

Social capital as a source for innovation

- An explanatory case study of two companies within the oil and gas industry



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Abstract

The thesis will investigate how social capital is a source for innovation and identify what forms of social capital more likely to enhance a company's ability to innovate. With focus on the process of how employees and the management engage in the innovation processes, our emphasis is to determine how social capital is affecting the process and how it could become an asset positively related to innovation. The aim for this thesis is to reflect the need to consider and include different forms of social capital when deciding on innovation strategies and when managing the innovation process.

Accordingly a qualitative approach has been applied, using an explanatory case study, based on semi-structured interviews with two companies in Norway (Depro AS and iQubeS AS). The companies were carefully selected on the basis of their innovative reputation in the Stavanger region, and their relation to the oil & gas sector which we characterize to be an interesting setting to explore the effect of social capital on innovation.

In Depro AS we found that trust in the organization, and towards the competition is essential for their innovation process. We found that they operate in a closely linked community of operators, service providers and suppliers to develop new innovative solutions. Moreover Depro had a strong focus on community building, both in day to day operations, and when hiring new personnel. In iQubeS AS we found evidence for different forms of social capital, and a vital regional norm built on trust and shared experience. The combination of the forms of social capital aided the innovation process of the 'information Quality System' (iQS), and accordingly in establishing the iQubeS organization. The evidence for the significance of social capital was primarily apparent through the heavily networked founders and their trustful collaboration toward each other and toward external actors. The close tie between the founders prospered a creative collaboration with enthusiasm influencing the organizational culture, and is now an important asset in order to successfully expand the business.

Our findings illustrates that both companies profit from a closed homogenous and trustful environment in the Stavanger region and the industry they operate within. The high level of trust in the region between supplier and customers has contributed to a secure and prosperous environment for innovations. However, we argue that both companies could benefit from exploiting their use of social capital and explore networks outside their immediate region to access more heterogeneous knowledge and diverse innovation networks.

Keywords: *Social capital, Innovation, Oil & gas sector in Norway, Trust, Norms, Networks.*

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Enjoy the reading.

Copenhagen, August 17th, 2012

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Chapter 1: Introduction to the topic

Entrepreneurship and Innovation has received increased attention both in the political and business sphere, and it has become an important factor in determining a nation's or company's competitive advantage. This has been supported by researchers who have found evidence for a strong correlation between a company's ability to produce new products and their market performance (Bessant, Pavitt and Tidd, 2005).

When searching the literature for success-factors and initiatives for innovation we identified the potential for social capital as an important asset in the ability to see connections, spot opportunities and to take advantage of them. Recent studies claim that innovation is no longer merely explained by combinations of tangible forms of capital, but also by the combinations of intangible forms like social capital. (Landry, Amara and Lamari, 2002). Similarly Nahapiet and Ghoshal (1998) argued that social capital is central to the understanding of institutional dynamics, innovation, and value creation. In our thesis we want to explore the underlying factors that can help us explain why the case companies are successful in their innovation processes by focusing on social capital theories.

The overall aim is to recognize the social capital components leading to a new or improved product by studying the innovation processes of the selected case-companies. For decades innovation has been considered a discrete event resulting from knowledge developed by isolated researchers, nowadays we are conscious of the many complex and various processes necessary to reach the final product or service. Tidd et al., (2005) e.g. regarded innovation as a generic activity and as a core business within an organization associated with renewal, survival and growth. In other words, innovation is about continuous improvements and essential in developing a long-term competitive advantage. Moreover Tidd et al., (2005) argued organization's tended to see innovations in terms of major 'breakthroughs' and ignoring the significant potential of incremental innovation (continuous improvement). Without much emphasize on the degree of an innovation, the thesis focus on innovation as combining experience, ideas, knowledge, technologies and platforms in order to create new or substantially improved products, services or software.

Innovation and competitive advantage

Innovation has become the new buzzword for businesses, and it is often being used to describe the rise or downfall of companies. Companies invest large amounts of money and resources into initiatives to create an innovative environment to enhance their ability to develop new solutions or new products. “Until the 1990s, countries strongly influenced by German and Japanese traditions persisted in investing heavily in R&D in established firms and technologies, whilst the US system has since been more effective in generating resources to exploit radically new opportunities in IT and biotechnology” (Tidd et al., 2005, p. 142).

In relation to the investments in R&D, several studies have emphasized the relatively low correlation of the input and the innovation output. In a study of this paradox of high R&D input and low innovation output in Sweden, Bitard, Edquist, Hommen and Rickne (2008) found that the investments in R&D in Sweden were large, but the ‘pay-off’ (in terms of e.g., growth and competitiveness) was not particularly impressive. The study reflects the complexity of measuring the input vs. the output and an increasing focus on the return of the invested capital (ROIC) in R&D. Similarly, and even more complex is the initiatives outside the regular R&D activities such as team-building exercises for the employees in order to increase job satisfaction and nurture the organizational culture and identity. The concept of social capital could reflect such initiatives that enhance social interaction internally and externally, consequently the paper will review how the concept affects the environment and potentially increase company’s innovation capabilities.

Competitive advantage can come from the size, sector, or possession of in-imitable assets, however the pattern is increasingly coming to favour those organizations which can mobilize knowledge and technological skills and experience to create novelty in their offerings and the ways in which they create and deliver those offerings (Tidd et al., 2005). Similarly Dyer and Singh (1998) emphasized the relational view of the firm’s competitive advantage in contrast to the structural or the resource based views. The structural view is built on the industry favorable structural characteristics (e.g. relative bargaining power, barriers to entry, and so on), and the resource based view on the firm’s heterogeneity and position in the market (e.g. rare or in-imitable resources). While the relational view argues that distinctive interfirm linkages (e.g. innovation networks) are the source of relational returns and a competitive advantage (Dyer and Singh, 1998).

Innovation and social capital

The link to innovation and social capital is evident in the relational view of competitive advantage, and how social interaction promotes trusting relationships and collaboration. This could be interactions among actors, between business units, or interfirm linkages that are positively associated with the level of the perceived trustworthiness among the parts. Several studies have emphasized the importance of social capital as a determinant of innovation (Dakhli and De Clercq, 2004; McFadyen and Canella, 2004; Akcomak and Weel, 2009). “It is now assumed that the acquisition of knowledge does not only depend on market and the hierarchy, but also on the social capital accumulated within regions through network of interaction and learning” (Landry et al., p.3, 2002). Moreover researchers have found that social capital encourage cooperative behavior, thereby facilitating the development of new forms of association and innovative organization (Fukuyama, 1995; Jacobs, 1965; Putnam, 1993; cited in Nahapiet and Ghoshal, 1998).

The concept of social capital has evolved from sociology into political science and economics in order to explain particular events occurring in the respective fields. The concept was initially developed on an individual level to explain societal phenomena like e.g. reproduction of inequalities (Bourdieu, 1986), norms and social action (Coleman, 1988) and civic engagement significance on a community’s prosperity (Putnam, 1995).

Social capital is an abstract concept that can be instituted in many forms. Social capital could be found in the solidarity and recognition between actors, or how the actor is part of a community constituted of norms and social trust. Most scholars agree that social capital is something that occurs within groups of people, and is associated with exchange of something among them. Hence, over time these exchanges become valuable to the actors in these networks. “The core intuition guiding social capital research is that the goodwill that others have toward us is a valuable resource”(Adler and Kwon, 2002, p18). The goodwill functions as a currency in transactions without money, creating unspecified obligations returned sometime in the future. Accordingly the goodwill could influence the interaction in regard of information flow, opportunities, trust, and a wide range of other forms of social interactions.

The research question and the aim of this study

This study will investigate how social capital is a source for innovation. Our focus is to identify what forms of social capital more likely to enhance an organization's ability to develop innovative products or solutions. Our study will emphasize the processes of how the employees and management go about their innovation process, and to identify the determining factors that contribute to successful innovations. Based on this we have formulated the research question for our thesis:

How is social capital a source for innovation and how do companies take advantage of its potential?

The aim of this thesis is to; first, identify the role of social capital as a source of innovation outside the traditional R&D process; second, examine if some actors or employees are more equipped with social capital and hence affect the innovation process; third, recommend actions companies can take to implement the use of social capital in their innovation process and to further develop the social capital as a source for innovation in the company.

The case companies

We have conducted a case study of two separate organizations, namely iQubeS AS and Depro AS. The companies were selected on the basis of their innovative reputation in the Stavanger region, and their relation to the oil & gas sector.

iQubeS AS

iQubeS is a recent start-up who offers a lean process-oriented management system named 'information Quality System' (iQS) among other IT-services. The iQS is an innovative system that consist of a unique combination of various inputs (50 years of industry experience, a large network, distinctive flexibility, strict quality control and best practice) into one system that offers complete information flow and integration among all the sub-systems.

Depro AS

Depro is an established company designing, engineering, testing and manufacturing specialized tools and mechanical components for both top site (on the platform), and subsea (at the sea bed) application. They delivered advanced custom made products, with the aim of making it better, cheaper and simpler than what is currently on the market.

Scope and Delimitations

The case study is based on two companies based in the Stavanger region who both cater to the oil and gas industry. The analysis is delaminated to one industry to get a deeper insight into how this industry operates in this region. The reason for choosing this industry is because of the rapid regional growth, to become an international benchmark. The industry constantly experience new and complicated problems and have to solve them within a very rigid regulatory system were the public rarely hear of any of the innovations and solutions unless something goes wrong. This also applies to the process leading to these innovations which is our research aim, i.e. to contribute to a superficial understanding of the overall process by studying one particular input (social capital) in the innovation process within a local innovation system part of an international industry.

Note that this thesis only investigates two companies, and not the industry as a whole, and we understand that narrowing the field of study to one industry and one region may make it difficult to apply findings to other industries or regions. However, we hope to provide the managers and decisions makers with insights to the underlying factors of innovation.

Thesis outline

Chapter 1, introducing the field of interest

The thesis starts with an introduction to the topic of innovation and social capital, and how we want to link this in our research question. The research question builds on the framework of the thesis structure: restricting the literature, structuring the findings and analysis, and eventually leading to the final conclusions and recommendations.

Chapter 2, understanding the research field

Our objective is to evaluate relevant theories and identify social capital as an asset and a source of innovation. We will focus on scholars developing the concept in order to understand its roots and identify its forms, furthermore present researchers applying the concept in the economic sphere and analyze how it is convertible into enhanced innovative performance

Chapter 3, introducing the research setting

In this chapter we want to provide some background information about the research setting for this thesis necessary to contextualize the cases discussed. We will provide some input into the historic development of the industry in the region, as this will aid the reader in understanding the findings which is strongly interrelated with the development in the region.

Chapter 4, presenting the research methods

This chapter will outline the methodology and research design chosen for this study, and then critically reflect upon our choices.

Chapter 5, presenting the findings and analysis

This chapter will present and analyze the findings in the two cases, Depro and then iQubeS. As the two cases differ, the two sections will not follow the same format, and we will be using theory from the literature review and make additions when necessary.

Chapter 6, drawing conclusions

In this chapter we present separate conclusions from the cases studies. The intention of this thesis was to not to compare the two case companies, however as the thesis progressed we found that there was some correlation findings that we would like to present in this section.

Chapter 7, giving recommendations

In the final chapter we present separate actions the two companies can implement to better utilize the available social capital and further develop it as a resource within and outside the organization. The recommendations reflect the need of being aware of its dynamic structure, and its significance on the process when managing the innovation process.

Chapter 2: Literature review – Social capital in relation to innovation

The purpose of this chapter is to introduce the concept of social capital and form a theoretical backdrop for our case study. The chapter will present the central authors in defining social capital, and discuss the theory's implications and its relation to innovation.

Social capital is a comprehensive concept focusing on different aspects of social interaction between actors, and how the interactions offer potential resources through these relationships. Moreover the concept emphasizes how relationships promote exchanges that would not likely occur without the connection, and how actors gain 'credit' from other actors through goodwill and favors. The notion 'there is no such thing as a free lunch' represents a commonly held view that in many ways describe the concept of social capital. Many exchanges in the society and in the business world is not immediately returned, resulting in exchanges that brings with it expectations about future obligations and goodwill. However, unlike other forms of capital, social capital is a result of interactions and is not owned by a single part. Nahapiet and Ghoshal (1998) e.g. found that social capital increases the efficiency for action and encourage cooperative behavior, accordingly arguing that the concept is central to the understanding of institutional dynamics, innovation and value creation. *"Recent research has applied this concept to a broader range of social phenomena, including relations inside and outside the family (Coleman, 1988), relations within and beyond the firm (Burt, 1992), the organization-market interface (Baker, 1990), and public life in contemporary societies (Putnam, 1993, 1995)"* (Tsai and Ghoshal, 1998, p. 464).

From another perspective the social capital theory has also been subjected for much criticism of being poorly defined and conceptualized (Fukuyama, 1995; Portes, 2000; Adler and Kwon, 2002). Isham, Kelly and Ramaswamy (2002) argued (from an economist's perspective) that social capital like human capital before is a concept with much appeal and promise, but full of definitional and operational vagueness. In order to deal with these challenges the review will emphasize articles by the main contributors; Bourdieu (1986), Coleman (1988), Granovetter (1973), Burt (1992, 2000) and Putnam (1993, 1995, 2004). The authors are central in the development of the concept and are covering different aspects of the social capital concept that we consider essential to get a proper understanding of the theory. Moreover to give a balanced presentation of the concept we will also include research articles and literature reviews in the field, covering e.g. Nahapiet and Ghoshal (1998), Portes (1998), and Adler and Kwon (2002) among others.

Defining social capital

Bourdieu

The accumulation and expenditure of social capital have many different forms, and therefore the theory of social capital have developed in different areas. The French sociologists Pierre Bourdieu expanded the concept of social capital in the 1970s and early 1980s, applying the term initially in his 'Outline of a Theory of Practice' (1972) which dealt with how human action should be understood. Later Bourdieu related the concept with his ideas of theoretical class giving an extensive analysis of social capital in 'The Forms of Capital' (1986) having studied the class distinction prominent in France. Since Bourdieu there have been numerous scholars who have developed the concept further to explain how the actors in their respective field of study accumulate social capital, and how it can be transformed or converted into other forms of capital.

"The aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition – or in other words, to membership a group"

Bourdieu 1986, p.248

Bourdieu analyzed the construction of social networks, and how the actors were able to maintain their position in society to find evidence of what he called the games of society. His findings indicated that a person's outcome is limited in coherence with the class he or she is born into.

Bourdieu (1986) argued that in the games of society characterized by distinctive social classes, the economic game offered unequal chances to change one's social status and therefore reproducing inequalities. In order to explain this phenomenon he use the game of roulette which holds the opportunity of winning equally of all participants independent on background or social status in contrast to the games of society which he argued to be pre-determined by social class.

"The structure of the distribution of the different types and subtypes of capital at a given moment in time represent the immanent structure of the social world" (Bourdieu 1986, p.15). Bourdieu (1986) claimed it was impossible to account for the structure and functioning of the social world unless one reintroduces capital in all its forms, and not solely in the one form recognized by 'self-interested' economic theory. Furthermore he noted that even priceless

things have their price, and the difficulty of converting practices and certain objects into money is only due to the fact that the conversion is refused for the very intention that produces them, which is the denial of the economy. Depending on the field in which it functions, and the cost of transformations, capital can present itself in three fundamental guises. Bourdieu (1986) distinguished these guises as economic capital, cultural capital and social capital. He described economic capital as tangible and convertible into money, cultural capital as non-financial social assets that could be educational or intellectual, and might promote social mobility beyond economic means. More interestingly social capital as “made up of social obligations (‘connections’), which is convertible, in certain conditions, into economic capital and may be institutionalized in the form of a title of nobility” (Bourdieu 1986, p.243).

Bourdieu’s characterization of social capital is relevant for our study in terms of how these obligations are convertible into a trustworthy and innovative-friendly environment. One feature of social capital compared to for example economic capital is the lack of transparency, the exchange and accumulation of social capital occurs in many different settings, and the nature of it means that there is no specific currency that can be accounted for. “*Bourdieu (1979, 1980) explained the transactions involving social capital to be characterized by unspecified obligations, uncertain time horizons, and the possible violation of reciprocity expectations. But, by their very lack of clarity, these transactions can help disguise what otherwise would be plain market exchanges*” (cited in Portes, 1998, p.4).

Coleman

James S. Coleman introduced his thoughts on the concept of social capital in his paper “Social capital in the Creation of Human Capital” (1988). His concept is relatively similar to the thoughts of Bourdieu, however Coleman discusses social capital as an explanation for social action, while investigating high school dropouts paralleling the concepts of financial capital, physical capital, and human capital, embodied in relations among persons.

“Social capital is defined by its function. It is not a single entity but a variety of different entities having two characteristics in common: They all consist of some aspects of social structure, and they facilitate certain actions of individuals who are within the structure”

Coleman 1988, p.98

The definition reflects the complexity of the concept introducing the concept’s dependency of some sort of social structure, and how a group of actors get some sort of social identity between them facilitating norms and certain behavior. A single actor who holds physical capital in the form of for example carpenters’ tools is able to produce value by making a chair. While an actor holding social capital will not be able to generate anything of value without interacting with other actors.

Coleman (1988) emphasized both the sociological view and the economical view of social capital. He argued that sociologists regarded the actor as socialized and action as governed by social norms, rules, and obligations. While the economists saw the actor as having goals independently arrived at, as acting independently, and as wholly self-interested. The economic principal virtue lies in having a principle of action, which is maximizing utility.

In order to explain certain attributes of the social structure Coleman (1988) presents several examples where social capital is used in its different forms. Mutual for these examples is that the all the forms of social capital is very intangible, and lack transparency for outsiders. One example of the closed community of the Jewish wholesale diamond market in New York City tells:

“Observation of the wholesale diamond market indicates that these close ties, through family, community, and religious affiliation, provide the insurance that is necessary to facilitate the transactions in the market (...). The strength of these ties makes possible transactions in which trustworthiness is taken for granted and trade can occur with ease. In the absence of

these ties, elaborate and expensive bonding and insurance devices would be necessary – or else the transactions could not take place” (Coleman 1988, p.99).

