboration and knowledge sharing through collecting data from interviews, observations and other sources. Furthermore, Stake (1995) explains that case studies are used to improve understanding of the subject and create room for personal interaction with the subjects involved.

Morris and Wood (1991), also claim that a case study is a good alternative if a rich understanding of the context of research and the various processes being enacted is needed. Saunders, Lewis and Thornhill (2009) further advocate that this method is good for answering the why, what and how questions. Gard Assurance has been chosen as the case to study in this master thesis and the main research question seek to answer a “how” question, and thus leading us to a case study.

Yin (2009) further states that data collected through case study can come from a variety of sources e.g. primary sources and secondary sources. The former include surveys, personal interviews and observation. The latter are systematic research performed by the organization themselves.

This case study will be a single case study as we wish to examine and test established theories to Gard and see if it can be applied to the organization. The SECI model (Nonaka and

Takeuchi, 1995), the strategies for managing knowledge and theories on collaboration theories will be applied to the case. Hopefully, by incorporating these concepts, this will lead to an understanding of how the arisen virtual phenomenon can affect collaboration and knowledge sharing in an organization.

Furthermore, there are three types of case studies; exploratory, descriptive and explanatory (Yin, 2009). This case study have aspects of both exploratory and explanatory approaches as we wish to explore and gather as much information related to our research question to answer the “how”, while at same time, try to explain the cause-effect relationship of the virtual phenomenon and collaboration and knowledge sharing.

3.2 Case Study of the Virtual Phenomenon in Gard Assurance

Assuranceforeningen Gard was founded in Arendal in 1907, and has grown to become the largest P&I insurer among the thirteen members of the International Group of P&I Clubs. With focus on marine insurance, the company has expanded to 13 offices around the world and now have employees of different nationalities and cultures. The company has their main focus on offering financial protection and practical assistance when accidents occur. Leif Herlofson, CEO of Gard (1970-1995), explains that disasters and accidents will happen, but the identification of risks, and possible ways to reduce and prevent them, are key priorities for the company. The company has the highest security rating in the marine market, meaning that Gard has all the necessary resources for dealing with losses in order to help their members and customers.

The company operates in a very competitive market that can experience shifts due to macroeconomic trends and cost minimization. With high focus on effectiveness, loss prevention, sharing experience and knowledge internally, as well as externally, has Gard supported both members and clients to operate with highest possible standards. Gard is therefore a knowledge-intensive organization which is dependent on their knowledge and expertise within a broad specter of maritime issues. Therefore, collaboration and knowledge sharing are important to their livelihood as their clients look to them for answers and support.

Moreover, as they are a traditional organization that has existed for over 100 years, and consist of a human capital base with an average age of 40 years, they have experienced shifts in their work methods from paper archives and fax to ICT solutions and now social technologies. Managers and employees need to have a platform that is easy accessible, user friendly and motivates collaboration. Gard has tried many systems to facilitate knowledge, which some have been more successful than others and some are still in use today. To mention some are; a document management system, a huge intranet, website and communication tools. The most recent implementation is an Web 2.0 solution named Chatter, which is a social platform which can be compared to the early stages of Facebook. It will therefore be interesting to look closer at how a shift to a virtual social interactive technology can affect knowledge sharing and collaboration, especially in Gard because of the fact that the employees consist of a large group of an older generation and also of their long traditions. Lastly, as they are a global organization and spans in different countries, our choice of Gard might make the research findings more generalizable.

3.2.1 Deductive and Inductive

The function of a research design is to ensure that the obtained evidence enables the researcher to effectively address the research problem. This information should be obtained in a logic and concrete way in order to accurately describe an observable phenomenon (De Vaus, 2001). Yin (2009), further defines research design as the logical sequence that connects the empirical data to initial research questions and ultimately, conclusions, for a given study.

The goal of our study is to explore virtual as a phenomenon and how it can affect collaboration and knowledge sharing. Although we had a slight understanding of Gard's ICT-tools, we did not know which tools were implemented and how they were used for different types of communication and collaboration. With this in mind, two types of reasoning must be considered, deductive and inductive. According to Ghauri and Grønhaug (2010) both ways of reasoning by researchers ultimately build theories. Our research have deductive traits, meaning that we have a given set of theoretical frameworks and theoretical approaches in order to support our main topic, and our research question. Deductive method is a "top-bottom" approach, where given theories form the basis of the research, and will be tested

through data collection. However, although we have theoretical frameworks, some of them might be outdated. Our research will therefore also be a “bottom-up” approach with traits of inductive reasoning to attempt discovery. Saunders et al. (2009), explains that the inductive method is best suited for the cases where you gather specific, relevant information based on a given topic and research questions, and afterwards develop theories that can be related to the literature.

Having considered our approach of reasoning and on account of our choice of a case study with exploratory and explanatory aspects, we can now choose a research method. As a result, a qualitative approach is better suited for our purpose which will be discussed in the next subsection.

3.3. Qualitative Studies

Saunders et al. (2009) propose two research methods, qualitative and quantitative. This research will be a qualitative study of virtual collaboration and knowledge sharing in Gard. Saunders et al. (2009) explains that qualitative research design address a given topic with analysis of data that is gathered in a non-numerous way, meaning that all the analysis will be covered through our interpretation of the data. By using this method we will be able to focus on and examine people's ideas, opinions, values, interpretations, apprehensions and behaviours regarding virtual collaboration and knowledge sharing (Saunders et al., 2009). Though subjective, this method gives a rich, in-depth understanding of the problem and findings.

3.4 Multiple Sources of Evidence

We conducted interviews to collect data, one of the most important sources of case study information (Yin, 2009). In addition, we will also used other methods to collect primary and secondary data. Curran and Blackburn (2001) point out that this type of data collecting is increasingly advocated in business and management research. Yin (2009) agrees and states that a good case will want to use as many sources as possible. More specific, our research includes a multi-method qualitative study (Saunders et al., 2009), where we also conducted observations and qualitative review of statistics. According to Yin (2009), interviews, observations and documentations are a part of what he calls “the six sources of evidence”. This helped us triangulate the data in order to strengthen validity, which will be discussed later on.

3.4.1 Interviews

As mentioned earlier, interviews are essential sources of case study information as they give the opportunity to find answers to complex problems in real life settings (Yin, 2009). Yin (2009) further distinguish interviews as guided conversations rather than structured queries. According to Ghauri and Grønhaug (2010), interviews are conducted to have an interaction between the researcher and the respondents.

Based on the content of the research question, interviews can be categorized into; structured, unstructured and semi-structured interviews (Ghauri and Grønhaug, 2010). Our interview guide was of the semi-structured nature, as such it had predefined questions. The pre-defined questions was split into three categories; knowledge sharing, social technologies and virtual collaboration.

Knowledge and knowledge sharing, *hereunder determine their working habits, their way of communication and their interaction with other employees.*

Social technologies, *hereunder online participation and motivation behind their use of different knowledge sharing platforms*

Virtual collaboration, *hereunder their ability to collaborate with other employees, and their way of resolving different challenges where they need to get information from their colleagues.*

In addition, the semi-structured approach gave the respondents considerable liberty, under some level of guidance and control, to discuss the questions and express themselves. Moreover, rather than being restricted by formulized standard questions as in a structured interview, this approach gave us an opportunity to ask follow-up questions and examples of their experience with virtual collaboration to capture specific meanings and anything we found interesting (Ghauri and Grønhaug, 2010). Because the company is operating in different countries, we also tried our best to get respondents opinions on different challenges, such as technological, cultural and motivational, and their thoughts of why such challenges could occur.

Before the interviews we sent out an information letter introducing ourselves and the research. The interviews were done over telephone and face-to-face meetings. We travelled to their headquarters in Arendal and had interviews at a closed meeting room at their workplace. The respondents surroundings during the interviews were therefore well known and safe. The telephone interviews went smooth with exception of one, where we got disconnected due to poor connection on their side.

We decided beforehand that one of us should be taking the lead during the interview, while the other gathered information and transcribed the given data underway. We continued with the same roles through the whole process, which made the lead interviewer more experienced each time. At every session we would start by introducing ourselves and convey the purpose of the interview. Next, we would ensure their anonymity and ask for their permission to use a digital recorder. At the start of the interview, we tried our best to get informants ready and comfortable through informal conversations and a brief introduction of themselves. The interviews lasted around 60 minutes.

3.4.2 Selection of Respondents

Having the right choice of respondents is key to getting accurate information (Ghauri and Grønhaug, 2010). It is important to consider certain criteria as to whom is the right employee that can give the right point of view and best suitable answer to the research question (Saunders et al. 2009). Therefore, the criteria for our selection of respondents was variation of departments, managers and employees. In addition, we requested to interview employees from branch offices around the world. It was also important that the respondents was knowledge workers who could share their daily work experience.

The selection method to find respondents best suited to contribute valuable information, was done through two key individuals within Gard. Through their position in Gard and their personal network they were able to identify and find willing respondents within our criteria to participate. Several of the respondents even had work directly related to IT and collaboration, possessing specific knowledge regarding our research. Even though some declined, the results were 17 interviews and two observations. Different authors recommend different number of respondents required, but Saunders et al. (2009) point out that selection should not be based on number of respondents, but rather if the researcher feels if there has been collected adequate amount of data. In our case, as we reached the end of the interview process, we felt that we had collected a good amount of data and did not expect anything new to come up. Hence, we believe that we have reached or at least are very close to empirical saturation.

Furthermore, the respondents came from different offices such as; Arendal, Oslo, Hong Kong, London, Singapore and New York. To maintain good research ethics, specific number of respondents from each office will remain anonymous, however it is worth mentioning that there are some skewness as the Arendal office is well represented. Also, the respondents represented several departments, such as claims, underwriting, human resources, quality management, top management, and corporate relations. Again, there were some skewness as claims department was also well represented. Lastly, there were variation in positions, responsibilities, education, gender and age. With this in mind, this sample allow different voices across the firm to be heard, strengthening the study's internal validity.

Respondent	Data	Department	Location
1	Meeting	Manager	Norway
2	Meeting	Manager	Norway
3	Telephone	Manager	Other
4	Meeting	Other	Norway
5	Telephone	Manager	Other
6	Meeting	Claims	Norway
7	Meeting	Other	Norway
8	Meeting	Manager	Norway
9	Observation	Other	Norway
10	Telephone	Claims	Other
11	Telephone	Claims	Norway
12	Telephone	Manager	Other
13	Telephone	Other	Norway
14	Telephone	Claims	Norway
15	Telephone	Other	Other
16	Telephone	Other	Norway
17	Observation + meeting	Other	Norway
18	Telephone	Claims	Other
Total = 17 interviews and 2 observations			

Model 6 - Respondents

3.4.3 Observations and Documents

As mentioned earlier, as we wanted to triangulate the data to strengthen validity, we have collected data from observations and documents as well (Yin, 2009). These sources are useful for providing additional information to the case study.

In our case, direct observations were done which according to Yin (2009) can be formal to more casual observations. We had the opportunity to visit Gard's headquarters in Arendal and got to see measures they had put in place to facilitate collaboration and knowledge sharing. For instance, they had a spacious and bright area called the Knowledge Café, where you could brew fresh coffee and have a talk with people. This café was consciously created for informal knowledge sharing. While we were there, we noticed a group of employees having a friendly talk. In addition, around 14 o'clock every day, they had free fruit in the canteen, with the purpose of informally gathering employees and to provide healthy nutrition. Unfortunately, we did not observe any gathering of sorts here. This casual observation provided us an impression of the climate within the organization that supported the data gathered in the interviews which will be discussed more closely in the chapter of findings.

Furthermore, we had the opportunity to more formal observations. First, we received a review of their technologies and platforms on a monitor, where we got to ask questions and look closer at how they worked. This was very valuable as to understand their platforms and the integration between them. Lastly, we got to sit beside a employee while they had a conference meeting through a digital communication tool called Lync. Later on, we observed a task where an employee in Oslo helped and collaborated with a colleague in Arendal. They used the "share computer screen" function and could also control the other person's screen to better illustrate. These observations provided us with valuable insight of the technical possibilities and how the employees preferred to use their tools.

Documents was also another source of which we collected data from. While information from interviews and observations are regarded as primary data, documents are secondary data. According to Ghauri and Grønhaug (2010), there are two types of secondary data, external and internal. The former are secondary data sources such as books and articles etc. On the other hand, internal data refers to collection of information from suppliers, employees, internal reports etc. We collected data about Gard and of its history mainly from their website.

Furthermore, we retrieved internal statistics so far in year 2016 of their communication tool Lync, which represented how it was used and how much. Additionally, we retrieved statistics of the social platform Chatter, however only March month was available to us. These statistics documents provided further support to our empirical findings.

3.4.4 Coding and Analysis of Data

Since we transcribed during the interviews, the transcription of the recordings went much faster and was done the same day or the day after. Afterwards, we created a mind map on www.mindmap.com where we had different categories (collaboration, knowledge sharing, strategies, social techn., etc) and placed quotes and examples in these categories. This gave us a better overview and a greater understanding of our data. However, the mind map became rather large and complex and difficult to follow as we had to zoom in and out. As a consequence, we had to create more refined documents with colour coding for each category. Fortunately, because of this, it became much easier to see patterns that was surfacing and we continued to develop new categories and terms. Then, we started to sort out what we thought were important to include in findings by putting them directly in our first draft of our study. Furthermore, we received an Excel sheet with data from Gard, which we used the Pivot function to extract information that would support the coded data.

3.5 Research Quality

This section addresses issues regarding research quality. According to Yin (2009), there are four commonly used tests to establish the quality of any empirical social research. These are; construct validity, internal validity, external validity and reliability.

3.5.1 Construct Validity

According to Yin (2009), this test is especially challenging in case studies since a case study investigator might fail to develop a sufficient operational set of measures, also “subjective” judgements are used to collect the data. However, Yin (2009) provides three tactics to increase construct validity when doing a case study.

The first is to use multiple sources of evidence during the data collection. This refers to having convergent lines of inquiries (Yin, 2009), i.e. that the multiple sources of evidence attempt to measure the same concept. Our foremost source of evidence was provided through our interviews. Seven of 17 interviews was done face-to-face in a closed meeting room at their workplace. By having the interviews face-to-face we could observe the respondents when we asked the questions. Thus, giving us the opportunity to solve any misunderstandings if the respondent seemed unsure or did not understand the question. This happened a couple of times during the interviews, where we saw that they did not quite understand what we meant. When this happened we added more information so the respondent could understand the question better.

Early in the interviews we became aware that this might influence the respondents to give expected answers, which according to Yin (2009) can cause lack of rigidity. However, as the interviews (face-to-face and by telephone) progressed we tried our best not to influence the respondents in any way, and excluded some added information and some follow-up questions that we deemed too leading. Most of the interviews were done by telephone, mainly because of geographical differences or they were out of town.

Nevertheless, the respondents by telephone were very open and asked us to explain if they did not fully understand the question. Hence, giving us the impression that the interviews by telephone were almost as good as face-to-face, except for one interview where we had some disturbance with the connection.

As mentioned in the previous chapter, we have gathered data from observations and documents as well. This is called data triangulation (Yin, 2009) and was used in our case to control if a correlation existed between the data from interviews, observations and documents, strengthening the construct validity.

The second tactic to increase construct validity is also relevant during the data collection and is establishing a chain of evidence. A chain of evidence makes it possible to follow the development, moving from the research question, theoretical frameworks, methodology to the conclusion (Yin, 2009). We believe that second tactic is accomplished since much of the empirical evidence found can be traced back to the chapter with findings. Thus, making it easier for readers to understand what the differences, comparisons and conclusions are based upon.

The third tactic according to Yin (2009), is to have key informants review the case study draft. They can give their opinion on the conclusion that has been made and correct misunderstandings. Thus, providing valuable feedback and additional information. However, due to time restraints we have chosen not to use this option. Consequently, construct validity has not been increased through this tactic.

3.5.2 Internal Validity

Internal validity is concerned with whether the findings are about what they appear to be about. (Saunders et al., 2009). Furthermore, the authors direct following question in order to address the issue with validity “Is the relationship between two variables a causal relationship?”. According to Yin (2009), there are two main concerns to consider when it comes to internal validity. These are false assumptions of causal relationship and issues regarding inference. False assumptions is made if the researcher is trying to explain event X led to event Y, but in reality and without knowing a third variable Z may have caused event Y - thus, leading to wrongful conclusions. Issues regarding inference may occur every time an event cannot be directly observed. A researcher will “infer” that a particular event resulted from some earlier occurrence, based on the evidence collected (Yin, 2009). The researchers should ask themselves; Is the inference correct? Have all the rival explanations and possibilities been considered?

Furthermore, Yin (2009) proposes four tactics to increase internal validity; pattern matching (1), explanation building (2), addressing rival explanations (3) and using logic models (4).

Since our case study has exploratory and explanatory aspects, it is important to address this test with care. In our case we have chosen to focus on tactic (1), (2) and (3). As mentioned in “selection of respondents”, we believe to have a diverse sample of respondents and used the same semi-structured interview guide in all our interviews which can contribute to see matching patterns. In addition, we triangulated the data by using multiple sources of evidence, which supported matching patterns even further. Furthermore, we have tried to our best of our abilities to use theoretical frameworks to discuss and explain findings in our study and at the same time tried to address rival explanations to this study’s conclusions. As a result, we believe internal validity in this study is sufficient.

3.5.3 External Validity

The third test, external validity, deals with the problem of knowing whether a study's findings are generalizable beyond the immediate case study (Yin, 2009). Case studies rely on analytic generalization to generalize a particular set of results to some broader theory, which in our case deals with virtual collaboration and knowledge sharing discussed in the theory chapter. The results of our research can to a degree be generalized, but possibly only to knowledge-intensive firms. Gard is a credible company as it is the largest and leading marine insurer in their industry. Furthermore, Gard operates in a global scale and have 13 offices around the world and all offices have the same virtual collaboration tools available. The company therefore spans different cultures, geographical regions, organizational structures etc. With such diversity, we believe the results obtained here can be generalized to companies within the same industry. In addition, companies about the same size (medium and large enterprises) as Gard and/or with similar human capital could also be considered for generalization. However, as this is a single case study with the purpose to explore in-depth the unit of analysis, the virtual phenomenon using Gard as a context, a broader generalization to different industries was never our intention. As such, a broader generalization might not be possible as they might have different methods to collaborate and share knowledge. Thus, resulting in different findings regarding virtual collaboration and knowledge sharing.

3.5.4 Reliability

Reliability of a study refers to the extent to which a data collection procedures will yield a consistent finding (Saunders et al., 2009). The reason is to minimize errors and bias in the study. Easterby-Smith, Thorpe, Jackson, and Lowe (2008) explains three important questions that can be asked in order to assure the reliability:

Will the measures yield the same results on different occasions?

Will similar observations be reached by other observant?

Is there transparency to how sense was made from the raw data?

Yin (2009) proposes two specific tactics to answer these questions. The first is to document all the procedures in a case study protocol to ensure that other researchers can follow the same steps and get the same results. We did not use this tactic in our study. However, the methodology chapter might provide readers with an insight on how we got in touch with Gard and the respondents, how we collected data and how the data was codified, which we believe contributes to increase reliability. In addition, our semi-structured interview guide is added as an attachment for readers to inspect, increasing the probability of answering Easterby-Smith et al. (2008) questions. The second tactic according to Yin (2009), is to develop a case study database, which we did by recording and transcribing the interviews. This raw data was put in a database and contributed to our findings, discussions and conclusions. Also, readers can get a better insight and understanding in our discussion based on the findings which was presented first.

Furthermore, Saunders et al. (2009) also mentions that it is important to consider participant error, participant bias, observer error and observer bias when gathering data.

We believe we handled these issues with satisfaction. All of the respondents received an invitation letter which described the purpose and the themes that was in focus. Giving the respondents a chance to prepare themselves. We focused very much on receiving personal examples from the respondents and gave them sufficient time to answer. We also feel that the respondents felt safe enough to say what they meant.

Since there was two of us, one observant would ask questions in every interview while the other transcribed the information, giving us the opportunity to learn and be more experienced for each interview. In addition, this also reduced observer bias as we would challenge each

other's interpretation and any biases regarding the study. As a result of aforementioned discussions, we believe that this study has a satisfactory reliability.

Test	Tactics to Increase Research Quality	Accomplished (x)
Construct Validity	Multiple sources of evidence (Data triangulation)	X
	Establish Chain of Evidence	X
	Review by key informants	-
Internal Validity	Pattern Matching	X
	Explanation Building	X
	Rival Explanations	X
	Logic Models	-
External Validity	Use Theory in Single Case Studies	X
	Use Replication Logic in Multiple-case studies	-
Reliability	Use Case study Protocol	-
	Develop Case Study Database	X

Model 7 - *Tactics to Increase Research Quality* by Yin (2009)

3.5.5 Research Ethics

Ethics are the moral values and principles that have impact on the researcher's way of conducting activities in a systematic and organized way (Ghauri and Grønhaug, 2010). In this study we paid close attention to research ethics, especially regarding the respondents. As mentioned before, an invitation letter was sent out to outline the study's objectives.

Permission was always obtained before recording the interviews.

Furthermore, we ensured respondents anonymity, which is why there will be used numbers instead of names in the table of respondents and findings chapter. Additionally, as Gard is relative small firm, specific positions and certain countries will be hidden as well. Also, to further handle sensitive data, no names was written down in the transcription. We also considered business sensitivity and signed a nondisclosure agreement with Gard. This ensured that respondents felt safe and comfortable to give us specific examples of their day-to-day work routines and cases. Lastly, we were respectful and gave them reasonable time to think over their answers.

5.0 Empirical Findings

In the following chapter we will present our findings regarding the use of different knowledge systems and Web 2.0 technologies. In the last part of this chapter, we will cover aspects of collaboration within the company.