Coleman (1988) was focusing on the social structural conditions in analyzing the effect of the lack of social capital available to dropouts from high school by examining three forms of social capital: obligations and expectations, information channels, and social norms.

Obligations and expectations

Obligations and expectations, is understood as people doing something for others, this results in people owing each other, and an expectation and obligation of repayment of the favour, or service provided is created. A simple example is if you help a friend moving in to a new house, you expect him or her to help you when you are moving. “This form of social capital depends on two elements: trustworthiness of the social environment, which means that obligations will be repaid, and the actual extent of obligations held” (Colman, 1988, p102). The trustworthiness of a community is linked to how closely integrate the community is and how well the actors in the community know each other. Trust is one of the key components of social capital and in societies with little social capital usually also lacks trust. In ‘Making Democracy Work’ (1993) Putnam regards trust as a source of social capital that sustains economic dynamism and governmental performance. Nahapiet and Ghoshal (1998) regard trust as the manifestation of its relational dimension, presenting findings of studies among knowledge-intensive emphasizing the importance of strong personal and team relationships, high levels of personal trust, and norm-based control.

Information channels

Information can give actors or companies and advantage in a society. Actors obtain information from friends and social relations, as it is quicker and more efficient than finding the information themselves, allowing a single actor to be up to date on a wide range of topics, with the basis of information obtained by other actors in their network. Burt (2000) further examines this form of social capital, how networks structures and positions in the network provide an actor with information and advantages over the other actors in the network.

Social norms

“When a norm exists and is effective, it constitutes a powerful, though sometimes fragile form of social capital”(Coleman, 1988, p104). Social norms work as guide in what is allowed in a society and what is not allowed, norms reward and sanction behavior by actors within a social environment. Norms also facilitates for more collective action, as the collective governs

norms, it is more likely that norms that support the interest of the collective are enforced, and Colman (1988) views this as an important form of social capital. However, as the collective enforces the norms, that inspire certain actions, it also limited, or constrains other types of actions. In this setting it could be difficult for an entrepreneur, or an individual to pursue an opportunity that would benefit only the individual. Coleman (1988) does briefly discuss the implications regarding the issue with norms limiting the aspirations of individuals, however it might offer some explanation to why many entrepreneurs more successful on their own than within large companies.

Closure

Coleman (1988) also introduces what he calls the closure argument. In an open network, all the actors do not know each other, making it impossible to sanction actors who violate norms in the network. “As reputation cannot arise in an open structure, and collective sanctions that would ensure trustworthiness cannot be applied” (Coleman 1988, p107-108). His argument is that if actors do not know each other, they will not be able to join forces and enforce the norms. This is however somewhat in conflict with his other argument that norms prevent crime, as one does not have to know everyone in one's society to agree that crime is a problem in society, and criminals should be excluded. However the closure argument is very important in creating an environment where the actors trust one another, and share the same norms. Similarly in community or in an organization with a closed network, it is easier to build trust within the network; conversely it could also impose barriers for heterogeneous collaborations outside the network. However this will be discussed later by Burt (2000), and applied in our findings and discussion.

Granovetter

In 'The Strength of Weak Ties' (1973) Mark Granovetter target a fundamental weakness of current sociological theory which he argued to fail to relate micro-level interactions to macro-level patterns. Research on macro-level sociological processes and sociology of small groups are not bridged well. He is not using the term social capital, but we argue that his theory of information flow in social networks is reflecting an important fundament in the development of social capital theory. Moreover Granovetter (1973) argued that in the analysis of processes in interpersonal networks provide the most fruitful micro-macro bridge (an indirect tie between two parties that requires n intervening parties). It is through these networks that small-scale interaction becomes translated into large-scale patterns, and that these in turn, feed back into small groups.

Granovetter envisioned "that the personal experience of individuals is closely bound up with larger-scale aspects of social structure, well beyond the purview or control of particular individuals" (Granovetter 1973, p.1377). Granovetter (1973) defined the strength of a tie as a: "combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and the reciprocal services which characterize the tie"(p.1376).

In social network theory, social relations are viewed in terms of nodes and ties. Nodes are the individual actors within the networks, and ties are the relationships between the actors. In Granovetter's (1973) view, a similar combination of strong and weak bonds holds the members of a society together. He claimed that the more local bridges in a community and greater their degree, the more cohesive and collaborate the community is. In the study of diffusion of weak ties, bridges play an essential role. Strong ties typically exist in the cliques (set of nodes closely connected), and weak ties bridge these cliques. The significance of weak ties would be that those that are local bridges create more and shorter paths. In his research Granovetter (1973) studied actors who had recently changed jobs, and found that indirect influences outside the circle of family and close friends could be in great advantage in landing a new job. Because those we are weakly linked to (class-mates/colleagues) moves in different circle, and is therefore subject to different information channels. Granovetter speculated that the use of weak ties plays an important role in diffusing information and influence, providing opportunities for mobility, and helping the community to function (Lin, Ensel and Vaughn, 1981). However, Vaughn et al., (1981) argued that Granovetter presentation was too simple and failed to explain about the relationship between the contact and destination.

Burt

Burt (1992) built on Granovetter's (1973) insight by developing the concept of 'structural holes'. Burt (1992) argued that an actor brings three kinds of capital to the competitive arena, namely financial capital (cash), human capital (natural qualities) and social capital (relations with other actors). "You have friends, colleagues, and more general contacts through whom you receive opportunities to use your financial and human capital" (Burt 1992, p. 9). By opportunities he refers to examples like job promotions, participation in significant projects, influential access to important decisions and so on.

Like Bourdieu's perception, Burt has also an instrumental view, but in his case social capital is based on the relative paucity of network ties rather than on their density (Portes 1998). In 'The Network Structures of Social Capital' (2000) Burt reviewed the social capital theory and argued that research and theory should focus more on the network mechanism responsible for social capital effects. "The goal is to determine the network structures that are social capital" (Burt, 2000, p. 346).

Burt (2000) discusses the concept of social capital in networks structures, where his focus is on senior managers and organisations, which he argued to provide the network structures that are social capital. He investigates why managers get a higher return from their network than others. He argues that society is a market place where people and organisations exchange a wide variety of goods, services, and information. "Holding a certain position in the structure of these exchanges can be an asset in its own right" (Burt, 2000, p347). His argument is that social capital is found in the structure of networks, and not only in the interaction among actors. He builds on Coleman's argument, of people who are better connected enjoy higher returns (Burt, 2000). However the connections alone do not create value, he focuses "on the specific network mechanisms responsible for social capital" (Burt, 2000, p346). He builds on Granovetter's discussion on strong and weak ties, and how the weaker connections facilitate holes in the social structure, or network. Burt introduces the theory of structural holes as social capital. "The argument describes social capital as a function of brokerage opportunities" (Burt, 2000, p 353). Burt uses examples of employees who advance faster in organisations because of their position, or connection in the firm's social network. He explains this by the actor's ability to function as brokers in these holes, and use them to their advantage. "Structural holes separates nonredundant source of info, sources that are more additive than overlapping" (Burt, p.353).

Burt (2000) also discusses some personality traits of actors who are more likely to become brokers in a network. As actors who are more entrepreneurial oriented are more likely to be surrounded by a large sparse network, with structural holes that can be exploited. These people are more concerned about change; however, at higher levels there is little evidence of these personality differences. Burt (2000) refers to a study by Mehra, et al., (2000) that finds that middle and top managers are able to build networks that span over structural holes, regardless of their personality traits.

Actors will only have access to the information that is available within the network, and will struggle to trust information that is received from outside the network. The closing of networks may help to explain why some people or organisations fail to understand what is changing in the markets, as they only have access, or allow access to information that is already available in their network. However, some actors seem to be able to expand beyond their natural network, and gain access to other groups. Burt's argument is that actors who have networks that span over these structural holes have a competitive advantage. These holes also gives actors an increased opportunity for receiving information as these holes often are filled with information, actors who have networks that span across these holes have a better potential to prosper.

Burt (2000) for example emphasized that the human capital explanation of inequality is that the people who do better are more intelligent, skilled and attractive. Similarly he argued that the social capital metaphor is that people who do better are somehow better connected. So there is a point of general agreement from which to begin a discussion of social capital. The cited perspectives on social capital are diverse in origin and style of accompanying evidence, but they agree on a social capital metaphor in which social structure is a kind of capital that can create for certain individuals or groups a competitive advantage in pursuing their ends. "Better connected people enjoy higher returns" (Burt, 2000 p.348).

Putnam

Putnam's book 'Making Democracy Work: Civic Traditions in Modern Italy' (1993) was his first work in the area of social capital analyzing the evidence of institutional performance and levels of civic engagement in the north and south of Italy. His emphasis was on trust as an essential component of social capital arguing that every transaction between actors has an element of trust. Further, he explained how social norms and network increase with use and diminish with disuse, which results in the creation and destruction of social capital to be marked by virtuous and vicious circles. Another important aspect Putnam present is that social capital is not the private property of any of the persons who benefit from it, and like all public goods, social capital tended to be undervalued. This indicated that social capital, unlike other forms of capital, must often be produced as a by-product of other social activities.

Putnam built upon his findings about social capital and released a critical review of the America's decline in social capital in his article 'Bowling Alone' in 1995, where he stressed the implications that could be caused by this. Putnam defined social capital as:

"By analogy with notions of physical capital and human capital – tools and training that enhance individual productivity – "social capital" refers to features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit."

Putnam 1995, p.136

Putnam (1995) focused on social networks and especially voluntary groups, which he argued to be a pointer for the community's stock of social capital, and in this article, the nation's social capital. Putnam (1995) emphasized that civil engagement and social capital is crucial to have a strong democracy. Putnam discusses the decrease in voter turnout, public meeting attendance, serving on committees and working with political parties. By reviewing Americans civic engagement Putnam argued that the contemporary urbanities now follow a path of less civic engagement and that the collective stock of social capital is so dangerously eroded that it is verge of depletion.

In Democracies in Flux (2004) Putnam and Goss emphasized that the development of social capital takes place in the daily life through interactions between people. According to Putnam, the accumulation of social capital may satisfy social needs, lead to overall improvement of happiness, termed subjective well-being and "affect the health of our democracies, our

communities, and ourselves” (Putnam and Goss, 2004, p. 5). Putnam and Goss (2004) emphasize the coherence between social capital and happiness, claiming that social capital may actually be more important to human well-being than material goods. Moreover they illustrate the essence behind social capital which is that networks have value, first of all, for the people who are in them. In the language of microeconomics, networks have private returns in e.g. finding a job. Social capital could simultaneously be a private and public good and social networks create value, both individual and collective because we can “invest” in networking (Putnam and Goss 2004).

Discussing the perspectives and levels of social capital

Based on our research question we will discuss the different forms of social capital and their potential outcomes. The different theories were developed from different perspectives and levels. We want to investigate how social capital in a community (societal) or within an organization (individual and organizational) affects the innovative behavior.

Individual social capital

Both Bourdieu (1986) and Coleman (1988,) analyzed social capital in the individual’s relationships with other individuals within a network focusing on the structural aspect of the network and how it affected the relations. Coleman (1988) e.g. highlighted the diversity between social capital and human capital, arguing that it was relational, embedded in social structure, and had public good characteristics. *“Unlike other forms of capital, social capital inheres in the structure of relations between actors and among actors”*(Coleman 1988, p.98). The structure of relations could help establish obligations between social actors, create a trustworthy social environment, open channels for information, and set norms and impose sanctions on forms of social behaviors (Coleman, 1988). What Coleman describes is in many ways an appropriate environment for innovation networks to prosper.

Granovetter (1973) emphasized on the amount and strength of ties in order to refer to the power of indirect influence in searching for a new job. Burt (1992) built on Granovetter, however he analyzed the network structures and argued that the advantage is in the way you are connected (the position in the network). Similarly Bourdieu’s (1986) concept of social capital regards the individuals’ social relationships and their social position in the society, emphasizing social capital as a resource with a negative impact on equality and the society. Moreover Bourdieu argued the social world as accumulated history, and not to be reduced to a discontinuous series of mechanical interaction between agents. In the context of innovation,

Bourdieu's view is appealing in terms of the importance of 'status' and how the position in the network/community could result in either restrictions or potential benefits through increased influence and access to industry related knowledge.

Portes (1998) argued that the greatest theoretical promise of social capital is at the individual level, exemplified by the analyses of Bourdieu and Coleman. *"At the individual level, the processes alluded to by the concept cut both ways. Social ties can bring about greater control over wayward behavior and provide privileged access to resources; they can also restrict individual freedoms and bar outsiders from gaining access to the same resources through particularistic preferences"* (Portes, 1998, p.21).

Organizational social capital

On an organizational level Nahapiet and Ghoshal (1998) presented a theoretical model of how social capital may facilitate value creation by firms. Building on Moran and Ghoshal's (1996) formulation of value creation as arising from the combination and exchange of resources, Nahapiet and Ghoshal (1998) identified three dimensions of social capital that facilitated the combination and exchange of resources within firms; the structural, relational, and cognitive dimension.

Tsai and Ghoshal (1998) applied the dimensions and analyzed relationship both among the structural, relational and the cognitive dimensions of social capital. Viewing the organizational value creation through product innovations and the study indicated that the structural dimension (social interaction ties) was the foundation of the process. Moreover they found evidence for the argument that social capital facilitated value creation and *"we suggested and demonstrated that each dimension of social capital reinforced the creation of the other dimensions"* (Tsai and Ghoshal, 1998 p.473).

Tsai and Ghoshal (1998) provided empirical support for Nahapiet and Ghoshal's (1998) broad framework relating social capital to value creation in the organizations. "In addition to offering these substantive findings, this study has, we hope, also demonstrated the value of using network analysis in innovation research and strengthened the importance of network theory and its usefulness for furthering understanding of organizational phenomena" Tsai and Ghoshal, 1998 p.473).

The structural dimension

In process of distinguishing between the structural and relational dimension Nahapiet and Ghoshal (1998) draw upon Granovetter's (1992 cited in Tsai and Ghoshal, 1998) discussion of structural and relational embeddedness and Burt's "Structural Holes" (1992). "Structural embeddedness concerns the properties of the social system and of the network of relations as a whole. The term describes the interpersonal configuration of linkages between people or unites" (Nahapiet and Ghoshal, p. 244). The location of an actor's contacts in a social structure of interactions provide certain advantages for the actor, and this could be used for personal gains to get a job (Granovetter, 1992), or to obtain information (Burt, 2000). The social interaction ties may stimulate trust and perceived trustworthiness, through frequent social interactions actors share information and are more likely to create a common point of view (Tsai and Ghoshal, 1998).

The relational dimension

In contrast to the 'structural embeddedness', the term 'relational embeddedness' describes the kind of personal relationships that have developed through a history of interactions (Granovetter, 1992 cited in Nahapiet and Ghoshal, 1998). The relational dimension of social capital refers to assets that are rooted in the relationships, such as trust and trustworthiness. It also focuses on particular relations people have, such as respect and friendship, that influence their behavior. They further emphasize it is through these ongoing personal relationships people fulfill such social motives such as sociability, approval, and prestige.

Nahapiet and Ghoshal (1998) mention important forms for this dimension is trust and trustworthiness (Fukuyama 1995 and Putnam 1993), norms and sanctions (Coleman 1990 and Putnam 1995), and obligations and expectations (Burt, 1995 among others). The relational dimension could e.g. be an explanatory factor of why two actors in similar position in the network (structural) have different ties (relationships). "An actor occupying a central location in a social interaction network, is likely to be perceived as trustworthy by other actors in the network" (Tsai and Ghoshal, 1998, p. 465-466).

The cognitive dimension

Nahapiet and Ghoshal (1998) identified this cluster separately because they believed it represented an important set of assets not yet discussed in the mainstream literature on social capital but receiving substantial attention in the strategy domain. Ghoshal and Tsai (1998) argued that this dimension of social capital captures the essence of what Coleman (1990,

p.315) described as “the public good aspect of social capital”. Inside an organization a shared vision and a set of common values help develop this dimension, which in turn facilitates individual and group actions that benefit the whole organization. Nahapiet and Ghoshal (1998) described the cognitive dimension as embodied in attributes like a shared code or a shared paradigm that facilitates a common understanding of collective goals. “With collective goals and values, organization members are inclined to trust one another, as they can expect that they all work for collective goals and will not be hurt by any other member’s pursuit of self-interest” (Tsai and Ghoshal, 1998, p. 466).

National social capital

From a societal perspective social capital has been regarded as a constructive element in the creation and maintenance of economic prosperity (Fukuyama, 1995), and democratic governance (Putnam, 1995). Putnam (1995) studied social capital at the societal level by reviewing the decline in civic engagement and political involvement in the United States since 1950s, arguing that the decline in social connectedness among Americans would negatively affect the democracy, norms of reciprocity and social trust. Accordingly this could also have a negative effect on the innovative environment that is dependent on considerable amount of trust and communication. Dakhli and De Clercq (2004) emphasized that previous research have argued that trust, both within and between organizations may foster innovation. “Within organizations, trust has been found to be important to innovation it that it lessens the need for rigid control systems (Quinn, 1979, cited in Dakhli and De Clercq, 2004), moreover arguing that tight monitoring and control mechanisms reduce creative thinking, while freedom from rigid rules and job definitions enhance idea generations.

“For a variety of reasons, life is easier in a community blessed with a substantial stock of social capital. In the first place, networks of civic engagement foster study norms of generalized reciprocity and encourage the emergence of social trust. Such networks facilitate coordination and communication, amplify reputations, and thus allow dilemmas of collective action to be resolved” (Putnam, 1995, p. 136). Regions and communities with high stocks of social capital, company’s and actors are more willing to help each other without economical compensations because they know that the obligation created will be returned in terms of goodwill, enhanced trust, shared experience or future assistance. “A number of studies that focused on social capital and the overall well-being of societies support the arguments for the positive effect of social capital on innovation” (Dakhli and De Clerq, 2004, p. 112).

“For both partners, the transaction costs will be lower when dealing with a firm with which they are familiar: they are likely to have some degree of mutual trust, shared technical and business information and existing personal social links” (Tidd et al., 2005, p. 289).

The term social capital achieved a level of prominence in the United States as a result of his book *Bowling Alone: The Collapse and Revival of American Community* (2000) based on his article ‘Bowling Alone: America’s Declining Social Capital’ in the *Journal of Democracy* (1995). Similarly to Putnam, Fukuyama analyzed the link between trust, social capital and national economic success. Fukuyama (1995,2002) was interested in how social capital was produced and consumed, arguing that without trust, human interactions are too costly. Furthermore he explained the danger of relying on trust without building more. As a political scientist he mainly emphasized the national and regional level of social capital from an economical perspective, and he frequently criticized the concept of being too diffuse and difficult to measure. Fukuyama (2002) reviewed the social capital theory, and analyzed how it interacts with other factors in international development. In the article he emphasized the weaknesses of the concept, where he underlines the major problem to be methodological. Arguing that even if there had been an agreement on a single definition of social capital, there would still be problems in measuring and using it as an input in economic models (like e.g. physical and human capital).

Summary

The concept of social capital constitutes of different levels and perspective. However, essentially the concept refers to social interaction between actors. The capital aspect describes the stock of actual or potential resources available as a result of social interaction creating a tie. Furthermore, social capital makes ‘expensive’ exchanges possible because the interaction has created a channel for trust and shared experience that facilitate collective action or using obligations as a currency for trade. Hence an actor equipped with high stocks of goodwill or obligations are better suited to e.g. land a job Granovetter, (1973), advance in the business world (Burt, 2000) or gain status in the social hierarchy (Bourdieu, 1986). Social capital is about interaction and being dependent on other actors or vice versa and is consequently something that needs time to develop in different forms and levels.

Social capital is a multi dimensional concept applied in different settings, and the dimensions (e.g. structural, relational and cognitive) could be viewed as parameters of measuring social capital. Nahapiet and Ghoshal (1998) reviewed social capital as a facilitator of new intellectual capital in order to create an ‘organizational advantage’. They argued that organizations, as institutional settings, are more conducive to the development of high levels of social capital because of the more dense forms of social capital compared to markets. Their theory is rooted in the concept of social capital that is concerned with the significance of relationships as a resource for social action. Similarly, as Putnam (1995) observed, social capital is not an undimensional concept. “While sharing a common interest in how relational resources aid the conduct of social affairs, the different authors on this topic have tended to focus on different facets (forms) of social capital” (Nahapiet and Ghoshal, 1998 p. 243).

In a knowledge economy where everyone has access to a large database of information, it’s is even harder to compete on what most people can access. Krebs (2008) argues that creating competitive advantage requires social capital. Social capital is simply derived from the employee’s network, but more difficult is the ability to utilize and combine the knowledge and experience of others. Krebs (2008) further emphasized that it is the unique interconnectivity of human capital that creates some kind of advantage. How internal and external content is interpreted, combined, and converted into new ideas and services.

The main parts of our study will deal with the forms we find evidence for during our study. In relation to innovation we have already identified forms that we assume could have positive correlation to innovation, but also negative. For example the closure concept that could be positive in building trust and a close collaboration, could also restrict outsiders to join and barriers for actors inside to look for opportunities outside the network.

As the Oil and Gas sector in the Stavanger region have been very successful in producing innovative solution for the industry we would argue that there is aspect both at the individual, organizational and societal level in the region that facilitates innovation. Because of this we have chosen a broad scope for identifying forms of social capital.

Forms of social capital assumed to be decisive based on the review are mainly; trust and norms in building relations and sharing ideas; information channels and the position in a network in searching and attracting ideas, partners and customers; goodwill and shared experiences for exchanging commodities and having a common goal that promotes collective action. A challenge with forms of social capital may be to determine what comes first, and how they affect each other. Like trust promotes social capital and social capital promotes trust. Which is similar to what Putnam (1995) discussed, he found that these trends tended to move in cycles. Many authors on the subject have an emphasis the time aspect, indicating that the social and relational aspects takes time to nurture and develop.

In short this literature review have, first introduced the concept of social capital, secondly, presented the central authors and main contributors of the concept, thirdly introduced the different perspectives in the literature and discussed its relation to our study, fourth presented three dimensions of social capital which is going to be applied as a framework on the organizational level, and finally summarized the forms relevant for our thesis and its implications as a basis for the theoretical framework.

Chapter 3: Background

In this chapter we want to provide some background information about the research setting for this thesis necessary to contextualize the cases discussed. We will provide some input into the historic development of the industry in the region as this will aid the reader in understanding the findings, as they are strongly interrelated with the situation and development in the region. Furthermore we will provide some basic information about the companies in the case study. “It is important to recognize the extent to which the Norwegian economy is based on the exploitation of natural resources. The most important of these is evidently oil and gas, and industry which came on stream strongly at the end of the 1970s, and which rapidly became a major force driving structural change in Norway” (Nås, Dietrichs and Smith, 1998, p.9).

Historical background – from fishing to drilling

When oil was discovered outside the coast of Norway in early 1970s, the Norwegian government had to make some decisions on how to deal with it. In this process they established an Oil Directorate, and a state owned oil company, Statoil. After some competition from Bergen and Trondheim, Stavanger was chosen as location for these institutions. The international companies soon followed and Stavanger eventually became the national centre for the industry. Stavanger then experienced a rapid transition from a small fishing village to become a European Oil and Energy capital. In its infancy the Norwegian oil industry was dependent on mostly American companies and knowledge to be able to develop the vast oil reserves that was located deep below the sea. However, as the Americans did not have any experience with the North Sea, they soon realised that they had to take advantage of the knowledge from local fishers and ship builders to adopt their rigs and equipment to the conditions faced in the North Sea.

Over the years the region has developed to become world leading in deep sea drilling in its own right, and is now in a position to export its knowledge and know-how to other regions of the world. However, the drive for further developments and growing oil consumption is forcing the industry to continue innovating. The nature of the operations (deep sea drilling) and potential risks associated with the industry demands a high level of planning, and process management. The rapid growth of the industry meant that it was necessary to hire people locally, and from other industries. So even if there are many people who have moved to Stavanger to work in the industry, it is still very influenced by local people.

Despite the rapid developed from the small fishing village Stavanger was in 1960, it still has a lot of the small town qualities. The city centre is very compact, and the region is nicknamed the “20 min region”, as it only takes about 20 minutes to drive to any location in the region of interest. It is a very proud region, and is known for its local bias.

“The Stavanger region is an international energy center. Our expertise and experience extends across the vast array of sectors within the petroleum industry. The competence and excellence within the oil and gas industry and strength in research and development is well known, and the region was the first to utilize offshore technology... More than 45 000 people work in the petroleum sector in Stavanger, and the leading petroleum companies and supply industry are located in the region” (Stavanger-Region European Office, online source).

The New industry

The Stavanger region has become the most important region of oil and gas exploration and development in Norway. There is also an established industrial cluster related to the oil and gas service sector. The oil reserves are becoming scarcer, and the industry has to become more efficient to develop new technologies to extract more oil form the reserves that already exists. When the initial operations started in the North Sea, the processes and technology was simple and characterized by high level of manual labor which consequently led to high accident rates. Over the years the Norwegian government and labor unions have enforced stricter regulations with relation to safety, working conditions and environmental concerns, as a result of this the industry in Norway is world renowned for their good safety and performance record. Adopting the American technology is no longer good enough and advanced new solutions have to be developed. The cost of labor in Norway is also one of the highest in the world, and therefore the companies have to deliver the best quality, and perfect timing, as they are unable to compete on price.

Research setting

The Norwegian manufacturing and service sectors are heavily based on SMEs (Small-Medium Enterprise) as has Norway has relatively few large firms (Smith et al., 1998). “The SME sector is characterized by highly asymmetrical distributions of research and innovation activity, and apparently problematic relations to the formal science and technology infrastructure”(Smith et al., 1998, p.10).

This make the oil & gas and service sector in Norway an interesting setting to explore the role of social capital as a source of innovation. We argue it is a good setting because we know; first, much of this industry was based on adopting existing technology form other industries, and competitive advantage is achieved by inventing new ways to employ this technology (or advance it further). Second, it is a proud region and the industry is geographical located in a small area with close ties and collaboration. Third, the constant pressure from legislators forces the sector to become even more efficient and environmental friendly. Finally, the high labor cost enhances the focus on quality and to deliver efficiently on time.

Depro AS

Depro was established in 2005, at Jæren, outside Stavanger by six former employees of Bryne Mek who had been made redundant. They rented the workshop of their former employer, and only planned to break even, without pay. They had a flying start, and since the start they have experienced continued growth. During the small recession, due to low oil prices in 2008, they used the opportunity to acquire key personnel from competitors who had to downsize to handle the drop in orders. Because of this Depro was well prepared to take on the rapid increase in activity since 2010. Today they hold about 37 employees, and are planning to become twice that size within a 2015. They are also in the process of building new offices to cater for the new expansion. In 2012 the turnover is expected to reach just over 100 million NOK, and they estimate to reach 200 million NOK by 2015.

Depro offers design-, engineering, project management and fabrication to the oil & gas industry. They have delivered advanced custom made products for Subsea and Drilling in the last years. Depro’s goal is to make things better, simpler and more cost efficient for their customers, and they always try to challenge the status quo. 90 % of their customers are Norwegian, however large parts of these export to the far corners of the earth. They also develop and manufacture a small rage of their own products, however they do not want to

compete with their customers. Their biggest customers today are GE Oil and Gas¹, and National Oilwell².

Unlike many of its competitors Depro is a multidiscipline company. They do engineering, construction, manufacturing, and testing, which allows them to see things differently, as they can manage whole solutions, and not only parts or components. Their workforce is made up of mostly men from the area, many of which have experience from Brøyt and/or Kverneland, two manufacturers of farming and construction machines and equipment. An industry that was very important to the region before the oil industry was fully established.

Depro do not make everything themselves and rely on an extensive network of sub-suppliers, most local from Jæren. Their close cooperation with sub-suppliers has given Depro deep knowledge in sub-suppliers know-how, allowing them to select the best sub-supplier for the job.

iQubes AS

iQubeS was founded in 2008 in Stavanger by Sigbjørn Tveit and John Klemetsen. With 50 years of combined experience in the oil and gas industry they developed iQS, an Enterprise Resource Planning system (ERP) based on the Microsoft SharePoint platform. The iQS is an agile system providing complete control of customers and personnel, projects and processes, documents and quality-control, finance, contracts, logistics, tracking, risk management, business processes and much more. iQS is a shared online workspace for the entire company with full access to the information from any computer or mobile unit that is connected to the internet. The software can send and receive data from the company's finance system, and can also be integrated with any other business system already in use in the organization.

Prime partner

iQubes have a partner in India for software development and integration. CCS Technologies is a programming company that was established in 1980. CCS functions as a subdivision for iQubeS with 17 programmers working full only for iQubeS, and they are divided in a SharePoint team (12 people) and a Java team (5 people). CCS is headquartered in Kochi India, with offices in USA, UK, Australia and the Middle East.

¹ GE Oil & Gas is a world leader in advanced technology equipment and services for all segments of the oil and gas industry, from drilling and production, LNG, pipelines and storage to industrial power generation, refining and petrochemicals (GE, 2012).

² National Oilwell Varco, Inc. is a provider of equipment and components used in oil and gas drilling and production operations, oilfield services, and supply chain integration services to the upstream oil and gas industry (NOV, 2012).

Products and services offered

iQubes provide two versions of their ERP software, iQS UNO (the basis version) and iQS OMNI for larger companies with the need of more advanced applications. iQS UNO includes four base modules; project management, personnel management; HSE & quality / document control; and CRM / contract management. iQS-OMNI gives the customer the selection of a wide range of modules to control and manage their business depending on their needs.

The consultants in Norway primarily provide advice for customization and additional modules, while the team in India adapt and integrate the existing systems into iQS. The iQS is an unique and innovative system that have integrated internal processes that focus on QHSE (quality, health, safety and environment) and are certified in accordance to e.g. ISO/IEC (International Standardization Organization / International Electrotechnical Commission). Furthermore iQS is a fully scalable system based on Microsoft's market-leading SharePoint platform which imports data from other systems already used by the customer, integrates them into one user interface for the employees. The SharePoint is a platform closely integrated with the Office Suite.

Mission

iQubeS is established with a clear mission to deliver smart and innovative solutions. We will build long-term partnerships with customers and suppliers by providing leading technology and best service. iQubeS has also recently become one of Microsoft's 120 prime partners reflecting Microsoft's admiration of iQS' great business logic applied on the their SharePoint platform.

Vision

iQubeS' vision is to be the preferred choice for customers, employees and investor.

iQubeS AS financial highlights

The system has been very well received in the market and iQubeS have received the award "Best credit worthiness" of Experian Credit Services. iQubeS has an 910 point rating class based on all available information about the company and key personnel.

iQubeS had a total revenue of 2 772 000 NOK in 2010, 6 400 000 NOK in 2011 and estimated 16 000 000 NOK for 2012.

Chapter 4: Method

This chapter will outline the methodology and research design chosen for this study. The purpose of this chapter is to critically reflect upon the selected methodology and research design, and argue for our choice. In the process of this thesis we have investigated what type of research had been conducted previously within this field, and discussed what type of study we found the most appealing to conduct and would provide us with the best findings.

Innovation processes are complex, and hard to grasp for an outsider, success and failure sometimes depend on individuals or the organizational culture, and is often a result of both competence and luck. Because of the nature of the subject investigated and the scope of the thesis, and narrow in-depth approach would be most appropriate.

The initial intention was to investigate one specific project in each of the companies, and describe the innovation process, and identify potential sources of innovation. However, as the thesis progressed we realized that each of the innovation processes involved too many different actors and companies that it would be difficult to get access, and provide an accurate picture. Instead we chose to focus on how the companies worked with innovation in general. Keeping with the focus on investigating how social capital is a source for innovation. However we have used examples of projects where this is relevant.

Research design

For this study we have chosen a qualitative case study approach as opposed to quantitative approach. A quantitative research approach would involve a large-scale study with many participants, responding to a standardized questionnaire. We found that this research method would not be appropriate for our study as it has several shortcomings with regards to our study. A quantitative approach would only provide us with an overview of the processes in the firm, and not give the case companies how they do it as the findings would be limited to the questions in the survey.

Case studies are appropriate when you want to answer ‘how’ and ‘why’ questions (Yin, 2003) and it investigates a contemporary phenomenon in its real life context (Yin, 1984). A qualitative approach gives us more freedom in exploring findings and phenomena’s discovered during the interview process. “This qualitative case study is an approach to research that facilitates exploration of a phenomenon within its context using a variety of data sources” (Baxter and Jack, 2008, p.544).

Type of Case study

The case study method offers many different types of case study design. In this thesis we are using an explanatory case study design. “*An explanatory case study is often close examination of data both at a surface and deep level in order to explain the phenomena in the data*”(Zaidah, 2007, p.3). We are conducting two single case studies and the two companies will be investigated separately, with the same theory basis. The intention is to provide insight into the innovation process, and not to compare the two companies.

Case 1 – Depro

In the case of Depro we want to understand how Depro uses social capital when creating innovative products and solutions for their customers. We will look at how social capital affects the innovation capabilities inside the firm, with customers and competitors, and within the society, and how they build an innovative organization for the future.

Case 2 – iQubeS

The iQubeS case will be divided in two parts. In the first part we want to understand how the social capital was a source in innovation process of iQS. The latter part will focus on the iQubeS organization, and how the social capital affects their continuous innovation model.

Data Collection

In the study we have used, observation, interviews and collection of public information. Our primary data is based on the interviews and the observation of the employees in the companies. Our secondary data is based on company websites, news articles and other academic studies and reports relevant for the topic.

For the interviews we had prepared a set of topics we wanted to discuss based on the theory on the theory in the literature review. We used a semi-structured interview approach, where we initiated the conversation with the topics and encourage the interviewee to elaborate. The questions were open –ended and the interviewees were encouraged to speak freely. As the interview form was so open the role as moderator was important to get the focus right.

Participants and interviews

The selection of companies for the case study was important to get a reliable case. When searching for companies we had some criterions: First, the companies had to be involved in an innovation process. Second, they had to have resources to allocate time for our study. Third, they were operating in the oil and gas industry in the Stavanger region. Fourth, they could allow access to the information needed.

The process was initiated by composing a research outline where we presented our objective the study and estimated use of time and resources from the company. We used this when we contacted companies that we found to fulfill our requirements. We used people in the region and the Internet to identify potential companies and contacted a few small and medium-sized enterprises (SMEs) in the Stavanger region that we found to be interesting. The companies we contacted were all local companies, with most of their operations located in the Stavanger region, although they all had an international customer base. We decided on two companies' iQubes AS and Depro AS.

All the interviews were recorded and transcribed after; we took notes to non-verbal communication and other observations during the interview. The interviews were conducted in Norwegian to avoid any misunderstandings of confusion, as all the participants were Norwegians. The choice of language would make the setting more informal as the interviewees would be more comfortable with their own language. We later translated the quotes used in the thesis. All the interviewee has firsthand knowledge of the issues they were asked. We took into account that some of the interviewees had personal interests in the company, and therefore could be tempted to provide a subjective view of the company. This was however equalized by interviewing a more neutral and objective employee to compensate. We have also taken this into account in the analysis. However there were no obvious reasons for any to falsify, or intentionally manipulate the answers given.

We would note that the topics discussed were closely related with the employee's abilities and performance, and that it would be natural for the interviewees to be reluctant to discuss negative aspects of this. Some of the other themes would also be considered sensitive, such as whom they would not cooperate with, and whom they would not employ. However, we did asses that we got some honest answers, although it was difficult to get the interviewees to elaborate.

Depro AS

We contacted the CEO Kåre Stokkeland by e-mail, and he replied that they would be interested in participating in our study. We conducted the first interview with him at their offices at Bryne outside Stavanger, the following day. We chose to do the interviews at the company as it was the most practical, and it would provide the relaxed atmosphere we needed, as the interviewee was in familiar surroundings.

Stokkeland have been with the company since 2009 as the CEO. He gave us a brief introduction of the company, including their product portfolio, and main customers. During the presentation we asked questions where appropriate. After the presentation we continued with the interview. In the interview we focused on the company as a whole, and what type of products they design and develop, who they work together with, how they share knowledge internally, if they have activities for the employees and so on.

After the interview we were showed around their facilities, and got to observe how they work, and see what some of their products look like.