5.1 Systematic overview of Web 2.0 technologies

As mentioned above, we will present the in-depth findings of the most used Web 2.0 technologies at Gard. The systematic overview of platforms will provide useful information on how knowledge strategies and knowledge sharing are supported. This information further provides the reader with an overview of employees' working routines in the various platforms. Moreover, findings regarding challenges with social technologies will be presented at the end. By introducing the Web 2.0 technologies first, the reader will have a greater understanding of the findings regarding how employees collaborate and share knowledge in virtual platforms.

5.1.1 Document management system

The document management system, from now on referred to as DM, is a system that is used for storage of personal files, folders and cases. The system is primarily used by claims office and legal department. However, everyone have access and use it to an extent. Documents are stored with different tags and keywords, as well as with a unique ID:

“I use the system to search for things. People tend to avoid the system because it's difficult with keywords and tags” - Respondent 11

The main purpose of this system was to adopt to an electronic database rather than having paper archives. For knowledge purposes, this system should contain all important data on cases, policies and client information, as well as so called “*knowledge documents*”.

Knowledge documents were supposed to be written as articles that employees can retrieve when they need them. However, our respondents have different perspectives on both the system and the stored documents:

“I sometimes use DM, however it's hard to find information. If different people are working on a document, they store it differently in terms of keywords and tags, and it's hard to retrieve afterwards” - Respondent 12

Another employee mentioned that he uses the system often, but considered the system to be challenging:

“I use DM quite a lot. it's really the only system I use. It's terribly to find things. Each files have unique tags and we have lots of folders, and we don't even know who has what in their folders. For me it's easier to ask people for information” - Respondent 14

It seems that it can be difficult to retrieve certain information hence the fact that it is not organized in a convenient way. All respondents mentioned that it can be tricky and time consuming to find important information. Furthermore, some of the respondents mentioned that they are concerned with whether the information they find is outdated or not:

“It can be hard to find master data. Sometimes you can get up to three files on top of the master data. In my opinion it's hard to find the data, and if you find it, you don't actually know if it's outdated or not” - Respondent 7

When asked how often they use the systems, all respondents mentioned that they use DM often, but to an extent. One of our respondents mentioned that they use it for storing and organizing their own files:

“I tend to think that DM is just a place to store files. I generally don't use it that much” - Respondent 10

However, it seems that all employees mentioned that in order for them to search for something, they need to know exactly what they are searching, either with keywords, tags or links:

“I use DM all the time now. But I use DM for specific documents rather than looking for all files. For me it's important to recall specific cases. Mental ability helps me because of the number of the list of documents” - Respondent 18

It seems that in order for employees to locate the knowledge, they either need to know from experience what documents they are looking for, or at least know someone that can help them and send them to the right files in DM:

“I sometimes use DM myself. Often I ask the people that I know, and they will know and send me the specific DM-link” - Respondent 2

Our general understanding is that knowledge is definitely present in the document management system, however most of our respondents experience difficulties finding it. Issues regarding keywords, tags and links makes it difficult for employees to locate the correct information and knowledge in a huge database. Furthermore, some of our respondents mentioned that the system is somehow technologically outdated;

“I think it's very outdated. it's slow, it's difficult to find things and overall not organized” - Respondent 1

Summary

DM is a system that is used for storage of personal files, folders and cases. DM was introduced as an electronic database as a replacement for traditional paper archives. For knowledge purposes, this system contain coded data on cases, policies, client information and “*knowledge documents*”. While knowledge definitely is present in the document management system, our respondents experience difficulties finding it. Issues regarding keywords, tags and links makes it difficult for employees to locate the correct information and knowledge in a huge database. It seems that in order for employees to locate the knowledge, they either need to know from experience what documents they are searching for, or use their personal network to find someone that can send them to the right files in DM. In regards to virtual collaboration, DM is only used database and there is not much collaboration (i.e blog, wiki, etc.) on this system than sharing coded knowledge, if it can be found.

5.1.2 Lync

Most of the employees agreed that they use telephone regularly, and some of our respondents preferred this method of communication as an alternative to face-to-face meetings. Lync, also known as Skype for business, is a platform where employees can call, chat, present, share and learn through internet. All employees mentioned that this is a good option in terms of knowledge sharing, however, it seems that Lync is mainly used for certain types of interaction;

“I use telephone, conversations and Lync as my main communication. On Lync, we have business meetings and we share things. But, I don't like video conference that much, it makes me uncomfortable. People don't use webcam that much either. “ - Respondent 13

This quote can be strengthened by following statistics from the Lync peer-to-peer activity report;

Peer-to-Peer Activity Summary Report (Page 1 of 2)											
From:	04.01.2016 00:00:00		The specified time range and interval exceeded the maximum number of samples (12). The time range used for the query was changed to 04.01.2016 00:00:00 - 28.03.2016 00:00:00.								
To:	28.03.2016 00:00:00										
Weekly	Total peer-to-peer sessions	Total peer-to-peer IM sessions	Total peer-to-peer IM messages	Total peer-to-peer audio sessions	Total peer-to-peer audio session minutes	Avg. peer-to-peer audio session minutes	Total peer-to-peer video sessions	Total peer-to-peer video session minutes	Avg. peer-to-peer video session minutes	Total peer-to-peer file transfer sessions	Total peer-to-peer application sharing sessions
03.01.2016	0	0	0	0	0	0	0	0	0	0	0
10.01.2016	0	0	0	0	0	0	0	0	0	0	0
17.01.2016	0	0	0	0	0	0	0	0	0	0	0
24.01.2016	4156	1667	11575	2398	2804	1,17	3	7	2,33	16	75
31.01.2016	6767	2970	18726	3616	6828	1,89	11	140	12,73	31	150
07.02.2016	6386	2682	16607	3478	6055	1,74	8	92	11,5	28	198
14.02.2016	6906	3152	19954	3610	6443	1,78	5	133	26,6	24	120
21.02.2016	5961	2490	16937	3298	5005	1,52	6	16	2,67	21	152
28.02.2016	6775	3146	19414	3384	6322	1,87	1	49	49	27	218
06.03.2016	7028	3261	21121	3516	6407	1,82	7	52	7,43	40	212
13.03.2016	6789	3071	18095	3515	5056	1,44	4	10	2,5	29	174
20.03.2016	4057	1555	11349	2418	2658	1,1	19	408	21,47	18	66
27.03.2016	217	4	6	213	0	0	0	0	0	0	0
Total	55042	23998	153784	29446	47578		64	907		234	1365

Model 8 – Peer-to-peer Activity Summary Report

Table above shows the overall activity of Lync in peer-to-peer interaction. Out of the total 55042 connections during the first three months in 2016, only 64 were video sessions.

Furthermore, it seems like video sessions are rather short with the total of 907 minutes during

those 64 sessions. Audio sessions on the other hand, alongside with instant messaging, are the most used form of communication among the employees.

It seems that all employees use Lync to a high degree, especially for calling and meetings.

When we asked *why* they preferred Lync as a tool for sharing and retrieving knowledge, most of them seemed to prefer a way of interaction where you can talk real-time:

“I either prefer face-to-face or Lync. For me it's important to be able to feel expression of body language or tone of voice.” - Respondent 6

When asked if Lync is accessible to everyone, and whether its easy for people to retrieve information, or even collaborate, couple of respondents mentioned technological difficulties:

“Lync can be unstable sometimes. But that’s more on a technological side. I think everyone has it.” - Respondent 14

Media Quality Diagnostics

	This week	Trend of past 6 weeks
Peer-to-peer		
Total poor quality calls	0	
Poor quality call percentage	0,00 %	
PSTN calls with poor quality	0	
Conference		
Total poor quality calls	2	
Poor quality call percentage	1,75 %	
PSTN calls with poor quality	0	
Top worst servers by poor quality call percentage		
ARESrv502	<u>1.75 %</u>	

Model 9 – Media Quality Diagnostics

According to the Media Quality Diagnostics, Total Poor Quality calls are a rarity, but the trend shows that instability can occur “sometimes” (Respondent 14). Good quality can be

important when users perceive the system's usefulness and their willingness to incorporate it into their daily routines.

When asked if employees used Lync for collaborative tasks, many of respondents mentioned some good examples of how they work through Lync:

“We use shared screen on Lync often. Especially for learning and education. We also have different webinars” - Respondent 17

Another respondent mentions that Lync is good for giving presentations, however, he does not feel like this tools is used for collaboration;

“We use Lync occasionally for presentations and such, but I don't feel like we collaborate in this platform” - Respondent 18

Our observation of Lync illustrates the quotes above.

We found the Lync to be convenient when we observed the use and possibilities. You can see who is online at all time, and you can invite employees to chat in various ways. Furthermore, we also observed when two colleagues, one more “experienced” and a “rookie” used audio and a shared screen to solve a task. At first, the “rookie” observed how the task was done by observing the “experienced” through the shared screen. Later the roles was switched and the “rookie” tried to do the task while the “experienced” could guide the “rookie”. Based on our observation of the respondent, it was easy to use and the respondent was comfortable with the system. This suggests that use of available features of Lync depends on the user's computer capabilities and how much that person perceive the benefits of using it.

While it is important to notice that Lync is an important tool for meetings with various colleagues, offices and departments, it seems like our respondents use this tool to a high degree. Our respondents further mentioned that with Lync, the overall communication has increased since its now easier to contact fellow colleagues in different offices;

“We have meetings. Daily, monthly, weekly - all depending on the type of meeting. These meetings are important. I think the overall collaboration has increased, people share daily, either on email, Lync or Chatter” - Respondent 5

Conference Summary Report (Page 1 of 2)

From: 04.01.2016 00:00:00
 To: 28.03.2016 00:00:00

The specified time range and interval exceeded the maximum number of samples (12). The time range used for the query was changed to 04.01.2016 00:00:00 - 28.03.2016 00:00:00.

Weekly	Total conferences	Total participants	Avg. participants per conference	Total A/V conferences	Total A/V conference minutes	Total A/V conference participant minutes	Avg. A/V conference minutes	Total unique conference organizers	Total conference messages
03.01.2016	0	0	0	0	0	0	0	0	0
10.01.2016	0	0	0	0	0	0	0	0	0
17.01.2016	0	0	0	0	0	0	0	0	0
24.01.2016	105	369	3,51	65	3070	9362	47,23	63	316
31.01.2016	155	479	3,09	96	4438	11680	46,23	85	473
07.02.2016	175	519	2,97	108	4688	13007	43,41	80	615
14.02.2016	136	434	3,19	91	4572	11390	50,24	74	170
21.02.2016	123	497	4,04	86	3794	11731	44,12	71	202
28.02.2016	114	422	3,7	73	3545	11922	48,56	71	320
06.03.2016	172	531	3,09	112	4765	12521	42,54	86	555
13.03.2016	162	462	2,85	112	5636	14006	50,32	89	515
20.03.2016	80	244	3,05	36	1166	3011	32,39	52	275
27.03.2016	0	0	0	0	0	0	0	0	0
Total	1222	3957		779	35674	98630			3441

Model 10 – Conference Summary Report

Statistics from the table support the quote above and indicate the consistent use of conferences/meetings via Lync during three months. However, as we do not have statistics for a longer period of time and statistics regarding maximum, minimum, and median of participants in conferences, certain conclusions can not be made. Nevertheless, the statistics indicate a consistent use between 80 to 175 conferences during this period. Additionally, it is interesting to see that the average participants is around 3-4 per conference. This can give an indication that employees in Gard collaborate in relatively small teams. This might be because it is the preferred way to work in Gard, or it is the appropriate number of participants to be on a Lync conference.