The second interview was with one of Depro's development managers, Gudmund Rosland. In this interview we focused on the innovation process, from start to finish. We used one project as an example, a container for high-pressure sub-sea samples. We could not participate as observers of a project as it would take too much time. We discussed why they were chosen for the project, and how they solved some problems along the way. We asked how they put together their teams, how they get information and new knowledge, how they work with the client, how they solve problems on the way and so on. This interview was also conducted in Depro's offices at Bryne.

iQubeS AS

We contacted the CEO Sigbjørn Tveit directly by e-mail and he replied that they were very interested in participating in our study. He assured us that iQubes would be able to provide us with the access required to background information and to key employees. We decided to arrange an introduction Skype meeting to elaborate more about our study and identify which employees we should talk to. Tveit made suggestions to who should participate in this meeting from iQubes. In the Skype meeting we met with two other key employees that Tveit thought would be suitable for the study. The employees were his co-founder John Klemetsen, and their new sales manager Dagfinn Andresen.

During the first video meeting we were able to map out who held the different positions and responsibilities in the company and how they do their day to day operation. This made the foundation for the further analysis of the events related to the successful start-up and the creation of their iQS system. Tveit and Klemetsen were the founders, and the people behind the development and launch of the iQS system. Andresen had just started in the company three weeks earlier to our visit, and recently returned back from the US after living there for about 10 years. He has previously worked and lived in the region. Andresen had little knowledge of the company history, and was mostly focused on the sale of the iQS system and its modules. As he had not been part of the start-up from the beginning he would be able to provide us with a more neutral view of the company, as he did not have the same personal connection to the company and the system. Simultaneously in the process we gathered as much information about the company that was publicly available.

The second interview took place at iQubes offices in Stavanger. We did one interview with Andresen alone, in this interview we focused on his role, and how he used the resources made available to him in the company. Then we followed up with an interview with Klemetsen to get deeper into particular events we found relevant in the first interview. Andresen did also join this interview, mainly just sitting-in, but did share his view in some particular cases.

Analyzing the data

We prepared a framework of themes carefully to be able to maintain a natural order to make the analysis more efficient. After each interview we discussed the execution of the interview, particular findings and need for further information. We then reviewed our findings and looked for weaknesses in our proposed method to prevent any error or interpretations problems. Between interview phase one and two we discussed the findings to disclose anything that had to be further clarified and investigated.

Use of theory

We have reviewed the main authors and their theories of social capital. They all present their own view of social capital, depending on their field of study. They look into different settings and discuss different effects, and sources of social capital. We would argue that many of the basic principals are similar and that many of them would be relevant for our thesis. We have included a literature review to give the reader an insight into the theory of social capital. However we have not followed a set theoretical framework in our study as we feared that it would limit the scope of the thesis.

We have used the theory as a backdrop for our decision on the themes for the interviews, and the collection and organization of findings. The forms of social capital analyzed is based on themes in the theory base. We will apply theory from, but not exclusively from the literature review presented in the thesis where relevant as an integrate part of our findings and analysis.

Limitations

The Oil and Gas industry is a very large and complicated industry, and many of the issues faced by the industry may be difficult from an outsider to understand. Many of the products and solutions are very technically advanced and custom made, this proved a challenge for the research as it was hard to recognize and identify an innovation.

During the data collection we realized that the study of the companies in this region might be very geographically or culturally founded, and the application of the findings for other companies could prove difficult.

Further considerations

Both innovation and social capital are terms that are difficult to define. The focus for this thesis has been on the innovation activities of the employees and founders of the companies, and how social capital is a source for these activities. In the theory part we touch upon the nature of innovations and how we define it. Moreover we would like to clarify that in the interviews with the companies we have focused on innovations that have resulted in products or services deliver by the companies. Similarly as presented in the literature review and particularly by Fukuyama (1995), measuring social capital is difficult and the concept is very intangible. As emphasized by Akcomak and Weel (2008, p. 548), “measures of social capital are not without controversy”.

We will also note that we do not only look for successes in this thesis, although the projects we have discussed with the companies have been successful. We aim to identify areas, or aspects that could create implications, or limit their innovation capabilities.

Similarly to Akcomak and Weel (2008) we assume that the formation of the stocks of social capital is a long run-process, which reflect the importance of stability and time, but also suggest that the interview objects could be reluctant to reveal their sources of social capital as an attempt to protect their assets.

A last consideration we would like to stress is that none of the researchers holds any personal interest in any of the companies, nor plan to work for them in the near future.

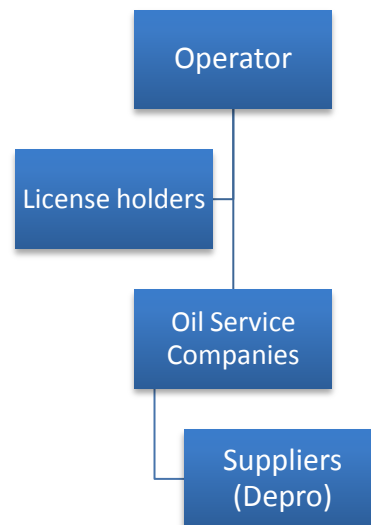
Chapter 5: Findings and analysis

In this chapter we will present and analyze the findings in the two cases, Depro AS and then iQubeS AS. The cases differ on many levels, and accordingly the two sections will not follow the same format. We will apply the theory from the literature review and make additions when necessary.

Findings and analysis Depro AS

In this section we will identify the social capital present in Depro, and analyze if it is a source for innovation. We will use the theory from the literature review as a backdrop when presenting the analysis, and introduce new literature when applicable. The findings and discussion will be organized in the framework for social capital presented by Nahapiet and Ghoshal (1998), adapted for this study. We will start with the relational dimension discussing trust and norms, followed by the structural dimension discussing, network, knowledge sharing, network closure and broker opportunities, ending with the cognitive dimension discussing community building, and shared goals.

The diagram shows a simple presentation of how the oil industry organization is organized. On top you have the operator who has the full responsibility, the license holders own the license to drill for oil together with the operator. The oil service companies provide services such as drilling, seismic, transportation, and subsea. Depro is at the bottom of the pyramid as a supplier to the service companies, although the order may also come from the operator.



The Relational Dimension

In this section we will present and discuss the findings within the relational dimension of social capital which refer to those assets created and leveraged through relationships central in this dimension is trust, norms, obligations and expectations that affect behavior and the strength of the relationships. In the Depro case we have looked at trust and norms, and how these forms of relational social capital influence innovation.

Trust

Trust is one of the main components of social capital. Putnam (1995) discusses how trust and trustworthiness is key for a society's performance, both socially and economically. In the literature review we have included the example of the diamond traders in New York. The example illustrates how the trust between the diamond traders allows them to do business that would not otherwise be possible. This is supported by Coleman (1988) who argues, "social capital is productive, making possible the achievement of certain that in its absence would not be possible" (p. 98).

In Depro's case the conditions are similar, the industry is geographically concentrated, the actors in the industry know each other well, and they often collaborate even if they are also competitors. However, the strong family connections among the diamond traders in New York are not present in the Depro case. We wanted to see how trust among the actors interacting with Depro gave them an advantage, or access to resources that would not otherwise be possible, and if it changes Depro's ability to innovate.

What are the outcomes of trust? Are they only positive or are there more negative consequences regarding trust that needs to be discussed? In the literature review we presented some of the most prominent authors in the field of social capital. Common for them is trust as an element of social capital. Much of the literature discusses trust and the relations between individuals and society, or between individuals, or between individuals and corporations. Coleman (1988) highlights "Relations among corporate actors can constitute social capital as well" (p. 98). In the following discussion we view Depro as a corporate actor and the relationship with other corporate actors. Tidd and Bessant (2009) write, "When there is strong level of trust, everyone in the organization dares put forward ideas and opinions" (p.138). They refer to a study by Isaksen and Tidd (2006) showing that trust is one of the most important factors influencing innovation. The base of the trust in the Depro case can be organized under the following themes presented by Tidd and Bessant (2009):

- Contractual – honoring the accepted or legal rules of exchange, but can also indicate absence of other forms of trust.
- Goodwill - mutual expectations of commitment beyond contractual requirements.
- Institutional - trust based on formal structures.
- Network – personal, family or ethnic/religious ties.
- Competence - trust based on reputation for skills and know-how.
- Commitment, mutual self-interest, committed to the same goals.

These themes of trust are not exclusive, and they tend to be dependent on each other.

“Although over-reliance on contractual and institutional forms may indicate absence of the other bases of trust” (Tidd and Bessant, 2009, p.139). We will use the bases of trust to analyze the evidence found in the Depro case. The bases will be presented as they occur, not all bases are present at all the levels. The bases of trust identified by Tidd and Bessant (2009) is regarded with trust within organizations. In the case of Depro we assessed that the trust was not only based within the organizational structure of Depro and but also in their customers. The general level of trust could also be a result of the high level of trust in the region.

For the purpose of the analysis we have identified two different situations where trust, act as an important factor for innovation and product development. The first situation is the trust between Depro and their customers; the other situation is the mutual trust between Depro and their partners / competitors.

Trust between customers and Depro

Depro’s customers create the basis of their innovation activities as it is the customers who give new challenges and problems to solve. The customer base is a mix of local and global companies in the oil and gas industry. They are both small companies in the region, and global actors. However, most of the customers have either an office or a large part of their operations in Norway, mainly in the Stavanger region. Depro base much of their business on the trust of the customers. This is illustrated by the CEO Stokkeland’s answer when we asked why the customers choose Depro, “Customers come to us because they know they can trust us to solve their problem”. The customer trust is one of the key factors bringing business in to the company. When we look at trust with relation to the customer we discuss the customers trust toward Depro. In the further analysis we will discuss how this trust arises, and how they can continue to build it, and more create innovative products because of it.

Competence and commitment

The first base for customer trust as defined by Tidd and Bessant (2009) is found in Depro’s competence and commitment. Depro has very skilled employees, and they have focus on creating solutions that no other companies are able to do. Their slogan is “Can it be better” (Depro, 2012). The customer’s confidence in Depro’s ability to deliver gives them a competitive advantage through the whole process. The trust also works as a motivator for the company they do not only risk losing the one customer if they violate the trust, but also risk losing many future opportunities. Therefore “trust can act as a governance mechanism for embedded relationships”(Uzzi, 1997, p.43).

For this to work they have to live up to the customers' expectations when they work. "We try to be as honest as possible with our customers", as "in Jæren we always finish what we started", "we never do anything half way". Depro also puts great pride in building this trust with their customers. Therefore they are also honest when they don't think they can solve something, although as the CEO said, "I don't think we have experienced a situation where we have been unable to deliver. Although sometimes we have to make compromises and find a different solution than the client had in mind".

Another base for the customer trust is Depro's commitment. We found that Depro works for the client and not on their own initiative, so when they develop new products and solutions the customer hold the patents once the job is done. This way there are no doubts that Depro do not hold any interest of their own in the products they design. "We don't want to own the patent's", because of this the customers are more willing to share technology they already have, as Depro won't be selling the technology to others for a profit once the job is done. "We don't want to develop standard products and sell them". "We work for the customer, and cater to their specific needs". Depro are fully committed to solve the customers challenges.

The network

Network based trust as described by Tidd and Bessant (2009) could come from family, or religious ties, however in the Depro case we look at the professional network surrounding Depro as a base for trust. The trust based on competence is useless if the customers do not get to know about their competences. To communicate their competences and transfer this trust to their customers, they depend on their network. The quote by the CEO suggests that the customer already knows Depro when they get in contact. The network trust is transferred to the potential customer, even before they start a project.

Because of their strong network in the industry, Depro do not intentionally participate in marketing and advertising activities, instead they priorities to continue to build their network. They do this by e.g. being present at the ONS³ conference in Stavanger, and the OTC⁴ conference in Houston. These two events are the most important arenas for the industry to meet. The conferences usually include an exhibition, conferences and many social events to

³ For almost 40 years ONS has been a broad-based international energy event, and a unique meeting place for everyone involved in the entire energy sector. Since its launch, the biennial event has been staged in Stavanger, Norway. When ONS opens its doors for the 20th time this August, they expect more than 50 000 guests.

⁴ Founded in 1969, the Offshore Technology Conference is the world's foremost event for the development of offshore resources in the fields of drilling, exploration, production, and environmental protection. OTC is held annually at Reliant Center in Houston.

meet and greet. Even if they are conscious of which event they attend they rarely approach the customers directly. They put great pride in their relationship with the customers, and their ability to deliver on time and on budget, which is one of the most important reasons for their success. They use their trustworthiness to build trust.

The Depro network is a mix of both personal and professional ties. The oil and gas industry in the region is not that big, and people change jobs, when they move to another organization they maintain their old connections. As Stokkeland says “there is always someone who remembers a name”. Many of the projects are well known, and the industry knows who did it. We also found that actors are often known by nick names, such as ‘Mr. Crane’, “I was known as Mr. Crane, many people didn’t know my real name, in a meeting one time, one of the participant was surprised to discover that it was me who people called ‘Mr. Crane’. I worked with cranes before I came here, and now we make some cranes here as well”. “In Norway companies are concerned with whether or not we have the right key personnel”. The projects they do can be very complicated and we often have fairly small teams, usually about 5 people. The uses of small teams increases the importance of the skills in the teams, even if the company has the skills or are able to obtain the skills needed, it is not efficient. So when the customer has a new problem that is similar to one they or someone else have had before they want the same people to look at it. “They investigate which individual solved the problem, and not always which company”.

However they also attribute the trust to the region they operate in, people trust each other out here (Jæren). “We (people from Jæren) are known for doing our best, and we do.” Price was never mentioned as a factor that helped them to get customers.

Contractual

Tidd and Bessant (2009) argue that contractual based trust indicates lack of the other forms of trust. As discussed above we found that a lot of the customer trust was based in the Depro network.

When Depro was approached by potential customers from other regions, or outside their network the trust base was different. We found some evidence that trust in the network and competence/commitment based trust was strongest in the region. Potential customers who had little or no knowledge of the region, or a weak network in the region were less confident in Depro’s abilities. The companies from outside the network were also more reluctant to share technology they had developed themselves, or would like to have improved. AS Stokkeland

commented, “the American customers are different, they are very protective of their own technology”. When working for an American company for the first time, especially if it was not for the local Norwegian branch, they would only be given parts of the project, and parts of technology. By splitting the projects between many suppliers they attempt to limit the risk for industrial espionage. They also rely more on written agreements and contracts.

This is an example of trust based in the contractual; the American companies compensate for the lack of other forms of trust by protecting themselves and minimizing the risk of being exploited. So when working with American companies Depro had to prove themselves on several occasions, and build their trust before they would be allowed to work with complete technologies. This is interesting as it could show that the trust is more founded in the local business and social community, than in the company. Because the American companies have the same options to check references as the local companies. However, once accepted, Depro have received recognition from American customers, and were recently awarded best supplier by GE Oil and Gas.

Another source of the contractual based trust is Depro’s focus on documentation. In the Norwegian oil industry documentation and procedures are key for operators to accommodate the governmental rules and regulations. Operations may be postponed simply due to lack of documentation; even only one document can delay the process. “At Depro the customers know that they get the documentation they need”. If Depro or any other supplier fails to deliver adequate or correct documentation it would be the operators problem, as they are responsible for everything that happens offshore. Consequently the documentation that comes with the products is very important as they include maintenance procedures, safety regulations, emergency procedures and so on. The documentation may also prevent accident if it is complete, as they provide instruction for the crew how to handle the equipment safely. If an accident occurs the first thing that is investigated is if the procedures in the documentation were followed. So the customer must be confident that the documentation that follows the products is complete.

Trust towards competitors

The second level of trust we have studied in Depro is the trust between Depro and their competitors and collaboration partners. This relationship is somewhat different from the relationship with the customer. When working with partners and competitors the trust must be mutual, Depro must trust their partners just as their partners must trust Depro. Compared with

the case with the customer where they only needed the customer to trust them enough to choose them, and their solutions. In the customer relationship Depro only had to be concerned with their trustworthiness, while in this setting they also need to take the trustworthiness of the partners or competitors into consideration. By partner we include both sub-contractors and other suppliers they cooperate with.

In the previous section we found that Depro's customers have a high level of trust towards them, and Depro were very aware of maintaining this high level of trust for the future. This strong foundation for trust was also found between the competitors and partners. Depro is situated in a cluster with many companies who all cater to the same industry, and many of them provide similar, or parts of the services of Depro, as describe in the background chapter.

Depro interacts with their competitors on different levels. Because of the dynamics in the industry, Depro's competitors, are also customers, partners and suppliers. The current market in the oil and gas industry is also very good and there is enough work for everyone.

We found very little evidence of contractual based trust. They use contracts and legal documents, but this was not the basis for trust.

Trust can provide transfer of resources that would not be otherwise available. Tsai and Ghoshal argue that "when two parties begin to trust each other, they become more willing to share their resources without worrying that they will be taken advantage of by the other party" (Tsai and Ghoshal, 1998, p 467). Which is also supported by Coleman (1988) who claims a group with high levels of trust and trustworthiness is able to accomplish more than a group without trust and trustworthiness. In other words the trust level determines how much the actors are willing to share, and therefore controls the resources available for the firms.

High levels of trust can also provide the actors access to resources they would not otherwise have been able to access. "The primary outcome of governance by trust was that it promoted access to privileged and difficult-to-price resources that enhance competitiveness but that are difficult to exchange in arm's-length ties" (Uzzi, 1997, p.43).

Goodwill

Following the bases of trust suggested by Tidd and Bessant (2009) we found that within the Depro network the Goodwill based trust has a strong foundation. "Goodwill is normally a second-order effect based on network, competence or commitment"(Tidd and Bessant, 2009, p. 500). Goodwill is also closely related to social capital founded in obligations and

expectations as introduced by Coleman (1988). We found that Depro often works with the competitors in their network to help them with problems that arise or with technical assistance; they do so even if it does not benefit Depro in any way. This form of help is often given as an informal favor and could simply be sharing some know-how. When we asked the CEO why they do that he replied; “We do not want to make life difficult for the competitors, what do we gain by doing so?” However from an outsider perspective this would be regarded as giving away for free. If they did not help the competitors they would not harm their competitors intentionally, they would just not make their services available for free. There seem to be a strong community among the companies in the Jæren region, and they constantly are building Goodwill towards each other. “Next time we may need help”, we found that the management at Depro was aware that by helping a competitor, they would be able to expect or claim something in return at a later point in time. Uzzi (1997) found that “Trust developed when extra effort was voluntarily given and reciprocated” (p.43). This is consistent with the findings in Depro. If one actor goes the extra length, they build a stronger bond, and the expectations for the return are even higher. Giving something extra would give Depro a stronger leverage, or debt, resulting in a stronger level of trust.