Summary

Lync is a platform where employees can call, chat, present, share and learn through internet. This system was implemented as an alternative to face-to-face meetings. Furthermore, Lync allows multiple employees to have group calls and groups meetings. Audio sessions alongside with instant messaging, are the most used form of communication among the employees. While video conferencing is supported through Lync, employees do not find such ways of communicating necessary. Employees seems to prefer Lync due to its ability to share knowledge in real-time. We found the Lync to be convenient when we observed the use and possibilities. Is is possible to see if employees are online or not, and you can invite them to chat in various ways. Furthermore, it seems like Lync is useful for giving presentations together with multiple offices. Our observations suggests that collaboration on Lync depends on the user's computer capabilities and how much that person wants to use it. Lastly, the overall communication has increased since its now easier to contact fellow colleagues in different offices. Further findings regarding collaboration on this system will be presented in findings "Virtual Collaboration".

5.1.3 Salesforce

Salesforce is a CRM-system that is aimed to increase the overall enterprise social participation and collaboration. The platform is advertised as "enterprise social network that connect every employee with files, data and experts they need". This platform was made with an intention to increase productivity, accelerate innovation and knowledge sharing. Due to our problem statement, we found this platform more interesting to focus our interview process on, particularly on who use this system, what types of knowledge they share, how they collaborate and what challenges might occur.

Salesforce is a platform originally intended for underwriting department, and we also got the expression that this department use this system more frequently than other departments;

"About 50% use this system, is my guess. Most people have access, but they go in there only from time to time. I don't think claims is that engaged in this system. It's mostly used for underwriting" - Respondent 7

When we asked why our respondents have this understanding, they explained that this system is more suitable for communication between “salespeople” and customers, rather than specific knowledge sharing among employees that mostly try to convey the tacit knowledge. These employees are also more used to solve challenges in more traditional ways such as face-to-face interaction and email:

“I think that the overall knowledge is a bit lower in underwriting. When people have questions regarding a particular file, they ask through email. It is much more convenient. You can have big cases” - Respondent 3

However, some of our respondents are aware that the knowledge might be difficult to retrieve in later occasions, while others mentioned that information in email can be stored in DM. The Chatter function, which is an important part of Salesforce, is the social media approach for employees. Different groups exist for different topics and issues, and employees have the ability to share information, ask questions and comment on different posts. Participants might also “like” information with “thumbs up” function. When it comes to who participates, it seemed that most of employees mentioned that they get the impression that the same people post in given groups;

“There are number of people who contribute actively, usually the same people. And they feel that they need to share. There are lot of people that are active listeners. They see it, but they don't press the “like” button or interact. And I also think that there is a group of people that don't participate at all” - Respondent 11

This quote can also be strengthened by our secondary data in form of statistical numbers;

A: User information		
User log in	Active users	Posts
441	113	350

Model 11 – User information on Chatter

Meaning that there were 441 people who logged in during march, while only 113 of them posted something. However, there have been made 350 posts in chatter. When we look at user statistics and distribution of participation, we found some interesting information:

B: Summary of posting activity						
Mean	Median	STD	Min	Max	>3 posts	>7 posts
3	2	3,18	1	16	23	10

Model 12 – Summary of posting activity on Chatter

Mean: 3 posts were posted on average for each participant

Median: 2 posts per participant is the median. Close to mean - no extreme cases that interrupt the “average post”

Min: Minimum total of posts per user. 33 users posted only once during given period.

Max: Maximum total of posts per user. Only one person posted 16 times during given period.

>3: Users that posted more than 3 posts. 23 users posted more than 3 posts during that given period

>7: Users that posted more than 7 posts. 10 people posted more than 7 posts during that period.

Statistics above indicate that while there are many users on chatter, only few of them participate on a regular basis.

Summary

Salesforce Chatter was made with an intention to increase productivity, accelerate innovation and knowledge sharing. Salesforce is intentionally a CRM system. Chatter is a part of this system that is similar to other social platforms and discussion boards. The system was first introduced for underwriting department, but every employees have access to Chatter. There are various groups, topics and areas that employees might join. In this system, employees have the possibility to ask questions, answer questions or simply engage in both formal and informal discussion. Chatter is voluntary and therefore not necessary for everyday tasks. While many respondents see the potential of Chatter, central findings suggest that participation is rather low. While employees do post on chatter, we got an expression that the same group of people are engaging in this platform. Statistics regarding age were requested to indicate if age could reflect the low participation. Unfortunately, this was not possible to receive due to sensitivity issues. Additionally, other challenges regarding participation on Chatter and other platforms will be covered in the following section.

5.1.4 Challenges regarding Social Technologies

While it is important to understand the possibilities of Web 2.0 solutions, it is equally important to address some of the challenges such technologies bring along. This section intend to present the reader with challenges related to different platforms in Gard.

As there are too many operating platforms within the company, it might be challenging for employees to consistently use all of them ;

“We have different tools. We get training in various system. Some of these tools are mandatory and people have to use them in order to retrieve information. It seems that people use a lot of email, and it's not efficient” - Respondent 3

Respondent above, explains that employees get the proper amount of training necessary to navigate in such systems. However, some still prefer traditional methods of interacting. Another respondent mentions the importance of collaboration and knowledge sharing in virtual platforms;

“It's important for us to collaborate and share knowledge virtually. This isn't a small company anymore, it's impossible to have everyone at one place. Most of what we do should be shared, but it's difficult. It's challenging to search for things. How do you find all the information you need in a virtual reality? I think in the end people will ask people” - Respondent 17

Respondent above mentions that while it is important to interact virtually, the information on virtual platforms can be extensive. These findings can also relate to the challenges regarding the use of *Document management system*. A lot of information is put in the system, and people have problems retrieving it afterwards. Thus, resulting in information overflow.

One of our respondents mentioned that Chatter is used to a certain degree and raised some interesting topics regarding the responsibility and ownership of the information:

“We work with things that some people might find boring. If i put something on Chatter, people might find it boring to read. And if you start posting on chatter, people will have expectations. If I for instance have some information, people will expect that I put all information in there. It's time consuming. I cannot post just small pieces of information. This is a changing landscape. If I start posting, and stop - the information might get outdated” - Respondent 13

As the company operates in a business with various cases and the employees often work with different cases, the respondent above points out that if he share some information, it needs to be updated by him. However, we did not gather enough data to generalize this as a problem for whole the whole company.

When it comes to organization culture, our findings suggests that knowledge sharing is important. All respondents mentioned this in our interviews. However, on a more personal level, it seems that our respondents found it rather time consuming to work in different platforms and consistently think about knowledge sharing at the same time;

“I don't have time to for instance use Chatter on a daily basis, so it should be implemented as a mandatory system. I do read through posts, however, but I don't post that much. It works on

a more informal level rather than on formal matters. What we could do, is post an interesting article, but I don't know if people will read it” - Respondent 12

Almost every employee we interviewed mentioned that adapting to new technologies takes time, especially considering a traditional organization where the average age is above 40 ;

“Using the computer might be problematic because of the age. People are sometimes afraid to do things with a computer. Sometimes, for example, people don't know how to share screen” - Respondent 17

“It depends on how digitalized people are. Age can be a factor, but there might be more. I think it depends on how well people adapt to technology” - Respondent 8

While multiple respondents mentioned that age can be important, the ability to adapt to new systems and finding the urge to explore new systems are as important as issues regarding age.

Some of respondents mentioned that there might be challenging to communicate with employees across geographic borders due to different ways of conveying messages;

“Sometimes It's challenging on a cultural level. It's easier for me to communicate with people that have the same cultural background. I tend to connect to my western colleagues first rather than colleagues from different cultures” - Respondent 8

However, it important to note that while this issue was raised couple of times, we did not manage to gather enough information regarding the cultural variety, and can therefore neither make a conclusion regarding issues with cultural diversities.

Summary of challenges with social technologies

While social technologies bring many possibilities to organizations, it is equally important to address some of the challenges that might occur with implementation of these.

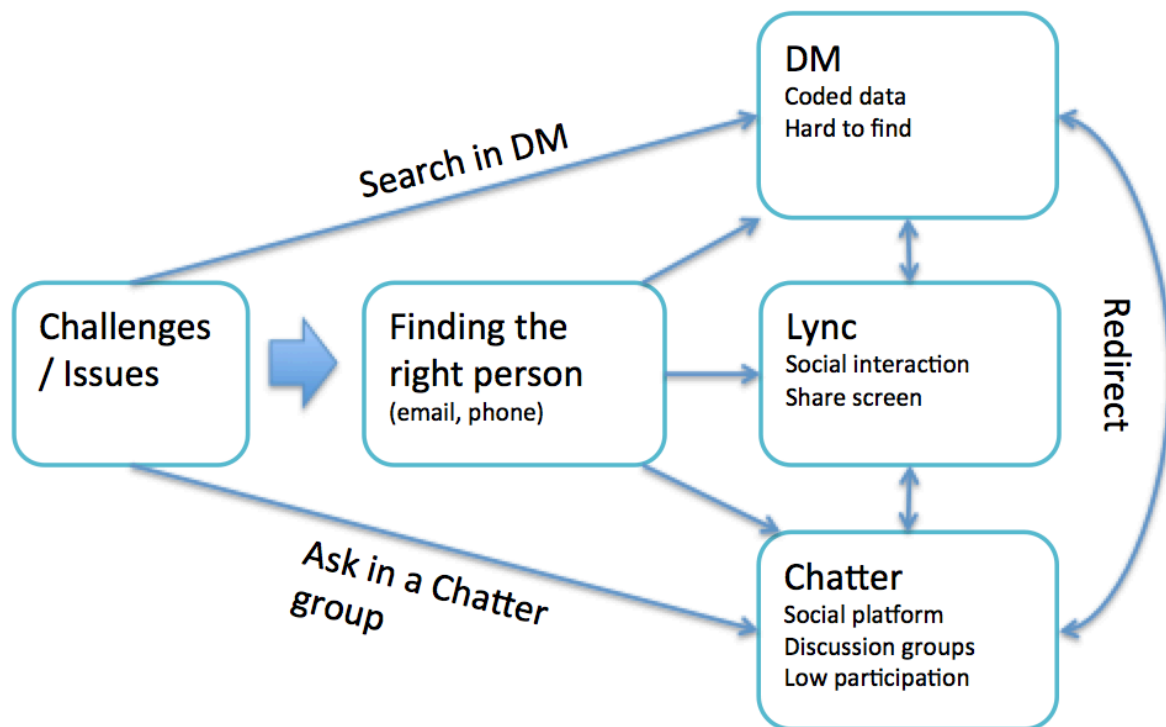
Our findings suggest that there are many various system for employees to navigate in. As some of these tools are not mandatory, employees might prefer tools they are used to. Hence, our findings suggest that some employees still prefer traditional methods of interacting (Paroutis and Saleh, 2009).

Furthermore, our findings suggest that users' computer capabilities can be a challenge if they do not know how to use the systems or are not willing to learn new systems. In addition, our findings suggest that the employees get some amount of training regarding new systems. However, as this learning is not practiced frequently, they fall back to old ways of working.

5.1.5 Summary of the overall use of different platforms

It seems that participants are used to collaborate, communicate and share the knowledge between different platforms. There have been couple of comments on technological difficulties, but it seems that all systems work in a way that can stimulate the knowledge sharing and the overall collaboration. Aside from the document management system, most people find other platforms operating and relatively easy to use. For many participants, it starts with emails, either being an invitation to a meeting or a specific question, before other platforms are implemented into the communication.

Furthermore, it seems that email connects participants to the different systems, for instance to DM, Chatter or Lync. Following model shows how multiple platforms are used if a challenge needs to be answered:



:

Model 13 - Summary

5.1 Virtual collaboration

Sharing

While there are multiple platforms within the company that are used for knowledge sharing, the overall collaboration in the company is fully dependent on employees' use of different tools. One of our respondents mentions that he tries to find proper ways to convey messages;

“Much of our subjects and cases are quite complex, and for me it can be difficult to convey such information in short messages. Therefore, I have to adapt my way of communicating, and I'm not sure how the information is absorbed. When we work on multiple platforms, I get thrown in the systems” - Respondent 13

This quote, from one respondent working in legal department, gives us a broader understanding of the challenges that might occur when participants from different departments interact with each other. As our respondents work with many cases in different units, they have to consider with whom they are sharing the information with.

When we asked if the employees could describe a recent challenge that required some sort of mutual problem solving we got an understanding that our participants use combination of various platforms. Following example demonstrates how one of our respondent use different tools to collaborate;

“I tend to avoid situations that require such tasks. Its complex. Recently we had a meeting between different offices, and we used a combination of Lync and chatter. There will be made a chatter group afterwards based on the topics we discuss. In here people can address different questions and exchange more information. However, on Lync, if there are many people in the meeting, not everyone can speak.” - Respondent 13

When asked why respondents share knowledge, most said that they wanted to help their colleagues, however some felt they had to help and share knowledge to reciprocate.

One respondent mentions that:

“I put in thing sometimes, and I read it sometimes. I think I give as much as I take” - Respondent 11

As we observed meetings in Lync, we got an expression that our respondents are used to communicate in this platform. As the telephone is connected through Lync, this type of communication seemed rather convenient. While there might 50-150 participants attending meetings Lync, it seems that the technology makes it possible for all employees to communicate and collaborate. One manager we interview mentioned that Lync is important for sharing and virtual collaboration in general:

“It made us more efficient for sure. Travel time is reduced. We need less physical meetings. You have more interaction and sharing that you would have had earlier. Company is getting spread out as well. We need tools like Lync. It's all about breaking barriers and establish strong identity” - Respondent 12

The quote above seeks to explain that technologies like Lync can reduce cost and time. Furthermore, this quote can directly be linked to how the company use technologies like Lync to include other offices across the world. Furthermore, as there are made Chatter groups afterwards regarding the most important meetings, employees can retrieve additional information or share information themselves. However, during our interviews we got an expression that the participation in chatter is not as high as participation on Lync;

“People use Lync because they have to. Chatter is not voluntary. People are in there to a degree that fit their needs. People sometimes use chatter talking as friends. It seems that people enjoy the system” - Respondent 10

Respondent above mentions that Chatter is not a mandatory tool in everyday tasks. However, it seems that people enjoy the system on a more informal level. Thus, meaning that communication can be some sort of informal. Interestingly enough, one of our respondents mentioned that the name “Chatter” seemed unprofessional.

Peering

As peering is similar to the theoretical framework of communities of practice, we will further in subsection of the chapter address our findings regarding peering as findings regarding *communities of practice*. While these frameworks were made in different settings, the topic of how participants use various tools as they engage into different communities. As the organization is divided into different department, we got a common understanding that there are different communities of practice depending on their operating field.

“Its different topics and areas. You don't usually see underwriting people in claims group” - Respondent 3

Furthermore, when we observed the system and the topics, it seemed like there are small groups connected to areas, fields, expertise and departments. This quote can also be linked to the assumption that there are indeed the same people that engage in certain groups.

“If something is interesting, you can follow that topic. You can also give likes and feedback on the information” - Respondent 1

Manually following the topics is a way for people to engage in groups and break the circle of a given community of practice. However, it seems that it's rather time consuming and that factors like inner motivation, thrive to engage in knowledge sharing activities are as important as technological difficulties, thrust and age limits ;

“People don't use chatter that much because it's not on their radar. We are busy most of the time. Clicking and liking takes time. I also think that claims people are used to the old ways of having meetings, meeting up with a client over dinner and coffee, It is hard to change that”- Respondent 15

When we asked if liking and positive feedback can increase the overall participation, we got some quotes that were different. While some of our participants mentioned that it can give some sort of responsibility and ownership of the content, and therefore could be sort of frightening, others mentioned that positive feedback is always a good thing;

“For me it's important with feedback. Its nice to see that people read and appreciate my contribution.” - Respondent 17

Interestingly enough, while some said that knowledge sharing is something within the team dynamics and the community, others mentioned that in order to increase the overall virtual collaboration, the organization needs to be more transparent;

“I think we are sort of transparent. We need to behave like one big whole organization, rather than 13 small offices. There are no issues with trust, I think” - Respondent 12

“In some teams the communication is very good. It has to do with dynamics. You work better with people you can relate to or have worked with before. Also, it depends on the leaders - some leaders try to promote the system better than others” - Respondent 4

All our employees mentioned that knowledge is vital for Gards' business. The market is dynamic with a changing landscape. New markets will arise while focus areas might change. The ability to share knowledge and operate professionally while maintaining the high level of competition is crucial;

“In our field, knowledge is vital. It's extremely important. We have different people with different backgrounds, and it's important that they share experience, knowledge and simply talk to each other” - Respondent 2

Furthermore, it seems that in certain areas and departments this established community strengthens the social network, meaning it's easier to localize the knowledge. However, with many different platforms and the big amount of data, it might be challenging to find the correct information.

Openness

We got an expression that every employee can contribute on Chatter and everyone has access to Lync. All of our respondents mentioned that the culture in Gard is all about knowledge and knowledge sharing. We got this expression as well, especially when we observed different concepts of informal knowledge sharing. As our third way of gathering data, we traveled to Gard's headquarters in Arendal and observed how and to what degree the organization support and facilitate the knowledge sharing for employees. There are various ways for employees to socialize, share knowledge and interact within the office:

- *Knowledge café*: An interesting concept where you can find different literature, newspapers and articles regarding shipping, insurance and legal issues. Employees might engage in interactions over a cup of coffee or tea. This seemed like a good option for employees to socialize and engage in both formal and informal conversations.
- *Fruit at 2'o'clock*: Every employee is encouraged to step out of their working space and engage in informal conversations over free fruits at 2'o'clock every day. This initiative is implemented as a way for employees to socialize and talk about different everyday tasks as well as informal conversations.

Furthermore, it seems that employees find it easy to talk to colleagues and ask questions they need answer to. We felt that if we needed some informations or we had questions, there was always high level of engagement and initiative. Our observation indicate that Gard has a strong organizational culture. By focusing on cultivating sharing and collaboration in informal settings, this openness for sharing and collaboration can be transferred to virtual platforms, and further increase the overall virtual collaboration with various colleagues.

However, it is important to notice that our visits were mainly in Arendal, with only a couple in Oslo. Oslo office lacked some of this atmosphere, however we did not spend that much time in this office either.

From a more virtual point of view, Chatter is implemented to get employees to interact and participate in various topics. Chatter groups are made regarding various topics and employees might follow interesting groups and engage in conversation;

“If you find something interesting on Chatter, you can post and comment. Interesting topics will also increase the participation “ - Respondent 15

Furthermore, Chatter groups that are made on specific topics after Lync meetings, are good example of how working in cross-platform can stimulate the collaboration not only during real-time interaction, but afterwards as well. While not everyone use Chatter after Lync meetings, everyone have access and can contribute freely. However, we were told that Chatter is a relatively new compared to the other systems, and that employees are still learning how to navigate in this system.

The quote above seeks to explain how employees are trying to convey difficult messages in a system like chatter. As there are extensive amount of information on different subjects, employees try their to best to post and share information in order to maintain this open culture.

Further, multiple respondents mentioned the challenges regarding use of different tools. It seems that a lot of communication still happens through traditional methods such as email;

“We use lots of emails. I get lots of emails. When people ask me questions on email, I try to avoid such communication. I like to go back to the information and it has to be structured and organized. In emails it's a bit messy. If they ask something, I send them to Chatter. People seem to like it and they say thank you. Sometimes, they will even ask in Chatter themselves” - Respondent 5

The quote above is an example of how managers try to get knowledge sharing more interactive and available by sending colleagues over to Chatter. In addition, the quote above shows how employees are used to work on multiple platforms, and how some need guidance towards social technologies.

Acting globally

As we mentioned earlier, it seems like technologies such as Lync and chatter have increased the overall collaboration with various offices. However, in order to gather specific examples on whether various offices across the world were collaborating, we got some interesting quotes;

“We had a drill last week with different offices. It was regarding accidents. Before hand we had scripts and different roles that were assigned. We used many different tools for communication, for instance Lync and chatter. We also used the chat system on Lync. It was good for quick messages and updates” - Respondent 5

In this specific example, the employees had a meeting on both Chatter and Lync in order to achieve a common goal - a drill, that will help the employees to respond in a quick matter if such accidents occur. This examples demonstrates how such technologies can make it possible for employees in different continents to be included in collaborative tasks.

One of our respondents working in IT, mentioned the importance of virtual tools when it comes to collaboration with his Indian colleagues;

“We use to have different projects with IT people. Most of them are in Arendal, but some are in India. We collaborate online in order to solve tasks and issues. We do use share screen as well as Jira. In the latest release of the platform we had some different issues, and people interacted with each other to solve these challenges” - Respondent 17

Screen share is happening through Lync. Jira, on the other hand, is an IT system for software teams. On this platform, people can report bugs, issues and fixes, while others will try to solve them. This is a good example on how mass collaboration can stimulate the overall knowledge within a company, as well as increasing the aspects of “act globally” mentioned in previous topic of our thesis.