“Many of our competitors are also customers; we help them cover the high points.” The nature of the Oil industry sometimes demands very short deadlines, or projects might become bigger than first anticipated. Depro then help their competitors if they are unable to deliver on time, or lack resources. Often the competing companies lack the skill to perform the fine engineering, and come to Depro to get assistance. “They come to us because they know they can trust us”, “we don’t want to patent something that will harm our competitors” this argument is the same as for the regular customers.

The high level of trust between Depro and its competitors, and collaboration partners gives Depro access to knowledge and services they would not otherwise have been able to. This social capital is essential when developing new products and solutions for their customers.

Another source of trust is the institutional based trust. The competition is to a large extent controlled by major oil companies who operate the oil fields, referred to as the operator. As the figure above illustrates the operator company has the full responsibility and functions as a coordinator of all the activities, and decides what technology is to be used on the different oil fields. The operator organizes all the operations, and all the suppliers report to them, providing a formal structure or hierarchy. Being part of this formal structure provides the

actors with an institutional based trust toward each other. If Depro develops something for one field for one Service Company, the operator may choose to introduce it to the other service companies, as the operator or Service Company own the technology. The operating companies also know what type of technology is developed; so copying or misusing technology will be discovered easily. The hierarchy also provides an information and communication channel for the suppliers.

Network based trust

As with the customers and employees, much of the competition is based within the region. Depro is proud of having a strong overlook of the companies in the region, and they have a strong network of sub contractors. Tidd and Bessant (2009) argue that network based trust is mostly based on familiar, ethnic or religious ties. In Depro's network we found that is mostly the regional connection, and the region's history that connects them. The region's history of trust, and collaboration is transferred to the companies that operate in the region.

Implications regarding trust

High levels of trust can also introduce some implications. If a region or organization has a high level of trust, it could be easy for an actor to take advantage of this. "I found that if the strong assumptions of trust and cooperation are exploited in embedded ties, vendettas and endless feuds can arise"(Uzzi, 1997, p59). The quote highlights the potential problems that may arise when the trust becomes too strong, the potential for actors deliberately exploiting this trust increases, as the resources available becomes more exclusive.

High levels of trust could also introduce the problem of free riders, where actors simply get benefits without contributing. This problem could arise at all levels of the network, between companies or partner, or within the organization itself. A challenge with free riders is to identify them, or defining when an actor becomes a free-rider. In the Depro network the companies contribute with different things, and at different levels. The challenge is the level of transparency, as it is difficult for one manager or actor to have an overlook of every transaction. The nature of valuing these things could prove difficult, measuring the level of the contribution also presents a problem.

In Depro we found that they had some issues with the high levels of trust. When we asked if they were afraid that they were giving knowledge and know-how away for free, the CEO realized that "we might be too kind" and sometimes "we might be a little too naïve". The strong trust and willingness to help each other sometimes become a threat to their core

competences. “We fail to recognize the effort we have put in developing our knowledge and share it too easily”. Furthermore we found that Depro sometimes struggle to decide if it still is in their best interest to share the information, or if it would harm their competitive advantage in the long run. In this setting it is hard to monitor who contributes, and how much this contribution is worth. This is a calculation of risk and return, if you share something valuable, it could potentially lead to something more valuable in return.

Tidd and Bessant (2009) raise the issue when high levels of trust become a barrier for innovation. “In the case of innovation, problems may occur where trust is based on the network, rather than competence or commitment” (p.500). In our findings we see that Depro has a bias towards the local actors, both in selecting partners, and when hiring personnel. This is also rooted in their dependence on their local network, and may miss opportunities simply because the opportunities do not arise within their network. They are automatically somewhat skeptical of people from outside the region, giving local actors a benefit when working with them. If their trust were based more on competence they would be more likely to interact with actors from outside their network.

Norms

Norms is another form of social capital that we have studied in Depro. Norms govern the network and is closely related to trust. Norms set the standard for what is socially accepted in a society, network or organization, however it can be based on legal standards or law.

Coleman (1988) uses the example of norms inhibiting crime, and making it safe to go outside at night, in this case the norms have a preventive function.

We have looked into the norms that are evident within the network of Depro. Norms govern the network, however norms have other functions as well. Coleman describes, “A prescriptive norm within a collectivity that constitutes an especially important form of social capital is the norm that one should forgo self-interest and act in the interest of the collectivity” (Coleman 1988, p 104). A norm of this sort can explain why competitors help each other, or why colleagues go the extra mile to help each other.

Norms could also help to explain why certain traditions or practices occur within an organization. However, norms do not only facilitate action; they constrain others, (Colman 1988). Norms may help explain why some industries or companies are more conservative, or why they choose to do things in a specific way. If the norm do not allow for experimentation, or pushing boundaries it could have a negative effect on innovation. “Certain norms may be

antagonistic rather than supportive of cooperation, exchange, and change (Nahapiet and Ghoshal, 1998, p260). “In some cases shared norms may create excessive expectations of obligatory behavior and may possibly result in problems of free riding and unwillingness to experiment beyond the network” (Inkpen and Tsang, 2005 p.153). “For example, the strong norms and mutual identification that may exert a powerful positive influence on group performance can, at the same time, limit its openness to information and to alternative ways of doing things, producing forms of collective blindness that sometimes have disastrous consequences” (Janis, 1982; Perrow, 1984; Turner, 1976; cited in Nahapiet and Ghoshal, 1998, p245).

In the following discussion we have analyzed the norms in three levels; the norms in the company; the norms in the industry; and the norms in the region.

Norms in the company

In this section we have focused on the norms that we identified to have arisen within the Depro organization. The internal norms of the company would govern much of the way they do their business, and guide existing and new employees in how they perform their work. The norms also influence who they employ, what is accepted at work and so on. The norms would also set the boundaries for what is allowed in terms of experimentations, and what activities is undertaken in the innovation process.

The Depro team

In Depro they focus a lot on collaboration among the employees. When they start a new project they put together a team of employees that would be most likely to solve the challenge. The teams are mixed and are not the same from one project to another. Depro also focus a lot on team building and other activities to make so the employees get to know each other, and make people more likely to ask each other if they have problems they need solving. “We are a team, we don’t blame each other”. The norm is that it is a team effort; failure is not accepted if you did not consolidate with your teammates. “Such norms may offset the tendency to “groupthink” that may emerge in strong, convergent groups and that represents the way in which high levels of social capital may be a real inhibitor for the development of intellectual capital” (Janis, 1982) (cited in Nahapiet and Ghoshal, 1998 p, 255).

The team focus and working together facilitates knowledge sharing, as the credit is attributed to the team and not the individual actors. Actors who do not help the others or chose not to share knowledge will be noticed and will struggle to be socially accepted in the company. As

the CEO explained; the employees are encouraged to solve problems in teams, and not to go to their supervisor when they disagree or don't find a solution "what can I do, it is they who hold the solution, not me", "I'm only interested in hearing how they plan to solve it". They focus on taking on employees who are willing to take responsibility and the management trust that they will make the right decisions, giving the employees a lot of freedom. "I trust them to make the right decision, they know what we are doing, and they know the client".

The use of multi-disciplinary teams could introduce a challenge with regards to norms as the team members have different educational and professional background, and therefore also have different norms they follow. The "kosekroken"(the informal relaxation lounge) in this setting Depro also contributes to building the norms in the company. This is a meeting point where new and existing employees experience the team norms.

Challenges with the Depro team

Depro is planning to double its number of employees, this could provide implications for the norms in the company. Today the size of the company allows the management to have an overlook of the employees' skills and knowledge. And the constant rotation of teams gives everyone opportunities to work together, over a reasonable amount of time. This rotation helps to spread and build the norms, and prevents some divisions or departments from developing their own norms. A challenge for Depro in the future will be to empower the norms that provide them with a competitive advantage and better innovation capabilities, and suppress the norms that constrain them. New employees have the potential to introduce new and better norms, however as norms require a social structure to function, it is more likely that new employees will adopt the norms in the company, than introduce new ones. This is because they enter a group as a single actor. Another challenge regarding norms is that there are two types of norms. Formal and informal, formal norms usually require an official sanction if violated. Formal norms are also usually set in writing, for example in company guidelines, or code of conduct. Informal norms on the other hand are harder to catch, they are usually not in writing, and simply govern people's behavior. An example could be that only the middle managers sit with the CEO at lunch.

The Depro quality

Depro has a high focus on quality, in all the stages of their development and manufacturing, and every level is carefully documented. They have to be confident that the products they deliver fulfill their quality standards. When the customer approaches them they sometimes

experience that the customers' expectations or specifications does not correspond with Depro's quality demands. "Sometimes the customers has specified standard products such as gauges and valves, we know that they will not be good enough, we change them with products we know will be good enough, and if it is something we can make better ourselves we get better margins". "We don't want a situation where one of our products fails because of a component we didn't make, or we believed to be under spec". "Everything has to live up to the Depro standard". In this situation Depro could simply provide the standard products, and see them fail and get a new job fixing them. As they only delivered the product according to the customer's specification, the customer is to blame.

This is where the aspect of trust from the customer becomes important. The customer has already chosen Depro because they trust then, and are confident that Depro's norms will provide the customer with a product that will meet their expectations, not only the specifications. Over time some implication of this practice might arise as the customer expectation might exceed Depro's abilities. In these cases the high level of trust and strong norms would suggest that Depro would be open with the customer, and explain their shortcomings, and discuss with the client how to find a solution. In parallel they may use their network, internally and externally to search for a solution.

Norms in the Industry

In this section we will discuss the norms that have arisen in the industry, and how it affects Depro. These norms come from all the companies and take much longer time to change than the norms in the organization. Many of these norms are also result of governmental interference or accidents or incidents experienced in the industry.

Industry norms can set the agenda, and decide the focus of innovation and development. We have seen many examples of companies becoming successful because they breach with the industry norms. One example is Spotify, who has been successful in streaming music, rather than selling it. Completely breaking the norms of the music industry, where the focus has been on selling records or more recently mp3 sales. Established industries may be viewed as conservative and reluctant to new inputs, this is a challenge for innovators as they are less likely to be able to get support for their ideas.

Although the oil and gas industry constantly develop new and innovative solutions, we found that one of the biggest challenges for Depro today is the conservativeness in the industry. Depro see potential in redesign and developing existing tools and equipment. But because

Depro only develops for their customers they are dependent on the customer to give them the chance to create new solutions, and take advantage of their knowledge, and the customers are more interested in new solution to new problems, rather than new solutions to old problems. “Even if we are at the cutting edge of technology, in the global setting, the industry is still very conservative”. A lot of this conservativeness is due to the high cost of developing new equipment. “Today there is a lot of equipment on the rigs that are out of date and would benefit from a redesign”. However, due to the conservativeness Depro is not given the opportunity to redesign it. Another issue is that most of the equipment is in use 24/7 leaving little room for changing or upgrading it. Depro want to push the envelope; “We strive to deliver better, cheaper, stronger, and lighter components”, but they are held back because of the norms in the industry.

We found that the Norwegian section of the industry is more open to change, “the Norwegian companies is more positive to experiment, they are more positive to testing and trying new equipment”. “The American companies would rather use what they have used before, even if we think we can make something better and cheaper”. The willingness of the Norwegian part of the industry could be attributed to higher level of trust, although it could also be because the norms are different. The cost of operating in Norway is a lot higher than most other places and the companies have more to gain from making the industry more efficient.

The American companies on the other hand follow a different norm, and are more reluctant to try new things. This is an example of norms limiting the innovation capabilities, or possibilities for Depro. The American norms of only allowing parts of projects to protect their IP, and limit the risk of losing control over technology they have developed. The industry in Norway is also greatly affected by the HSE and governmental regulations.

Note: the difference between American and Norwegian companies could be attributed to Americans doing their experiments in the US.

Norms in the region

The Jæren region is known for its good work ethics, and responsibility. This is closely correlated with the high level of trust in the region as discussed in the trust section. The source for this is the region’s proud history of farming, an industry where the working moral is very strong. The farmer’s attitude prevails, even if not everyone grow up on a farm. Depro is aware of this even when they look for new personnel. “Someone who grew up on a farm or nearby one, know that you have to look after the animals, you cannot sleep in or take a day off

whenever you feel like it”. “We see this at the office as well, people who have a connection or is familiar with farming through family or similar have a different attitude to work”. Depro hold this very high when they are looking for new people.

The region has also a strong history of helping each other, “If your tractor I broken you know you can borrow your neighbor, and most likely you do not even have to ask. The neighbor knows that you need it if he sees that you have borrowed his tractor”. The framers also look after each other; if they notice that something looks wrong on the neighbor farm they check it out to see if everything is ok. We found that this attitude and manner has influenced the regional industry. The companies look after each other by talking together and warning each other if they encounter something suspicious. The information in the industry spreads quickly and if a company fail to deliver, or violates the norms they are quickly excluded from the collaboration in the region.

We also found that they are skeptical to people or actors from ‘outside’ the region. “One is skeptical towards people from ‘the outside’”. By ‘the outside’ Stokkeland refers to everyone not from Jæren, and it could even be people from Stavanger, which is only a 20 min drive away. We found that during the interview the actors often referred to the way “we” do it here, as in the region, and discussed how it was done in the Jæren area. They also highlighted that there was a difference if you where from the area and not. If you are from outside the region, one does not trust you as much because you don’t know the norms. “We notice very quickly if there is someone who cannot be trusted” the companies also warn each other if there is a new entrant who has false pretenses. “We are aware of companies or actors who just want to use us, and not give anything in return. They ask the wrong questions, and they are often reluctant to disclose what their intentions are”.

Implications regarding norms

The strong norms do not only provide positive outcomes. The focus on local talent may limit them in getting new insights. The local bias, and favoritism of their own network could lead them into a lock in. The focus on group work might lead the entire group one way, leaves less room for individual thinking. The industry in the region was mostly farming, and people grew up on farms and are used to work on the farm, and keep animals. When working on a farm you don’t have the option to be ill, you have to get up and feed and look after the animals. “When we hire new trainees, we prefer to hire someone from the local area, as their working moral is stronger”.

Summary of the relational dimension

In this section we have discussed the findings in the relational dimension of Social capital. The relational dimension is concerned with the resources embedded in the relationships. The section concludes that social capital in the relational dimension, in the forms of trust and norms played a crucial role in the innovation process at Depro.

We found that both trust and norms were important sources of social capital, that provided Depro with input to their innovation process. The high level of trust both between Depro and its customers, and within the region is one of the strongest factors facilitating for their ability

During our study of Depro we early identified the level of trust as one of the most important forms of Social capital that improved their ability to innovate. We can conclude that the high levels of trust, in Depro, among customers and in the region gives Depro a competitive advantage, and access to resources and abilities that would not otherwise have been possible.

The high level of customers' trust towards Depro explains how they are able to land big projects without extensive advertising. The trust is based in Depro's high competence and commitment to their customers, and this is communicated by the customers' through the network. The trust in their competence also gives Depro more freedom when developing products for their customers, as they are able to choose the solution they believe in and not what they expect the customer to prefer. In markets where there is little trust, such as with the American customers, they use contracts to build the first level of trust with the customer. Once they have completed the first project they can transfer the basis of trust from the contract to their competence and commitment.

Because of the high level of trust Depro can operate with higher efficiency, as they have to allocate fewer resources to governance. The high levels of trust make the customers and employees more likely to speak their case, and act as they are told. This also gives lower transaction cost as the high level of trust decreases the risk of the projects. High levels of trust also give Depro better access to more information about current and future projects. This is especially evident in the network-based trust. Competitors are also more likely to share information valuable to Depro, with high levels of trust.

The trust between the competitors is what gives the region its most interesting feature. The willingness to collaborate and work together, and their ability to see a bigger picture is very interesting.

The goodwill based trust give Depro improved access to resources they would not otherwise have access to. The competitors constantly help each other and they are willing to do favors for each other. The trust among the companies allowed for this to happen, and the management seem confident that they would be paid back. This prospect of repayment would show that the help is not free; it is just paid for by another form of capital than financial capital that is most commonly used to pay for services in the industry from the outside perspective.

The non-contractual based trust could be attributed to the strong local trust. The high level of trust in the region could be explained to the high level of trust in Norway as a country in general. Rothstein and Uslaner (2005) present “In Norway, Denmark, and the Netherlands about 60 percent of people believe most other people can be trusted” (p42).

We have also identified some implications regarding the high level of trust. Measuring services is difficult and this increases the risk of free riders, not contributing. Another issue is as they start to operate outside their region they are less likely to be working in environments with the same level of trust, and they may risk not getting the goodwill repaid. Internally in Depro we found that Depro has strong norms surrounding quality and teamwork. They have a strong focus on this and try their best to implement this focus as norms. A more challenging issue was regarding the norms in the industry. We found that the conservativeness of the industry could limit their ability to experiment and search for new solutions. The conservativeness also prevents Depro from opening a big potential market of redesign, and improvement of old equipment. Another norm that was the local bias, this included both companies and potential employees.

Structural dimension

In this section we will present and discuss the findings within the structural dimension. The structural dimension is more concerned with the structure of the network, and how the actors are connected with each other, and the relationship between them. In the case of Depro we discuss how the structural dimension of social capital facilitates the flow of knowledge internally, and the access to knowledge externally. We will start with discussing knowledge sharing internally, then knowledge sharing in the region. Then we will provide an example of an innovation project where Depro used their network to find a solution to a problem they were unable to solve themselves. Followed by a discussion of network closure, and broker opportunities.