Another respondent mentions that such technologies might help to connect people from various offices:

“Yesterday we had regulatory forum. Managing directors from different offices communicated together. There were people from Hong Kong, Japan, Singapore, Bermuda and Norway - all participated. We shared screen and exchanges various documents” - Respondent 13

5.2 Knowledge Strategies

While there are many various systems that can be used for storing documents, we got an idea that looking in such systems is rather time consuming. When we asked how employees track down the source of the knowledge, it seems that in certain departments, the social network plays an important part;

“I use my social network when I need to find people. Most of us do. And If I'm not sure who to ask, I'll ask someone who maybe knows. Sometimes I also use chatter, but it feels like I'm going to the whole organization. It might feel like spamming” - Respondent 8

Another respondent points out that when he need to get in touch with someone, he will ask around in office or send email:

“I use email to get in touch with people. It's only one click away, and I can do different things until I get an answer“ - Respondent 14

“We have a lot of communication happening through email. People will search for the right person. If you need help with something, you send an email. We also have different email groups for teams” - Respondent 8

When we asked why people use email and why they prefer to find people on email, most respondents mentioned that emails are quick, possible to store, and that they usually know whom to ask. In urgent cases, couple of employees mentioned that telephone is a good tool when they need to solve something in a quick matter.

We got an expression that it is easy for employees to send emails. If they need to locate a file, some data or client information, email is a wide used alternative. Our respondents found it convenient for both formal and informal occasions. When we asked if there has to be some sort of requirements before they send an email, most agreed that It's not problematic to reach out for assistance. However, some pointed out that building internal network is important for maintaining good communication with employees;

“I think informally speaking is the most important way of communicating. You need to build the informal network inside the organization as the informal network is the best way to share knowledge.” - Respondent 8

Furthermore, it seems that Gard does facilitate such informal networks in various ways - either through different meetings, webinars or conferences. There are also weekly quizzes;

“We have quiz weekly. We try to make it work related, but it's going in different direction sometimes” - Respondent 17

We got an understanding that the employees at Gard are dependent on their social network. While certain cases and documents might be found in various databases, it is easier for them to ask someone they know. This person will either direct you the right person, right document or simply answer the questions himself if possible.

When we asked if people use documents, cases and old data as knowledge sources, several of the respondents mentioned that they to an extent use older cases. Furthermore, it is important to notice that there are websites, both internal and external, where you can find the most relevant information, hot topics and legal topics. Here they can retrieve the latest, most important and more general information;

“I get hot topics and most updated information on website. But it's external, so the information you get there is limited” - Respondent 14

Participants from the legal department mentioned that their daily work required searching for information:

“I use the DM. I have to search for things and read through big cases” - Respondent 4

“Well, google is fantastic. When you need some short answer, you don't need to dig into details. For me, if I need to find information on intranet, I need to look through historic data. It could be easier to go directly to the source ” - Respondent 13

One of our respondents mentioned the knowledge documents are stored in DM, but when you need to retrieve them, It is easier to ask rather than trying to navigate and look for specific knowledge documents:

“I put some strategic important papers in there 7 years ago. Then, the workspace got deleted. So, I knew that documents were there, but it was impossible to find them. Then, I remembered that I had sent those documents to my colleague. Luckily, I was able to backtrack the information and the person had the files on his USB-stick” - Respondent 16

It seems that while a combination of personalized and codified information is possible, most of the employees use their personal network rather than written documents.

Summary of Knowledge Strategies

While there are various sources of codified information such as old cases, reports and the information on intranet and extranet, DM is mostly used for retrieving codified knowledge. However, as the codified information on DM is extensive, employees find it time consuming to navigate in this database. Furthermore, our findings suggest that employees mostly use their social network in order to retrieve information. Thus, using their social network to find the knowledge provider. Other employees might then either redirect them to DM or send them files they are looking for.

Our findings suggest that employees use either phone (Lync), email or ask the knowledge provider in person. Some of our respondents use Chatter to find information as well. Either way, our findings suggest that employees' are dependent on their social network in order to retrieve the information they are searching for.

6.0 Discussion and analysis

From our observations, interviews and documents received by Gard, we received a good understanding of how the employees use different virtual tools for collaboration and knowledge sharing. While Gard is a good example of how traditional firms adopt different platforms in order to facilitate the knowledge sharing, the implementation of such platforms can be difficult for such businesses. Furthermore, the problem statement and research questions are presented again to guide the discussion and analysis.

How can the virtual phenomenon affect collaboration and knowledge sharing in an organization?

To help answer our problem statement, three research questions have been provided:

RQ1: How can virtual platforms be used for collaboration and knowledge sharing?

RQ2: Why are these platforms used?

RQ3: What are the challenges regarding collaboration and knowledge sharing using virtual platforms?

In the following part we will analyze the most important findings of our case, and cover aspects such as knowledge sharing, collaboration and communities of practice in the light of the existing theoretical framework covered in Chapter two.

6.1 Knowledge Sharing in Practice

While there are many different platforms within the company, we got a common understanding that Email, Lync, Chatter and Document Management System are the most used forms for communication between employees. Furthermore, the platforms will be discussed in the light of the “SECI” model and knowledge strategies. In the end, a summary will be presented.

6.1.1 Document management system

The document management system is a place for employees to store and retrieve information. While this tool is not much used for collaboration, it's a place to store and capture the most important documents such as cases, emails and knowledge documents.

In the light of Nonaka and Takeuchi's SECI model (1995), data repositories such as DM can to a degree be used for internalization, externalization and combination. Internalization involves converting explicit knowledge to tacit knowledge, such as old cases, which can be used to provide new knowledge. Externalization involves converting tacit knowledge such as experiences with certain cases to an explicit form. Combination involves converting explicit knowledge to explicit knowledge, such as collecting emails to form a report or a knowledge document. However, internalization and combination through DM can be challenging as searching for documents can be difficult. Our findings suggest that DM is outdated and should be replaced by an easier system to fully capture internalization and combination of knowledge. Furthermore, to fully capture the essence of externalization, a platform such as a public blog would have made it easier for the employees to publish their personal ideas, experiences and knowledge and thus, making it visible to the whole organization. Nonetheless, a blog might be further down the line for a slow adopter such as Gard, which still face transition challenges to virtual platforms.

According to Hansen et al. (1999) the storage of files in repositories as DM, especially when it comes to knowledge documents, are good for storing codified knowledge. However, one of the main benefits of Hansen's codification approach is how one should correctly store the knowledge in terms of proper codification to a degree that knowledge can be easily accessed and used by employees in later occasions. While a lot of documents are codified and stored, it is challenging for employees to find these. Thus, Gard misses the opportunity to capture the benefits mentioned by Hansen et al. (1999). Furthermore, as the employees have their own personal folders with different cases, it could be challenging for others to know what information they possess and whether this information is up to date. Thus, this type of knowledge is not easy accessible within the organization.

However, employees use their personal network to navigate themselves on where they can find the information sought after. These are often information on older, similar cases or

information about clients that are stored on either DM or in their personal folders. As such, they use Desouza and Evaristo (2004) hybrid approach in order to retrieve coded knowledge. As the authors mentioned in their article, one of the benefits of such personalization approach is that it fosters dialogue and develops a sense of community as employees interact to gain information. It seems that in Gard, such ways of finding the right information through people makes the knowledge sharing easier and lowers the threshold to contact other colleagues.

6.1.2 Lync

Lync, also known as Skype for business, is a platform where employees can call, chat, present, share and learn through internet. It has several useful functions that can be used for collaboration and knowledge sharing. It can be used to hold virtual meetings, webinars or instant messaging. Furthermore, Lync has a function for computer screen sharing, where one employee have the opportunity to observe, as well as control another person's screen to elaborate even further.

In the light of the SECI model (Nonaka and Takeuchi, 1995), Lync is a great tool for socialization, as it can be used for social interaction between employees where they share experience and tacit knowledge through video conversations and sharing computer screen. However, our findings suggest that video conferences are not that common, because employees feel a bit uncomfortable on video, and would rather have a meeting face-to-face if it was needed. One respondent even mentioned that not using video during a conference, then he could multi-task. In addition, it was mentioned that the video frames of people was so small during a conference, so body language did not really benefit and the lack of video in conferences did not hinder them in anyway. Furthermore, Lync can be used for internalization (Nonaka and Takeuchi, 1995) through webinars, transferring organizational knowledge to individuals. However, holding a webinar on Lync loses the social learning interaction between the parts. It is harder to get participants involved and have a discussion in the moment. Discussions would be through short messages on Chatter and read and answered by the speaker, resulting only in a one way discussion.

Since Lync is mainly used for dialogues between individuals, it can be considered to lean towards a personalization strategy (Hansen et al., 1999). Knowledge that has not or cannot be

codified is transferred through online meetings, brainstorming sessions and one-on-one conversations. Lync gives the employees the opportunity to have deep discussions and to collectively able to arrive and gain deeper insight on problems they need to solve without being in the same room. It is fairly easy to get in touch with a colleague on Lync if you know who to look for. However, Lync is just a tool and the organization still need to invest heavily in building networks of people, and a directory of experts to be able to find the right person.

Furthermore, even though this was not observed in Gard, Lync has the potential to facilitate a virtual community of practice together with Chatter. Our thought is that a certain community on Chatter can e.g. use Lync as a space for a virtual workshop, making it more similar to a regular community of practice. This gives a potential of reducing cost of traveling, as well as including more colleagues from various offices.

6.1.3 Salesforce Chatter

While salesforce is originally a CRM system, we did not manage to capture customers thoughts and insights of this system. However, this was not a part of our thesis either. The interesting part of Salesforce was however the social platform *Chatter*, which is similar to a social media platform where employees can interact, post, edit and comment different topics. Our findings suggest that this platform, while being the newest one implemented, has some great potential for both collaboration and knowledge sharing.

In the framework of Nonaka and Takeuchi (1995), our findings suggest that platforms such as Chatter can be applicable for socialization, externalization, combination and internalization, as this forum gives users possibility to easily share their personal experience, ideas and explicit knowledge across the organization. Furthermore, as this platform can be used for sharing, learning and knowledge localization, *Chatter* can play an important part in the nurturing of communities.

Chatter also allows users to upload files and hotlink files from DM, and can in such way play an important part for knowledge localization. Employees have the opportunity to engage in different topics and find knowledgeable contributors, and in such way localize the knowledge similar to the hybrid approach proposed by Desouza and Evaristo (2004), and the virtual community of practice strategy proposed by Gammelgaard and Ritter (2005). Moreover,

according to Earl's (2001) school of spatial, Chatter is clearly a virtual space for employees to interact, collaborate and share knowledge.

However, for time being, Chatter has certain limitations. While there are various groups and topics within departments, these virtual communities contains many passive users and few contributors. According to Wenger et al. (2002), such communities of practice are a place for members to learn and regularly interact in order to improve skills, gain knowledge and increase the overall knowledge and collaboration. However, this way of interaction and knowledge sharing was essential before implementation of ICT, and therefore, as Wenger et al. (2002) mentioned, such communities of practice could be resistant to changes due to earlier achievement and history, meaning that technological platforms and tools could be difficult to implement. Furthermore, our data suggest that communities of practice, especially when becoming virtual, need to be nurtured by organization (Brown and Duguid, 2001; Swan et al., 2002; Thomson, 2005) rather than being spontaneous and self-organized as Wenger et al. (2002) suggested in his theory. Our findings suggest that managers need to make an effort to transit employees over to virtual platforms.