Knowledge Sharing - Internal

In this part we discuss how Depro construct their internal network to facilitate knowledge sharing, and improved communication between the employees, creating social capital. Depro focus a lot of attention on creating an environment where people share what they know. Their high level of trust and strong norms with focus on quality contribute to a better environment for knowledge sharing. “We are used to solve problems together”. This also applies to the teams they put together; they use both functional, and engineering teams. One of the challenges faced by Depro is that many of the engineers do not know how to construct components; put simply, they only have knowledge about how to calculate tolerances and so on, but not to design and construct the components. To overcome this problem Depro has set up a machine shop. “We use the machine shop for three things; first teach the engineers to construct; second making prototypes; third as a backup if we are stressed for time, and cannot produce elsewhere”. “Engineers can only calculate, the constructors provide insights to what it should look like, and make it possible to produce it. We also get a lot of input from the mechanics and the guys in the machine shop if the things we design will work in day-to-day operations”. The close connection with the functional part (the machine shop) and the theoretical (engineers) gives Depro an advantage when searching for new solutions.

Burt (2000) focuses on this when discussing structural holes. “Individuals with more non-redundant contacts, especially contacts within their own firm, were more likely to report that they had ‘learned a great deal’ in the alliance” (Lofstrom, 2000, cited in Burt, 2000, p.365). Emphasizing the importance of connecting employees, so that they can draw from each other’s knowledge and experience. Simply having skilled employees is not enough if they do not share their knowledge and work with the other actors. The way they are connected, or an actor’s knowledge of the others in the firm can be social capital (Burt, 2000).

A great example of how Depro actively build social capital within the company is the lounge “kosekroken”, a sofa group in their offices where they meet up a couple of times during the day to have a cup of coffee and discuss problems in an informal atmosphere. This is an arena for the employees to seek assistance from others in the company who might have experienced similar problems in the past or have a suggestion to solutions. “Many great solutions are developed in this forum,” says the CEO. If they cannot find a solution they put together an ad-hoc team who can work on it. This setting is also a great opportunity for employees to contribute with new knowledge, or knowledge they have that the others did not know about.

Depro also bring customers to this arena for them to describe their project, or problem they would like Depro to work on.

Knowledge sharing – external

“The competitors trust us with information so knowing that we will not use it against them”.

When working with new products and solutions Depro often use their network and network ties to the industry to get information and knowledge. As discussed above the network is important as a source for trust and the creation of norms. However, the network can also provide other forms of social capital. In this section we will discuss how Depro use their network, and how this is social capital. When working with innovation it is important to get information about potential projects, accessed to key personnel and resources. Much of this information is not available publically or the details are poor. Or as Tidd and Bessant (2009) writes “Networking presents a powerful solution to the resource problem – no longer is it necessary to have all the resources for innovation under one roof provided you know where to obtain them and how to link up with them” (p. 149).

“For the focal actor, social capital facilitates access to broader sources of information and improves information’s quality, relevance and timeliness” (Adler and Kwon, 2002, p 29). We found that Depro’s access to information within the oil and gas industry is good. We found that companies often uses information that actors have obtained themselves to choose partners, rather than searching for potential partners using other channels, such as trade fairs and the internet, their extensive network in the industry allows them to do so. Their rich source of social capital by, network and trust allows them to gain access to information easily from sub-suppliers and customers. The high level of trust and strong norms make the network more likely to share information, as they know it will be used appropriately. Depro uses an extensive network of sub-contractors, “one of the key advantages of Depro is that we know the sub-contractors, we know who are able to deliver and we their products”. With this knowledge they are able to assemble teams that others are unable to, and take on much larger projects than the competition.

Depro’s network is not only limited to the Stavanger region, as the Norwegian Oil companies and service companies grow bigger and start operations abroad they use expatriate’s⁵ from Norway to run the operations abroad. “Even if the oil service industry is global, it is still a

⁵ Professionals sent abroad by their companies, as opposed to locally hired staff.

small network, often there are people from this region who works in Abu Dhabi or other places who knows us from when they worked in Norway, and use us as they trust that we can deliver. Often they have worked with someone of us before, and get in contact to see if we can help them”. This network is an important source of social capital for Depro as it gives them easy access to markets that would otherwise been difficult to enter. This forms the opportunity for brokering (Burt, 2000), which will be discussed further in a later section.

Depro’s use of multi-disciplinary teams provides with the opportunity to cover a larger field of information, as each team member holds information of a different network. The different actors in a team hold a different professional network that they have the opportunity to utilize. Before the oil industry there was production of diggers and farming equipment in the region. The farming equipment is still a going business, and is well know around the world. Many of the older employees in Depro have experience and knowledge from the farming equipment industry, and a lot of the knowledge and experience from this industry is applicable to the oil industry, especially knowledge of materials, casting of metal, construction and engineering. As the CEO says, “the basis of framing equipment, and oil tools is not that different”. The “old” network from this industry, and knowledge has proven valuable in the “new” industry. Below we present an example of a situation where Depro use their network.

[An example an innovation project using network](#)

Depro was approach by an oil service company who needed a specialized canister for transporting samples under high pressure by helicopter. This was a big challenge as the sample containers posed a great risk for helicopters, as they could explode during transport, another challenge was that this was a brand new product, and there where no legislation or guide lines for such product developed by the air authorities, or the aircraft manufacturers. There was canisters for transport on land available, however they where to heavy, and could not handle the changing air pressure of helicopter transport. Another issue was that during land transport the canisters could be place in a reinforced shipping container, this was not an option for the helicopter transport due to weight restrictions. The current land-based canister did not fulfill the Norwegian quality standards and would not be allowed on Norwegian platforms.

The new canister had to fulfill the following specifications; it had to be able to hold 1000 bar, it had to be transportable by helicopter, it could not be heavier than for one man to handle safely, it had to be storable for several years under pressure, it had to be possible to withdraw

samples quickly while maintaining the pressure, it had to be corrosion resistant, and it had to comply with any rules and legislation that had not been decided on.

Depro was given the challenge because of their previous experience with the development of a canister that could handle 100 bars. Their excellent knowledge of valves and materials made them the perfect candidate for the job. The development process was smooth and they collaborated with partners and companies they usually worked with, in their network. Det Norske Veritas (DNV) provided assistance with the specifications and handled communication with the international air transport authorities and legislative body. The regulatory process was complicated and involved many companies and institutions.

During the development they found that they could not use regular stainless steel, as it was not flexible enough to handle the changing pressure. Depro have a great network of metal suppliers in Sweden that they have used for their previous projects; they worked with them to find a more suitable alloy. After some trial and error they decided on a special form of hardened steel, which had the strength and flexibility they needed. When testing the prototype they met a problem that could endanger the entire project. The steel they used, was strengthened in a special process, the problem was that this process also removed some of the anticorrosion qualities of the steel. This very small amount of corrosion caused a problem in the rivets for the lid making the canister unable to open after a very short period of time making the canister useless.

They were out of options, their regular steel suppliers in Sweden did not have a solution for the problem, and they could not use a different material, as it would be too heavy or too weak. After some time they tried to contact Kverneland AS, the manufacturer of farming equipment. They have some of the same challenges with strength and corrosion. Unfortunately they did not have a solution, but one of the engineers had heard of a new method used by the weapons manufacturer Nammo, at Raufoss outside of Oslo. The weapons manufacturer had many of the same challenges as Depro with regards to weight, strength and corrosion. They used a new method for strengthening the steel, by using vacuum. This method maintained the strength and the corrosion capabilities. Depro was allowed to use the technology for their canisters, and it proved to be successful. Together with DNV and the other partners they were able to develop a canister that fulfilled all the requirements, and it is now in use on multiple installations around the world.

Network Closure

Coleman 1988 introduced the concept of closure of social networks. Closure is a property of social relations that provide the structure necessary for effective norms. In a closed network all the actors are connected making them able to combine forces and impose effective sanctions. Nahapiet and Ghoshal (1988) argue that the conditions for closure are typically found within organizations, however they may also be found in inter-organizational partnerships. Burt (2000) has a more critical view of closure; he argues that the members of a closed group would only focus on their own activities. He says that closure is about giving advantages to the members of a group, creating an in group/out of group division. This builds on the on the implications regarding high levels of trust and strong norms. The closure also facilitates for other forms of social capital such as reputation and trust, as *Coleman (1988) argues, "Reputation cannot arise in an open structure..." (p.107).*

The concept of closure can also be seen in connection with Bourdieu's view of social capital, as membership of a group. In Bourdieu's discussion it was very important which group you where a member of would greatly inflict your prospects, and abilities in the future. As the groups resources and place of society would be available to you as a member of the group. Bourdieu discusses how these groups reproduce themselves, and maintain the level of inequality in society. You are either in the group that will guarantee you a great future, or you are in a group where you won't have the possibility for a great future. The distinction of who is within the group and who is not is consistent with Coleman's closure argument.

In the case of Depro, we have found that network closure facilitates the high level of trust and the effective norms. We will follow the same levels as earlier with internal, local industrial and regional closure. The closure provides a set of boundaries for the members, the boundaries guides the members by limiting who they share information with, who they trust, who are likely to have the same norms and so on. "Thus, we may say that closure creates trustworthiness in a social structure"(Coleman, 1988, p, 108).

Internal closure

Depro operates as a very closely linked network, the employees interact at work, but they also have a lot of activities outside the workplace. The companies approach to including the whole family in social events and activities makes the bond even stronger. It is voluntary to participate in these non-work related activities, however if an actor chose not to participate the actor could experience a weaker connection to the others, in other words the actor will not be

closed in with the others. These activities help to build the “Depro community”, increasing the trustworthiness and effectiveness of norms in the company.

The high level of activities and social interaction among the workers could also create a boundary, as the expectations for participation for the workers might be too high.

The employees in Depro are mostly male, born and raised in the local region, most consider themselves “Jærbu” which is the local term describing people from the region, other classifications would be “Siddis” which refers to people from Stavanger, and “Sandnesbu” referring to someone from Sandnes. They also mostly live in the area, with their families, and many of the children participate in the same sporting activities and so on. The strong community among the employees provides the attributes necessary to create a closed network. From an organizational perspective this would be positive, as it would provide governance of the actors, and availability of resources. In Depro we experienced a community and care from the workers, and an interest of becoming good together. From an innovation perspective the closeness of the network would help to enforce and develop the norms that promote innovation in the company, however the closeness could also make the organization less receptive for inputs from the outside. As the closeness can give only the actors on the inside advantages, it could also limit the actors in the network to receive advantages from outside the network.

Local industrial closure

In our interviews the CEO very often referred to “us at Jæren” and this implied that there was a difference with the companies in Stavanger. Depro and the region appears to be part of a very closed network with a high level of trust and strong norms. There are some biases against outsiders, and entry into the network can prove difficult for someone who does not have any contacts in the network. The reluctance to hire people from outside the region could be explained by this high level of closure. Coleman (1988) argues that this closure creates social capital, while Burt (2000) is more critical about the concept. In the case of Depro we would argue that it is positive as the strong connection in the region and closure provides the members with resources that would not otherwise be available. The closure also provides the region with a competitive advantage compared to the companies who are not part of the region. A problem arises when the resources within the closed network have been fully utilized, the challenge is to identify when this point has been reached.

Another benefit of closure in the local Depro network is the governance effect. The sharing of knowledge and resources within the network provides a risk of free riders as discussed earlier. The closure of the network provides an effective way of sanctioning the actors who violates the trust. When we asked how they handled cases of companies or other actors, who tried to take advantage of the network, they answered that this rarely was a problem within the network. However, they were quick to respond if someone from outside tried to take advantage of them, by contacting other companies to warn them of their experience.

Structural holes

Burt (2000) introduced the concept of structural holes. Although Burt (2000) is critical to closure, he identifies the potential of bridging closed groups. Structural holes are set to appear between closed groups. The example of network above is also a great example of a structural hole. “Census data on economic transactions have been used to describe how producer profit margins increase with structural holes in networks of transactions with suppliers and customers” (Burt, 2000, p357). “The advantage of bridging structural holes emerges from an individual generating contingency for new ideas synthesized from diverse information clusters to which a network entrepreneur has access” (Burt, 2000, p362). In the pressure canister example there was a clear distinction between Depro’s regular network of suppliers and partners in the oil and gas industry, and the weapons manufacturer at Raufoss. In this case the employee at Depro who contacted Nammo AS was the bridge that connected the two groups. This is also an example Granovetter’s (1973) of a weak tie and without the bridging of the two groups Depro would not be able to produce the pressure canister, and the project would have halted.

Another situation of where Depro benefit from structural holes is the use of expatriates. When they go abroad they enter a new network, normally inaccessible to Depro. The expatriates have access to both networks and are able to bridge them, benefitting both the expatriate and Depro. The two situations provide two good examples of opportunities that is a result of structural holes. There is an opportunity for Depro to further exploit these holes. In their planned expansion they have the opportunity to hire people who have access to other networks, and can provide them with bridging opportunities.

Summary Structural Dimension

In this section we have discussed how Depro use the social capital in a structural dimension in their innovation process. The structural dimension is concerned with who is connected, we have looked at how Depro use their network, to get access to information, and share and obtain knowledge. We have discussed how Depro actively use social capital and continuously build their network internally to facilitate knowledge sharing. Depro also benefit from high levels of structural social capital in the industrial region, in the form of close collaboration, and an extensive network of sub-contractors.

The internal network closure in Depro helps to build trust and enforce the norms within the company. Bourdieu and Burt (2000) discuss that members of a closed network receive benefits that is not available to those who are on the outside. It also provides benefit for the actors who are inside the network. The network both internally and externally also provides Depro with access to resources key to their innovation process.

The potential of structural holes was introduced by Burt (2000) and in the Depro case we found that this form of social capital holds potential for Depro to exploit. They are currently strong in their own network, both in terms of sales and development. The canister case shows that there is potential for using other networks to create better solutions for Depro. The Stavanger region, and to some extent Norway is very influenced by the oil and gas industry, and the region could benefit from access to other networks.

Cognitive Dimension

The cognitive dimension is concerned with the resources in the group that facilitates shared meaning and a shared vision between the group members (Nahapiet and Ghoshal, 1998). The resources in the cognitive dimension dictate the direction of a group or team. Often the corporate headquarters set these goal, however they may also be more ‘locally’ founded associated with specific products or department (Inkpen and Tsang, 2005). We follow the Inkpen and Tsang (2005) in using shared goals rather than vision, as we argue that it is more appropriate in the innovation process at Depro as the focus is to design and manufacture an end product for a client. We will also be discussing the effects of shared culture.

Community Building beyond the company – Shared goals

As most of the employees live in the area and have families in the near vicinity of the company Depro try to give some back to the local community. It is important for Depro to be a visible company within the local community. “We focus a lot on the community, and sponsor many of the kids’ football teams in the area. We want families to be proud of having a family member working at Depro”. We found that Depro is very concerned with appearing as a locally aware company, they focus on communicating that the company is a good place to work, and that they take good care of their employees. “We want the whole family to be proud of having a family member working at Depro”.

When hiring new employees, they rarely advertise. “We get many open applications every day, and very often I know of the candidates form other channels. Because of our network we know who are available, and who holds the knowledge we are looking for”. Most of the people, if not all have are either form the area, or have strong ties to the area. We also found that their career section of their website was the only section that was presented in Norwegian, also with reference to the Jæren area. This is interesting as the working language is English, and the industry, at least for outsiders is regarded as very internationally focused.

When asked about this Depro stated that it was not initially, they would hire anyone who are qualified. However they were looking for people whom either already where settled in the area, or where planning to settle in the area. “We don’t want to hire someone who are going to leave after three to five years”, “We want to build the company community, and that will not work if people only work here short term”.

Training of employees

Depro focus on education and training of their employees. On their web site they state “we arrange regular training for our employees, monthly professional meetings and seminars” (Depro, 2012). By investing in human capital, Depro wants to improve their employees’ skills and knowledge so that they may perform better. It is a general perception that letting the employees invests time and resources in building their knowledge, will benefit the firm, and the employees will get more pay, their value for the company will be higher, and they will get higher status (Coleman, 1988). Building social capital is different, as most forms of social capital cannot be taught. They are developing over time in a social structure, and occur within the interaction among the members and not within the members themselves. This leads us on to another form of training they use in Depro that is much less formal and structured. When discussed, they do not view it as training, but just a form of social event where they only talk business.

As discussed in an earlier section, the use of the “kosekroken” may also have other effects than just knowledge sharing. By constantly sharing the challenges and successes they communicate that they are part of the same team, and that they work towards the same goals. By doing this they also make sure that there is no disruptive competition among the employees or teams. Setting teams up against each other may improve efficiency, however it may also alter the goal of delivering to the client, to beating the other team.

At their offices we also observed a playroom for kids, a feature they had installed so that the workers could take their children with them to work if school was out or similar. Allowing employees with children more flexibility.

Depro also have a lot of activities for the employees that is not work related. In the theory of social capital Coleman notes “...Organizations, once brought into existence for one set of purposes, can also aid others, thus constituting social capital available for use” (Coleman, 1988, p108). And in Depro we find several examples of this.

Depro have their own Micro Brewery, a legitimate business producing their own beer, run by enthusiasts at the company ‘the beer gang’. They produce a new beer 4 times a year, and host events for employees and customers with beer tasting and tour of the brewery. The brewery was initially started by some of the employees, and later became a group in the company. The Brewery and its activities create another arena for the employees to meet, outside of work. It also gives Depro some publicity in the region, attracting both customers and new employees.

This novelty is something that is out of the ordinary, creating a something to talk about. What initially started out as a brewery for some of the employees have become an important social arena for people to meet and gives Depro an excuse to invite customers for meet and greet. Moreover they invest a lot in other social activities with trips abroad for all the employees and spouses, covered by the company. “We don’t think more pay will is the way to go, we want people to have fun at work, and with the people they work with”. This is not unique in the region, but it helps to build the community at work. Letting the families at home get closer to the family member’s work place and colleagues with families.

Summary cognitive dimension

The cognitive dimension was introduced by Nahapiet and Ghoshal (1998) and is concerning the public good of social capital, or the shared vision and culture within an organization. In Depro we saw that they have a strong focus on building a Depro culture among the employees. They have many outside of work activities for the workers to further build what we have identified as the “Depro community”. The company is investing in their people and their families, and makes an effort to become more visible in the whole community where they live. As most of the employees and their families live in the proximity of the company, Depro have chosen to invest in their free time as well. By sponsoring the kids’ football teams, and inviting the spouses on trips, they build a relationship with the whole family, and not only the employee. By introducing the Depro culture into the families they are able to get more from their employees as the company is bigger integrated part of their lives Depro build Goodwill with their employees. The microbrewery also helps to further build the culture of Depro. It provides the employees with an opportunity to interact with each other socially outside of work, building a shared culture. The shared culture and interest for things outside work helps to build other forms of social capital such as trust and knowledge sharing. A challenge is however to continue this strong focus as they expand their business.

The use of the sofa group “kosekroken” in the office also contributes to build the culture. The share each other’s problems and solve them together. Building on the strong trust and norms already present in the company. This venue for meeting you colleagues also helps to promote a common goal for the company. Many of these activities and actions is only intended to be a social activity for the employees, but as Coleman (1988) argued, they may also help to build social capital in the organization as a side effect. When the employees are used to work together as a team when they brew beer, they are more likely to work as a team when they come to work.

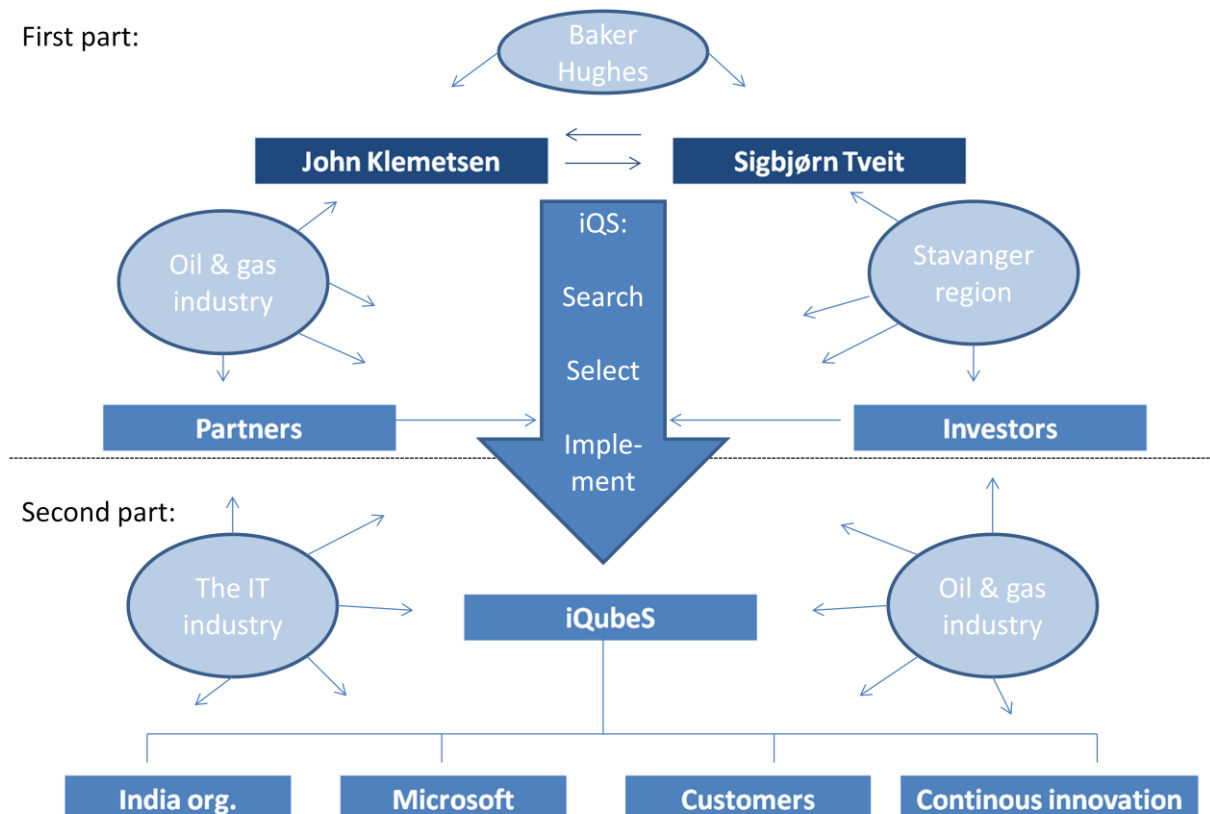
Findings and analysis iQubes AS

In our study of iQubeS we found evidence for the significance of social capital through the founder's extensive network and their trustful collaboration between each other and with external actors. Moreover we found a particularly important collectively industry norm built on trust, promoting close collaboration and sharing to become 'better together'.

The iQubeS-case differed from the Depro-case in several ways, particularly in relation to the recent establishment of the organization, which consequently led to an increased focus on the founders and their individual network. This case will start by investigating the course of events relating to the development of iQS, and how social capital has influenced the different stages of the innovation process. Moreover we are interested in analyzing the transition from the individual social capital held by the founders, and the social capital recognized in the iQubeS organization today.

The framework presents the external sources and actors influence on the main stakeholders identified in the study. Furthermore the framework characterizes the micro environment with direct or indirect influence on the innovation process behind the iQS software. Our findings will be presented in two parts, first focusing on the founders and the innovation process, and secondly on the organization and its continuous improvement model.

First part:



The “Baker School”

iQubeS AS was founded by Sigbjørn Tveit and John Klemetsen when they decided to start developing the revolutionary business software iQS. In the first interview talking about the processes leading to the iQS Tveit elaborated on the significance of the solid international background from Baker Hughes. Both founders were recognized in the network for their competence and determination in IT-implementation and their focus on quality control. Tveit further emphasized the essential know-how and know-who (e.g. a form of social capital) learned through experience and processes of what he termed the “Baker School”.

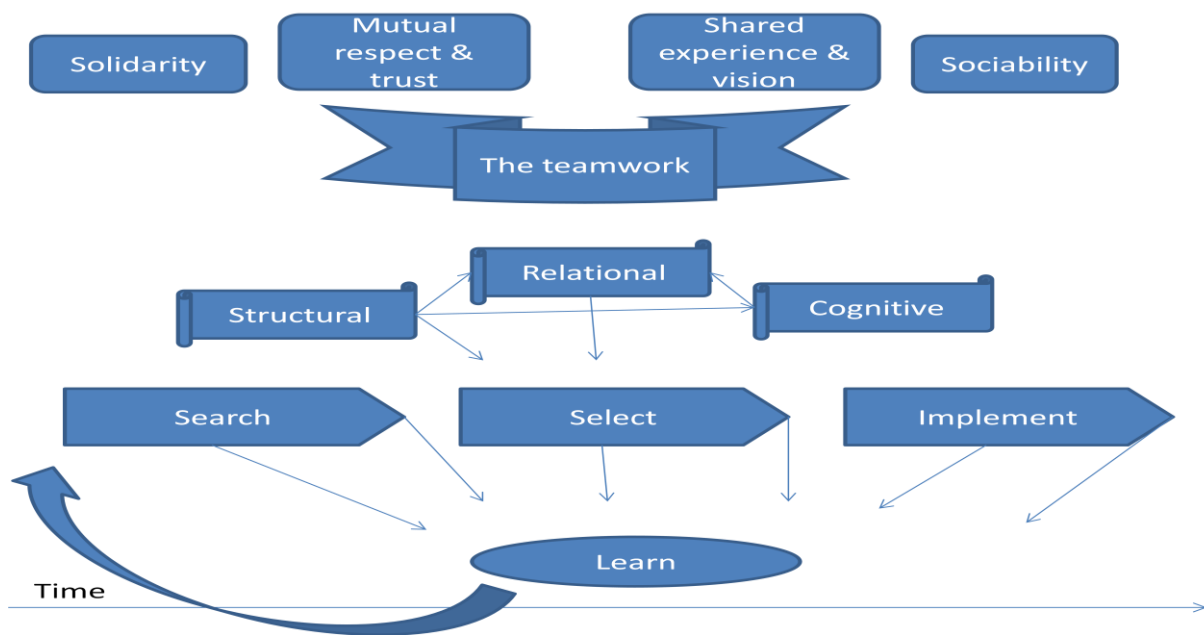
Burt (2000) argue social capital to be the contextual complement to human capital, i.e. that 20-30 years of experience has not only given the founder’s the insight and practical skills required, but a network of valuable contacts. Similarly Klemetsen elaborated on the experience in the oil & gas industry at Baker Hughes and referred to the “school of life” as one of the main reasons they were able to successfully develop iQS and establish iQubeS. The system consists of a unique combination of various inputs (experience, network, flexibility, lean processes, quality control and best practice) into one product and “even today we don’t know of anyone who offers a total business package as we do” Tveit added.

The innovation iQS

“Some firms implement the SharePoint platform and assume that everything is automatically going to be sorted out before they eventually notice that is not the reality. In iQubeS we have combined Microsoft’s 40 years of best practice (SharePoint) and our 50 years of experience in the oil & gas sector” Klemetsen proudly stated. The idea behind the whole process-oriented management system was to make the processes intelligent by offering numerous possibilities for customization according to industry standards and special procedures. Using the system should be like being guided by a GPS, where every process is certified according to ISO or other qualification standards. “One of the main goals of the iQS system is to help companies to learn from, and capture the experience gained, and to use information from previous projects”. By storing all the data in a common system, the whole organization would at any time have access to both historical data, and correct and updated information. “When important decisions are made; it must be based on the latest available information. It is therefore crucial that all relevant information reaches out to the relevant stakeholders”. During the interviews Tveit drew similarities between iQS and the iPad, which both is a system/device that connect diverse sources of information into one unit.

First part: The individual social capital in the iQS innovation process

Tidd et al., (2005) discussed the consequences of a limited understanding of the innovation process, arguing the importance of mental models in order to frame the issues which need managing. “If we believe that innovation is simply a matter of coming up with a good invention – then we risk managing that part of the process well, but failing to consider or deal with the key issues around actually taking the invention through technological and market development to successful adoption” (Tidd et al., 2005, p.78). For purposes of this case we adopt Tidd et al. (2005) simple framework of the innovation process in three-stages:



The figure has included relational forms of social capital that represent a foundation of a good teamwork. Moreover the figure has included the influence of the different dimensions to give a mental overview of the overall process until we discuss this further in the conclusion (ch. 6).

Searching: In this initial phase we focus on the founders' teamwork and ability to identify the opportunity that would improve the current system significantly.

Selecting: Deciding which of the signals to respond to. The opportunity became asserted because of the founders' position in the organization, and the inability of the Baker Hughes's management to see the opportunity for change.

Implementing: Translating the potential idea into something new and launching it in an external market requires attention to: First, *acquiring* the resources to enable the innovation. Second, *launching* the innovation and managing the process of initial adoption

The purpose of presenting the iQS development in these stages is to give a presentation of the findings in a chronological order and aid to recognize the most important forms of social capital evident at each stage of the process. Extracting knowledge from the process is important and it aligns with the purpose of the iQS that is to support companies in the learning process, and serve to capture the gained experience by utilizing the information from previous projects.

A broad strategic discussion regards where, when and how organizations make use of external knowledge to grow. In Cohen and Levinthal's (1990, cited in Nahapiet and Ghoshal, 1998) research on innovation, they argue that the ability to recognize the value of new knowledge and information are vital for the organizational learning and innovation. These abilities, which they labeled 'absorptive capacity' depend upon the existence of related prior knowledge, and based on this they suggest that an organization's absorptive capacity do not reside in any single individuals, but depends on the link across a mixture of individual capabilities. This is however the focus for the latter part of the findings, where we will review innovation as a core process within the organization by analyzing the norms and trust in relation to the continuous innovation model.

Searching for an opportunity

Tveit and Klemetsen have a solid experience from Baker Hughes, one of the largest oilfield services companies in the world. Baker Hughes operates in more than 80 countries around the world which imposes a lot of challenges regarding its internal storing and sharing, of knowledge and know-how. Nearly 20 years ago John Klemetsen was part of the team developing an Information Management System (IMS) for the Baker Hughes division in Norway. The system got a great deal of attention for its excellent business logic and provided the Norwegian division with a unique tool for organizing and managing their offshore projects. The Baker Hughes management decided to implement the IMS in the other countries as well, and Klemetsen was part of the team responsible for the development and implementation of the IMS, initially in Scandinavia but later also for Europe, Africa, Russia and Caspian (EARC). At one point in implementing IMS internationally Tveit became Klemetsen's manager, and a trustful collaboration was initiated.

Klemetsen discussed the role of his former boss, prior to Tveit. He was the brain behind the IMS and Klemetsen's mentor for many years. *"We would not be sitting here today without his knowledge and distinctive visions, but unfortunately he was an entrepreneur ahead of his time*

and had gradually lost his impact in the organization". On the other hand, the project needed a more practical manager and Tveit was the right man for the job, Klemetsen explained. "Tveit is not the technical kind of guy, but he is insanely process oriented. He has a remarkable business understanding, which made him essential to get the system out in the world!"

In the process of innovation and continuous improvement at Baker Hughes, Klemetsen and Tveit dropped in on a presentation from Microsoft and the new version of SharePoint 2003. Klemetsen recognized the platform to be a major breakthrough, and have huge potential for Baker Hughes by building the IMS on the SharePoint platform. In SharePoint the data was stored centrally at an online server in contrast to the old IMS system where every location had their own local server, which made it difficult for sharing and integration. However, their view was not immediately shared by the Baker Hughes management and a couple of years of discussing the path of the organization's IT-strategy followed.

The complementing team

The management team of iQubeS is led by Sigbjørn Tveit which is the typical manager with a business mind and process oriented approach. To describe Tveit, Klemetsen enthusiastically described *"Tveit is not only a smart man, but more importantly, he is a DO'er!"*

During the interviews it became gradually apparent that part of the success was the close and strong collaboration between Klemetsen and Tveit. They had developed trustful relationship built upon shared experiences and a shared language. Nahapiet and Ghoshal (1998) discussed the importance of having shared experiences and interactions over time to develop trust and a shared language, as well as to believe in a common vision and purpose.

This was especially distinctive in the first interview with the management, where the founders described the system's uniqueness with a shared compassion almost finishing each other's sentences. In an enthusiastic manner they shared their goals and vision for iQS and the iQubeS organization. Tsai and Ghoshal (1998) argue a shared vision to function as a bonding mechanism that allows for shared communication and integration of ideas. Bonding was one of two components of the social capital concept referred to by Putnam (1995), describing bonding as value assigned to social networks between homogenous groups of people. Bonding social capital has also been noted to hold some negative externalities, however in an organizational setting it could e.g. promote solidarity and strengthen the team feeling.

During the latter stages of the interviews they were both speaking enthusiastically about the importance of one another. “Tveit is a funny guy... Presenting himself for the department in Baker Hughes for the first time he just said, listen up guys. I’m the new manager, and I’m like superman, and Klemetsen is my cape, and together we can fly” Klemetsen elaborated in a cheerful manner. We perceived Tveit as the process-oriented businessman and the manager who controlled the business. On the contrary we perceived Klemetsen as the more persuasive developer with a strong entrepreneurial spirit.

The Entrepreneur

Burt (2000) presents some personality traits of actors who are more likely to become brokers in a network, arguing that actors who are more entrepreneurial-oriented are more likely to be surrounded by a large sparse network (with structural holes that can be exploited). “The advantages of bridging structural holes emerge from an individual generating constituency for new ideas synthesized from the diverse information clusters to which a network entrepreneur has access. Creativity and learning are thus central to the competitive advantage of structural holes, and so should be observed more often where relationships bridge structural holes” (Burt, 2000, p. 362).

Burt (2000) further explained that entrepreneurs are often identified because of their absence of conspicuousness. Moreover he argued that those with experience and who is richer in social capital are more likely to launch successful entrepreneurial ventures. The early access to a broad diversity of perspectives, skills and resources provides a broad base of referrals to customers, suppliers, alliances and employees.

Furthermore Burt (2000) discussed how it benefits the entrepreneur to identify promising opportunities in relation to the overall business perspective gained through experience and how this increases the probability for the entrepreneur to adapt his pitch to potential customers or investors. This was evident in the second interview with Andresen emphasizing the importance of the passionate entrepreneurial salesman Klemetsen who knew exactly how to persuade potential clients and investors. With his easy-going attitude Klemetsen was able to convince potential clients that iQS is essential to their future success, engaging the customers to elaborate about their core business and how important it is to have a good IT-system with access to historical data in the decision-making process.

The manager

On the other hand Burt (2000) also argued that managers are in better position to read diverse interests and know who can be brought together (e.g. implement a new internal policy). Burt (2000) reviewed DeSoto's (1960 cited in Burt, 2000) experimental design for measuring the difficulty of learning a social structure by applying Freeman's (1992 cited in Burt, 2000) research that requested inexperienced students to learn the relations in a small network that contained a structural hole (a gap between two closed networks with no connection). The students had severe problems identifying the structural hole, however in a study by Janicik (1998 cited in Burt, 2000) who also applied DeSoto's design with more experienced MBA students found evidence for a significantly faster understanding and discovery of the structural holes.

“Experience seems to be the answer to questions about where, when, or how people learn about brokering connections across structural holes” (Burt, 2000, p.364). Tveit have more than 15 years of experience as project manager and performance manager in the Baker Hughes organization and seemed to have a breadth of view and access to a widespread network of information. In a role where he functioned as an intermediary between the centralized management and operations his task was to bridge the holes to secure a fluent flow of information between the divisions. Because of his background and experience with structural holes he is more capable to see the holes in a new situation, and so enjoy enhanced performance associated with spanning the holes (Burt, 2000).

Reflections

Burt (2000) did also discuss that even if the entrepreneurs are more concerned with new solutions and change, at a higher level there was little evidence of these personality differences, referring to a study by Mehra, et.al. (2000 cited in Burt, 2000). The study found that middle and top managers are able to build networks that span over structural holes, regardless of their personality traits. This phenomenon could be explained by the fact that the middle and top managers have advanced to these positions because of their ability to build networks over structural holes, suggesting that most of the actors investigated where of the same personality type.