An example of one effort made by a manager is that he consciously direct his team to Chatter by making it the only available platform to retrieve this information. We also observed that one respondent consciously responded to emails by using Chatter. It is however important to notice that our findings suggest that Gard is in the earlier stage of Web 2.0 implementation, as they try to handle a transition from traditional community of practice to virtual communities of practice.

While many of our respondents mentioned that they can see the potential of *Chatter*, it is cumbersome in the overall daily use. As a consequence, the number of participants is rather low. Findings suggest that established working routines and user's computer capabilities are reasons behind low participation. Some respondents suggested that having quiz or questions on hot topics each monday, or simply having a summary at the end of each topic, could increase engagement in this social platform, and therefore strengthen the sense of a community. Since the benefits and strengths of a social platform depends on the number of participants, it is crucial for the organization to implement measures to involve more employees. The organization need to involve managers, as well as various learning activities,

to promote Chatter and its benefits to increase overall participation. Also, various learning activities need to be implemented to increase employees' computer capabilities.

While the challenges mentioned above are important to address, our findings suggest that employees find Chatter time consuming as there are already many various platforms in their daily routines. In addition, employees are used to communicate through email, and do not necessarily see the need or benefits to change. *Chatter* therefore regard as a supplement rather than a substitute. These findings coincide with Paroutis and Saleh's (2009) study on determinants of collaboration and knowledge sharing using Web 2.0 technologies. However, the determinant trust (trust of information quality and intention) mentioned by the authors did not seem to be an issue for low participation in our case. This might be related to the strong existing organizational culture within Gard.

Another interesting aspect of this new platform and the communication between employees, is the issue related to *power* of contributors. While Wenger et al. (2002) failed to address the power distribution in terms of employees and their participation, some recent research explained that *power* can reflect on participation (Roberts, 2006). Our findings suggest that while contributors do not post on chatter in order to appear powerful or knowledgeable, the power distribution might be greater when the same employees post more frequently than others. Thus, making it difficult for new contributors to become more active.

6.1.4 Summary - Knowledge Sharing in Practice

According to Hansen et. al (1999) codification strategy and focus on data repositories can be used to easily find and reuse knowledge. Our findings suggest that DM is used to archive files rather than for reuse purposes, as it is difficult to navigate through the immense amount of data. However, as some of these files are important for later occasions, employees need to use their personal network to retrieve these. Thus, a hybrid approach is observed in practice. Furthermore, DM can support internalization and combination of knowledge, however, as this system is difficult to use, the dimensions are supported to a lesser degree.

Lync, on the other hand, can support socialization to a high degree, as it enables social interaction. In addition, Lync supports internalization as it is used for webinars and other learning activities. Furthermore, Lync support personalization strategy, however we believe it has potential with Chatter to support virtual communities of practice.

In Chatter participants have the possibility to engage in various groups, topics and discussions. Such platforms can facilitate the creation and expanding of virtual communities of practice with high degree of both codified and personalization (Gammelgaard and Ritter 2005). However, Chatter has certain limitations. Since the participation is rather low, employees miss out on the opportunities that such social technologies bring. Our findings suggest that challenges regarding employees' computer capabilities and established working routines need to be addressed to increase the participation. Further, our research suggest that Chatter can support all the dimensions of the "SECI" model, especially socialization and externalization (Chatti et al. 2007). Since employees can use Chatter to easily share their experience, knowledge, various documents, this platform can be important for the overall creation of knowledge.

6.2 Virtual Collaboration

As there are many different tasks, issues and challenges that require collaborative working within Gards operating business, there are many different ways of solving those as well. Our findings shows that collaboration is an important focus area for Gard. As the company works in dynamic markets, across the globe, it is crucial to be able to respond to customer needs in an efficient way. Thus, collaboration is crucial for their business plan. Below will be a discussion on virtual collaboration in Gard by using Tapscott and Williams' (2006) four characteristics of mass collaboration. Lastly, an overall summary will be presented in the end.

6.2.1 Sharing

According to Tapscott and Williams, sharing is considered as the ability to exchange ideas, experience, knowledge, documents and other types of information within the organization. (Tapscott, Williams, 2006).

Our findings suggest that on a virtual level, internet meetings, especially with offices around the world are the most used way for collaborative working and information sharing within Gard. This collaboration mainly happens through Lync, but DM and Chatter are also used to a certain degree. Our findings suggest that Chatter, Lync and DM, if utilized correctly, can contribute to sharing of knowledge, experience and information. Chatter alone can connect members of different offices, teams and departments in order to exchange information, and therefore should be considered as an important tool for knowledge facilitation. As *Chatter* also connects people to different platforms such as DM, it is possible for employees to gain other stored data such as important emails and knowledge management documents.

Webinars, shared-screen information is an interesting way for employees to learn, evolve and adapt to new technologies. As these seminars can be recorded and shared within the organization, such ways of sharing through different platforms are extremely important in order to capture, maintain and create knowledge. Furthermore, the ability to learn-by-doing with the help of shared screen function, might help employees to adapt to new technology in way that can stimulate the overall knowledge sharing within the company.

6.2.2 Peering

Our participants mentioned that it is important to have meetings, both for organization and customers. Tapscott and Williams (2006) describes peering as the ability to rate content, create products and actively share information in order to enhance the product. Findings suggest that employees at Gard use Lync, DM and Chatter in order to enhance the product and service and make communication as efficient as possible. Thus, making it easier for employees to price insurance, evaluate risks and maintain quick input to output results. In Chatter, employees might engage in different groups, asking and answering questions, read inputs, give feedback and follow groups they find interesting. This platform demonstrates how social technologies can assemble communities with similar interests in order to collectively solve different challenges related to their daily routines (Gammelgaard and Ritter, 2005). Furthermore, users can see which groups other employees follow, and we can therefore conclude that Chatter not only allows, but also creates peer groups.

6.2.3 Openness

According to Tapscott and Williams (2006), openness is important for collaborative working. As explained earlier, openness refers to the ability to contribute freely, equally and openly. In Chatter, every employee is able to follow different groups, engage in different conversation and have equal rights to contribution.

Our findings suggest that Gard is transparent in terms of communication across geographic borders and offices. However, it is important to notice that it can be hard for employees to engage across departments since they have different work routines as well as subjects, e.g. underwriting and claims. Our findings suggest that while everyone have equal right to contribute, groups on Chatter are made by different departments with various topics. Thus, making it challenging to fully collaborate between different units. Nevertheless, our findings suggest that such platform can create greater level of transparency and increase the overall collaboration, not only internally, but also externally.

While *Chatter* is just a tool, it is important to notice that this tool can promote a more open and transparent community where everyone can contribute, regardless of country, department, or expertise they belong to (Tapscott and Williams, 2006).

6.2.5 Acting globally

The last principle of Tapscott & Williams covers the ability of connecting employees across geographic barriers in order to access new ideas and solutions. As there are 13 Gard offices in different parts of the world, it seems that the company established some of these offices to be able to respond quickly to different customer needs. Many of these offices are also strategic targets for future markets in the industry. These offices are important when it comes to collaboration in order to solve challenges. As Gards HQ is located in Arendal, Norway, it is important to have the proper tools in order to collaborate virtually and therefore save both time and travel costs. It is therefore important that experienced contributors connect to other employees in order to efficiently solve challenges that occur in various geographic areas. Lync, Chatter and DM allows the users to connect from anywhere in the world, meaning that these platforms have helped the company to “act global”. Our findings suggest that having meetings on various platforms, learning through internet, actively engaging in discussion boards are important ways of including colleagues from different countries and give them a sense of belonging. Thus, creating a strong cultural bond that can overthrow the cultural boundaries. The emergent possibilities of sharing, contributing and collaborating through Web 2.0 tools, goes far beyond culture, time and space, as Tapscott and Williams (2006) proposed.

6.2.6 Summary - Collaboration

As the company operates in 13 different offices, it is important that the employees collaborate in order to stay competitive. Technologies like Lync, DM and Chatter has made it possible for employees to have meetings with various offices and share information. *Sharing* is important for exchange of information, cases and experiences. Lync, Chatter and DM make it possible for employees to exchange these across geographic borders without physically being present. Lync is a powerful tool that connects users across the whole globe. With possibilities to have webinars and learning that can be recorded and distributed, this new way of learning goes far beyond the traditional methods of learning. Such ways of sharing and distributing, are important for capturing, maintaining and sharing knowledge.

In Chatter, employees might engage in various groups and thrive to increase their knowledge of various topics and subjects. Each employee have equal right to contribute and share their thoughts and engage in discussion, supporting the principle of *openness*. Further, our findings suggest that Chatter and Lync allows peering, as this system connects knowledge seekers with knowledge providers, creating *virtual communities of practice*.

In addition, such communities are no longer restricted by geographic barriers as members of different continents have the possibility to engage, and in such way support Tapscott and Williams' (2006) *acting global*. As it is not possible to operate in 13 different countries and collaborate traditionally, it is of high important that such tools provide a greater amount of transparency and *openness*. Thus, increasing the overall collaboration within the organization.

7.0 Conclusion

The main purpose of this thesis was to answer the problem statement “How does the virtual phenomenon affect collaboration and knowledge sharing in an organization?” Furthermore, three research questions were presented to guide the thesis. This led to the discovery of the theoretical gap between the interrelationship of virtual phenomenon, collaboration and sharing. To address this gap, theories of collaboration, knowledge and knowledge sharing were gathered. These theoretical frameworks established a fundamental groundwork to explore the theoretical gap created by the virtual phenomenon. In order to gather empirical evidence of the unit of analysis, a case study of the virtual phenomenon in Gard Assurance as context was carried out.

Interesting results were obtained from this study in regards to how the virtual phenomenon affects collaboration and knowledge sharing. The phenomenon makes it easier to freely and openly share knowledge across the organization. Furthermore, collaboration is no longer limited by time, space and geographical distances introduced by virtual collaboration. This study proposes that social technologies can support Tapscott and Williams’ (2006) characteristics of mass collaboration in virtual platforms. Virtual platforms such as Chatter and Lync can stimulate *sharing*, *peering*, *openness* and *acting globally*. Thus, increasing the overall collaboration in knowledge-intensive organizations.

Results suggest that organizations implement various systems to best support collaboration and sharing depending on their needs. As these platforms each serve different purposes, a hybrid knowledge strategy was observed. While these systems lack a tailored integration, employees navigate through various systems to perform daily routines. Furthermore, social technologies such as Chatter enable social interactions - establishing and expanding virtual communities of practice. Thus, permitting high degree of both strategies - codified and personalization. Moreover, results indicate that the separation between knowledge perspectives fades, as virtual collaboration makes it possible for both objectivist and practice-based perspectives simultaneously.

In addition, this study proposes that social technologies such as Chatter has the capabilities to support the “SECI” model throughout different dimensions of the knowledge conversion

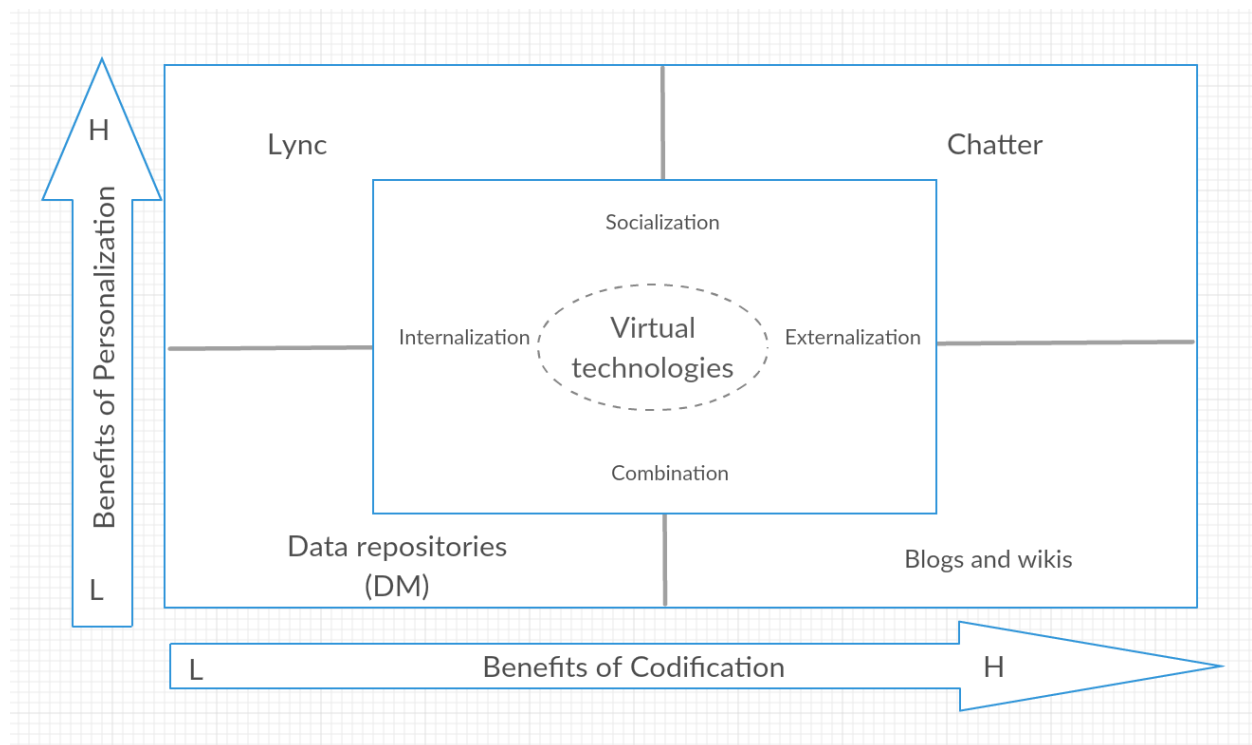
cycle. However, results show that this is not the case in practice as several systems are being used in the daily routines.

While the employees at Gard see the potential of Chatter, it is important to notice that transition to and use of social platforms brings along challenges, which affects participation. Results from this study showed that low participation was mainly due to old habits of working, such as email and user's computer capabilities. Furthermore, the study suggests that the arising virtual communities of practice in such systems need to be facilitated and nurtured by the organization.

In conclusion, our study suggests that new ways of collaboration and sharing knowledge are made possible through social technologies. With globalization and increasing customer expectation and demands, knowledge-intensive firms need to consider the implementation and challenges of virtual platforms, in order to create, facilitate, sustain and share knowledge to stay competitive.

8.0 Conceptualization

The study provided us with a deeper insight of the interrelationship of virtual phenomenon, collaboration and sharing in an organization. Interesting results led to the creation of a proposed concept based on the theoretical frameworks of which this study is based upon. This concept can perhaps provide answers in the aforementioned theoretical gap and hopefully contribute to further research.



Model 14 – Proposed concept

Starting in the middle, our findings suggested that virtual technologies could support the “SECI” model and the creation and conversion of knowledge. These findings are supported by Chatti et al. (2007). However, our findings suggest that the spiral process might be too static in regards to the virtual phenomenon. Since various virtual platforms can support multiple dimensions of the “SECI” model, we suggest that virtual technologies enables the creation and conversion of knowledge in a more sporadic way, or even simultaneously in some. Hence, the “SECI” is rotated to fit and present that various systems can support more than one dimension.

Furthermore, the model has two dimensions that represents benefits using personalization strategy on y-axis and benefits of using codification on x-axis, leading to four propositions:

1. Low Personalization, Low Codification

Data repositories such as DM has been placed in this proposition. Hansen et al. (1999) mentions that data repositories are good way to store and retrieve coded knowledge. However, our findings suggest that these systems are difficult to navigate in due to overload of data. While a lot of knowledge is codified, this can not be retrieved, and the benefits of the codification is low. Hence, the characteristics of low personalization and low codification. Furthermore, DM can support both combination and internalization. Explicit knowledge in form of old cases can form new explicit knowledge (combination). Which can further lead to internalization (an individual makes the explicit knowledge his own)

2. High Personalization, Low Codification

Systems such as Lync has been placed in the second proposition. Our findings suggest that Lync enables social interaction and dialogue between two or more participants, but is not made for storing coded knowledge. Thus, benefits from personalization strategy are high, and benefits from codification are low. Furthermore, Lync can support internalization and socialization. Lync can support learning through webinars, allowing explicit organizational knowledge to become personal tacit knowledge. In addition, Lync allows sharing of experiences through dialogues and various tools such as shared screen, supporting socialization.

3. High Personalization, High Codification

Social platforms such as Chatter has been placed in the third proposition. Such platforms can enable virtual communities of practice. Furthermore, these platforms enable social interaction as well as make it possible to capture and store knowledge. According to Gammelgaard and Ritter (2005) this hybrid strategy benefits from both personalization and codification in a degree. Furthermore, Chatter has capabilities to support all the dimensions in the SECI model (Chatti et al. 2007), but primarily socialization and externalization. Chatter support high degree of social interaction and enable sharing of personal experiences to others in a coded form.

4. Low Personalization, High Codification

Platforms such as blogs and wikis has been placed in the fourth proposition. Chatti et al. (2007) proposes that blogs and wikis can be used to share personal experiences and individual knowledge which others can discuss and comment to an extent. However, as knowledge shared via blog and wikis is not a direct communication between the contributor and the seeker, the benefits from personalization strategy is low (Hansen et al. 1999). Thus, the benefits from personalization is low and codification is high.

Finally, the model seeks to provide an understanding of how an organization have an overarching strategy, involving interrelation between multiple systems, the “SECI” model and knowledge strategies models, creating an overview of the importance and benefits of each system.

9.0 Reflections

Research into interdisciplinary subjects was an endeavour and was quite challenging for us. In this study, we had to explore the virtual phenomenon in the light of collaboration and knowledge sharing, which created an ambiguous theoretical gap to address. Since knowledge and knowledge sharing are essential in the extensive knowledge management literature, a larger part of the theory chapter was dedicated to these. However, we believe that theoretical frameworks on collaboration was sufficient. Further, this approach on theoretical frameworks laid the groundwork for further discussions in this thesis.

The case study was a helpful method to address such difficult subject. We believe that the qualitative case study methodology has provided interesting observations and experiences. Since our thesis was a single case study, we received a deep insight and understanding of the virtual phenomenon and its relationship with knowledge sharing and collaboration in an organization. Further, this study did not necessarily seek to generalize the empirical findings to other industries. However, if the purpose was to generalize, it would have been more beneficial to explore multiple organizations in different business areas.

We believe this study shed new light on established theoretical frameworks within knowledge, knowledge sharing and collaboration. Furthermore, we believe this study reduces the theoretical gap between the virtual phenomenon and the theoretical frameworks, revealing vast opportunities. Inorganization.” To addition, the study has shed light on practical implications of social technologies. It can be valuable to know that there is no best practice and an organization might implement various platforms to best support their strategies.

In addition, this study only scratches the surface regarding the virtual phenomenon as it focus exclusively on two essential fields within knowledge management. However, further studies could address other theoretical frameworks, such as innovation, change management, learning etc., to contribute to a broader understanding of the phenomenon. Based on this, propositions for further studies will be presented.

Proposition 1

“How can virtual collaboration support/stimulate creativity and innovation in an organization”

Proposition 2

“How can change management prepare for a virtual change?”

Proposition 3

“How can an organization successfully implement social technologies?”

Proposition 4

“How can Virtual Reality be implemented in an organization for learning purposes?”

We sincerely hope that further research will continue in this exciting, yet ambiguous field, to further understand the direction the world is moving towards.

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12.0 Appendix – Semi Structured Interview Guide

Interview guide

Theme:	Introduction - <i>Short presentation, interview duration, ensure anonymity, the use of recorder and handle of data</i>	<ul style="list-style-type: none"> • Can you please tell me a bit about yourself? • Can you please tell me about your job? • <i>How many years have you been an employee at Gard?</i>
1	a. Knowledge Sharing <i>Remember to emphasize on examples</i>	<ul style="list-style-type: none"> • How important is knowledge and knowledge sharing to you? • How do you prefer to share knowledge and interact with other employees? • Can you please give an example where you required rapid information gathering due to short deadlines? • Do this type of work limit other ways of gathering information? • What kind of knowledge do you share? • Have you experienced difficulties when trying to share knowledge? <i>Why? Why not? Examples</i> • Who do you share your knowledge with? • How did you share your knowledge prior to the launch of the social platform? • Has this platform changed the way you solve challenges? Examples Easier or harder, please explain, examples. • How do others reach you when they need your assistance? • How do you interact with employees across geographic borders? <i>-Why so /Why not?</i> <p>How do you find the right person?</p>
1	b. Social Technologies <i>Remember to emphasize on examples</i>	<ul style="list-style-type: none"> • How do you perceive the degree of online participation on Gard's social platform? <ul style="list-style-type: none"> • How does Gard facilitate knowledge sharing in the company? <i>-Environment?</i> <i>-Culture?</i> • In what context do you participate? • What would increase online participation? • Why do you think people should participate? * Do people voluntary use Gard's social platforms even when there is not a specific question, challenge or task to be done?
	c. Virtual collaboration <i>Remember to emphasize on examples</i>	<p>* Can you please describe a recent challenge where you needed some kind of information gathering in order to resolve the task?</p> <ul style="list-style-type: none"> • How did you find necessary information to solve that task? <i>Where?</i> (C vs. P) • Do you prefer databases or direct/indirect communication overall? How so? Examples • What communication tools do you think are most reliable when you interact with other employees? • What is most important when it comes to virtual collaboration between employees? • Which factors can bring difficulties in a virtual collaboration? <p>Examples? Do you feel that virtual collaboration has created any value? Customers, bottom line etc.</p>
4	Ending	<ul style="list-style-type: none"> • Are there any questions that you might feel we should have asked? • Any questions for us?