However, in our case the personality types are primarily relevant to underline how the founder's complement each other on different levels, and how their background and experience differ in their previous organizational position. Our limited data makes it difficult to draw conclusions on a general basis, but our findings could validate Burt's (2000)

argument that managers are more likely to understand the concept of structural holes because of their position and experience with managing different kind of networks. We argue accordingly that Tveit's position in Baker Hughes network has given him information and control benefits of structural holes, that have been useful in the development of iQS. Particularly in the early stages of attracting investors and customer to share the development cost. Although Burt (2000) mainly analyzes the network structure of promotions and the internal role of a potential broker it could also be interpreted as external advantages that could be utilized to find new customers, partners or investors.

Selecting the right opportunity

In the Baker Hughes-network they were both recognized actors in important positions. Klemetsen was the single-point of contact for almost 30 000 users while Tveit was still EARC Performance Manager (QA). Klemetsen was determined to change the IT-platform in order to enhance the information flow through better processes, nevertheless the Baker management wanted instead to integrate their system with SAP (systems application products). His patience was diminishing, and after the release of the 2007 version of SharePoint he was sure the platform was the “future within information technology!”

Klemetsen knew the significance of having Tveit as a partner, and shared his vision of developing a system applying business logic based on their operational experience, but on the SharePoint platform. Tveit was persuaded, “*it was an opportunity we just had to take*” he elaborated. The next step was how to withdraw from the network without breaching the norms and sustain the social capital gained.

Social norms vs. organizational norms

Coleman's (1988) closure argument focus on norms and traditions within and among organizations which could make it harder for employees who wish to challenge status quo, as they would most likely be sanctioned by the rest of the group for not complying with the set norms. Another argument for closure as an obstacle for social capital is that it limits the information flow between groups as closure tend to enforce the social capital among the members, but weakens it towards the outside actors.

Because of their central positions it was important to be able to leave the organization without risking the gained goodwill and breach with the social norm. The general social norm is to be loyal toward your employer, and that ideas generated in relation to your work belongs to the company. In this case both Klemetsen and Tveit had identified a good opportunity, but in a

huge organization like Baker Hughes the decisions are hierarchal. However IT-systems are not part of Baker Hughes' core business, which made the individual pursue less of a treat to the organization. We further emphasize that the experience associated with Klemetsen's former boss had showed Klemetsen that there was no room for personal initiative without acceptance from the top-level management.

In relation to some organizational changes in Baker Hughes in 2007, Klemetsen and Tveit consequently decided to select this opportunity and develop a new IT-system. Because of the situation at Baker Hughes (being the single-point of contact), Klemetsen agreed to continue for another year as a technical support for the IMS system from his own office while being able to work on his own project. This was a win-win situation for both parts, which allowed Klemetsen to gradually leave the Baker network in a respectful manner and gain even more goodwill from Baker Hughes. Similarly Tveit agreed to continue in Baker Hughes for a couple of more years managing workshops in Norway while assisting Klemetsen when required. The development of the system was mainly Klemetsen's expertise; nevertheless he was in need of help from partners and developers.

The process enabled the founders to withdraw from their positions in a slow and gradual transition almost appearing as a friendly spin-off.

Implementing: Developing and releasing the system

The large network in terms of size was the structural foundation of the use of the Baker Hughes network as an information and referral channel. This reflects the social capital effect on reducing transaction cost by facilitation of information flow and knowledge creation, which is emphasized by Granovetter (1973), Putnam (1993), Burt (2000), Landry et al, (2002) and Nahapiet and Ghoshal (1998).

Granovetter (1973) analyzed the advantage of a large network of weakly tied acquaintances enhancing the flow of information and ideas in professional networks. However in a study of biomedical scientists on social capital and knowledge creation, McFadyen and Canella (2004) found that the strength of interpersonal relations had higher marginal effect on knowledge creation than number of relations. Which is somewhere closer to Burt's (2000) view, whose main argument is that people who do better are somehow better connected, and individuals who are able to span the structural holes create a competitive advantage.

While working for Baker Hughes, Klemetsen was allowed to write the software specifications for building (structuring) iQS. The oil and gas industry is an industry characterized by strict governmental regulations and documentation (certifications and guidelines for procedures and standards) that enhances the need for a good customized management system. They were both experienced with the operating challenges, and wanted to make a system unique by making every processes certified in accordance to e.g. ISO/IEC. *“...most of what the different companies in various industries need to run is their business! This is taken care off in the iQS system. If our customers have specific needs, we can easily tailor-make the system for them”* Klemetsen emphasized.

The founders understood that such a system was demanded in the market, however developing the system would involve a lot of uncertainty regarding investors, partners, and customers. The development happened in collaboration with ErgoGroup (now Evry) and Webstep to build the system module by module. This process did not appear to involve social capital, as Evry and Webstep are among the largest software consultancies and were chosen because of their focus on quality and possibilities for further development at later stages.

Acquiring the resources to enable the innovation

An essential part of acquiring resources for the development was the founder's large network and their enthusiasm evident in an engaging collaboration and a shared vision. Arthur Rock a successful venture capitalist famously stated *“I invest in people, not ideas”* emphasizing the importance of having the right motivated people who are able to see future obstacles, adapt and guide the businesses.

The iQS combined essential features and targeted a fundamental need for businesses to have one system that coordinates all the info and internal resources. The progress of building and developing the system was expensive and they estimated the cost to be around 2 million dollars. During the development they had customers and investors already interested in a personalized management system aimed to support the operations of organizations within the oil and gas industry. As result of the many network ties the information about the new system was spread in these channels, and combined with a local network consisting of a large amount of trust toward the founders, the system was released without any debt. We found this particularly important, and searched for explanations in the literature of what motivated the customers to invest in a risky project with no immediate returns beside a unique system which could be developed by any other IT-companies. Portes (1998) argued the same importance of

identifying what motivates the donors to help recipients in the absence of immediate returns. In this case we argue that the regional norm of supporting entrepreneurs and new industry was important combined with trust and reputation in the region. Leana and Van Buren (1999, p. 524 cited in Adler and Kwon, 2002, p.25) “*arguing that the sources of organizational social capital lie in trust and ‘associability’ – the willingness and ability of individuals to define collective goals that are then enacted collectively*”. Similarly Putnam (1995,1993) argued that sources of social capital are not only in networks, but also in norms and trust.

One client did even become an investor in need of a tailor-made system focusing on all the specifications and requirement needed in the industry. This contributes to the perception of high structural and relational social capital through their recognition and trust. The customers and investors invested a lot of faith and confidence in Klemetsen and Tveit being able to develop the competitive and unique software they promised.

Locally in the Stavanger region and nationally the family name ‘Klemetsen’⁶ have some celebrity status, this has mainly been useful in “opening some doors” as Klemetsen described it. In the region the family is recognized for being cheerful and bringing a show⁷, and these informal ties seemed to be particularly important in order to attract interest of potential clients and in increasing the distribution of ‘the word’ in the information channels. While trust and shared narratives was decisive in the next process of signing the client.

Launching the innovation and managing the process of initial adoption

Sustaining adoption for the long term and revisiting the original idea. In this stage we emphasize the part to get iQS to the market and how the system has been modified through incremental innovation. The launch and the start-up stage were initiated in the late 2008 in a gradual process while Tveit continued in the Baker Hughes enabled the use of their Baker Hughes network as a referral channel for potential clients and re-sellers who had change position or joined another company (network).

The trust and reputation through the founders’ individual network was crucial for potential customers to take a costly and often a vital decision regarding their IT-solutions. As an inspiring entrepreneur Klemetsen were able to convince potential clients that their technology and their platform was the best in the industry. Klemetsen’s pitching was informal, using

⁶ His younger brother Ole Klemetsen was a professional boxer, competing at an international level.

⁷ John Klemetsen and his family have also been performing frequently with their band in the Stavanger region.

jokes which made the decision-makers comfortable in his presence. This was something that Burt described by how the social capital (network and position) tended to improve the entrepreneurs ability to pitch and 'share' their ideas to become owned by the other part.

After the release of the system in 2009 they got a front-page story in the local-press with the headline: "Makes good business in IT". The article was written by an acquaintance as a friendly favour representing social capital in forms of regional informal ties, norms and goodwill. The article gave an interesting and informative description of what services iQubeS offered and about the founders' background. This coverage was valuable in terms of genuine and trustful publicity that contributed in being recognized outside the immediate network, and becoming locally known as entrepreneurs with great enthusiasm.

"Meeting potential customers they often present a problem for us to solve, and we are always able to give an innovative recommendation to their problem, this is crucial in closing the sale" Klemetsen said. This is primarily know-how (human capital) but as elaborated earlier, this is equally about the entrepreneurial go-ahead spirit through the shared vision and norm of becoming 'better together' in the region. The founder's were able to identify with potential clients because of shared narratives and experiences regarding the exact same 'operational' issues the companies are struggling with. Becoming an iQubeS client is a long-term decision that is similar to a partnering where both companies need to trust each other and share knowledge in order to develop together.

After signing a new client they establish a work-group with e.g. one of the management, and a business analyst without much technical background to exchange ideas of the new module the customer desire. To help the customers visualize the integration process they assign a complete room showing how all the different modules and systems communicate with each other. This make it easier for the customer to see how the flow of information is transferred between the different units, and how they want it to be tailor made. Scrum is central in iQubeS' development, scrum is a framework for development of complex information systems. It is based on iterative and incremental processes where the development is executed by multidisciplinary teams. *"In today's fast-paced, fiercely competitive world of commercial new product development, speed and flexibility are essential"* (Tekeuchi and Nonaka, 1986).

The more the customer is investing in terms of knowledge-sharing the less we charge for the development of the module. "The philosophy is important... And the customers appreciate it" Andresen added. The mentality is important for the incremental innovation in iQubeS, but is

dependent upon the customers' willingness to share their knowledge. In a model like this the customer need incentives and a certain amount of trust. Referring to the trust in the model we imply that the customers need to have faith in the company's vitality and that everyone else will contribute, which touch upon a frequent discussion in the social capital theory. Trust facilitates social capital, and social capital facilitates trust in a continuous cycle that could change to become a vicious cycle emphasized by Putnam (2000) among others. Trust takes time to develop, but on an individual level it could be violated in a single act of disloyalty.

Second part: the organizational social capital in iQubeS AS

The social capital was identified through the shared vision and the strong tie between Tveit and Klemetsen, and in the trust and recognition toward them. Moreover we found evidence for a regional affiliation and industry norms that increasingly deals with the aspect of sharing and close collaboration. However, it appears that the founder's personal stock of social capital is now 'invested' in the organization, making iQubeS a more reliable and recognized supplier and partner. Relating to Bourdieu's (1986) distinctions of forms of capital it is evident that the most valuable investment in the organization was the personal stock of social capital, and not the economic capital.

The structuring of the organization is important in determining the potential usage of the social capital within the organizations, and according to Nahapiet and Ghoshal (1998) firms as institutions are likely to be relatively well endowed with social capital because of its nature of structure. The first part did mainly present social capital on an individual level, but now we are focusing on the model of continuous improvement and the sub-division in India to determine whether the social capital in the organization is affecting its absorptive capacity (AC). The AC is developed in the organizational culture or structure and is important in how well firms are equipped to search out, select and implement knowledge (Tidd and Bessant, 2009). "The key message from research on AC is that this complex construct – acquiring and using new knowledge – involves multiple and different activities around search, acquisition, assimilation and implementation" (Tidd and Bessant, 2009, p. 259). However as Zahra and George (2002 cited in Tidd and Bessant, 2009) found, to turn potential AC into realized AC the company needed focus on the capabilities around assimilation and exploitation. High level of social capital would similarly indicate a high potential of AC, but without a proper structure for processing the acquired knowledge and information the realized AC would never be achieved.

HitecVision a Norwegian venture capital firm stated that they had never seen a firm growing in such phase and with so much enthusiasm. For example in the local press Klemetsen appeared as confident and eager stating that *“The ambition of the IT Company is that within five years the turnover will be 50 million NOK”*. He was very enthusiastic about this opportunity, and he had this typical entrepreneurial ‘taking over the world’ spirit. This had clearly affected Tveit, and he was as eager as Klemetsen to describe what made the iQS-system such an innovative solution.

“As a metaphor you can think of the iPad, what have the iPad done for us? Similarly with the iQS, the iPad has implemented all the equipment and information into one device” Tveit explained. iQS is developed with the philosophy of lean manufacturing as the foundation. The system has integrated best practice procedures and check lists along every single process. “IT is one of the most important tools for companies to achieve its business goals” (iQubeS promotion, 2012). Klemetsen for example told a story about one of their customers who were in the process of expanding their business, and wanted to purchase iQS. After a successful implementation of the system, the organization could reduce almost 50% of the staff instead of the planned hiring. “The value proposition is about having a system for easy storing what before was in the head, on local driver instead of a piece of paper. A process could be continuously improved if the process owner manages to extract the human capital from experiences and knowledge from related processes” Andersen explained.

Newly appointed sales and marketing manager Dagfinn Andresen appeared as the typical salesman with a lot of experiences with providing IT-consultants in different industries. Andresen was approached by Tveit and Klemetsen through a mutual friend hosting a social gathering referred to as “the Thursday-club”, an informal get-together discussing business and related subjects. Tveit and Klemetsen shared their vision with Andresen, and convinced him that he was the right man for the job.

“Our network is too widespread to track, we can’t process it all... and that’s why we have hired Andresen to take us to the next level... now the skies are the limit!” Klemetsen added with enthusiasm. Andresen’s main task is to establish a new sales department in the organization, and take iQubeS across industries and outside the regional boundaries.

Andresen emphasized the risk of getting too close with a single partner, always reach out with many or have alternatives running up. “iQubeS is regionally consolidated, and would need to expand outside the comfort zone in Stavanger” Dagfinn elaborated. As Klemetsen also

realized, but emphasized that “in the oil and gas sector we are already recognized”. Norway is gradually becoming more internationally recognized also in the IT-industry, but it is still the oil and gas sector where Norway is known for its excessively focus on quality and reducing risk.

The iQubeS’ management is attending every industry fair’s, events and conferences etc. “We have to be present, and have informal talks about our services and products. It is these social interaction that build relations and is essential to access the market” Andresen explained.

iQubeS is also a sponsor of the regions proud football team Viking FK which is one of the most successful clubs in Norwegian football. “We got contacted, and thought why not... This is a great opportunity to meet like-minded people in an informal setting” one of the founders added.

The continuous improvement model

iQubeS is a small organization that focus on combining knowledge from external partners through their continuous improvement model with their own expertise and experience. Since the start-up iQubeS have been dependent on the know-how possessed by the owners, now they are increasingly reliant on the innovation process to work. An important influence on the particular ways in which innovation is managed is the size of the organization. Tidd et al., (2005) emphasized the advantages and constraints of smaller organizations. Effective innovation management depends on creating structures and behavior which enhances levels of informality to build on shared vision and decision making. Smaller organizations can make swift resource allocation nevertheless it is important to build network linkages to compensate for resource limitations, which is the purpose of their continuous improvement model.

In order to stay ahead in the competitive market, iQubeS’ continuous improvement model is grounded in their business philosophy. Instead of having their own research and development (R&D) department, iQubeS exploit the interaction with their customers in the customization process to develop new modules and improving existing ones. Creating incentives for the customers to collaborate and develop new modules is essential in iQubeS business concept. The more the customers’ share of their know-how and operating experience, the better module for their business is possible. This would lead to an even better collection of software and modules for iQubeS to offer. “We are creating a win-win situation for the customers. The more they share, the more ‘intelligent’ the modules become” Klemetsen added.

“Although scholars widely recognize that innovation generally occurs through combining different knowledge and experience and that diversity of opinion in a way of expanding knowledge - meaningful communication is an essential part of social exchange and combination processes - requires at least some sharing of context between the parties to such exchange” (Boisot, 1995; Boland and Tenkasi, 1995; Campbell, 1969, cited in Nahapiet and Ghoshal, 1998, p. 253). Nahapiet and Ghoshal (1998) suggest that sharing may come about in two main ways, through shared language, and sharing of collective narratives. In each case they are acting as both a medium and a product of social interaction. Language has a direct and important function in social relations and conduct business in the society. To the extent that people share a common language, this facilitates their ability to gain access to people and their information. The shared language was evident in the combination of the industry language and the regional affiliation. Being located in Stavanger promotes regional close connections and access to an international industry. Either way to make such a model work they need a common goal, e.g. “becoming better together” which is the regional norm nurtured by Statoil. iQubeS is in an interesting position of connecting these businesses with a common goal to improve the IT-systems to enhance the international competitiveness. IT-software is essentially to support daily operations which both the founders have extensive experience with, and are accordingly better equipped to offer the businesses innovative solutions and suggestions.

The founders’ experience from operations has made iQubeS an engaging partner for developing customized modules. Choosing iQubeS as a partner implies that the customers need to have faith in the company’s vitality and that everyone else will contribute by sharing. However as mentioned earlier, developing trust is a slow process but with a common goal like becoming ‘better together’ it enhances the chances of a productive and trustful collaboration. Moreover we perceived iQubeS as open-minded and determined to improve the industry, and iQS is the tool that would ensure a lean structure and a better information flow between suppliers and customers that would assist the decision-making process and bring the value chain closer together.

Searching for a prime partner

Both Klemetsen and Tveit had experience with collaborating with Indian programmers through one of Baker Hughes’ main partners, namely Infosys technologies from India. During the start-up they approached the same partner on behalf of iQubeS but were turned down for being too small. Instead they had to utilize their experience and network in India to find for a

suitable partner, and the search lasted for almost one year. “The process was complicated but with a little luck, experience and competencies we found the right partner” Klemetsen elaborated. iQubeS chose CCS Technologies because of their good communication and flexibility. Klemetsen applied the term “writing on Indian” when he referred to his ability to communicate and write the specifications of the modules for the partner to make. CCS Technologies commented after the first case that this was the best specification they had ever received. This was the beginning of new and productive collaboration which has not yet caused any particular challenges.

Since the start-up in 2008 iQubeS has grown rapidly and is soon almost 50 employees, where around 40% is working in India for CCS. Their purpose is to enhance the flexibility in the organization and develop new modules ‘written’ by Klemetsen. Another important aspect is their ability to integrate iQS to any system and databases the customer’s requires in order to create an unique database structured management system.

iQubeS has also implemented a ‘iQS school’ where the CCS’ personnel get education in the iQubeS values and developing culture. This could prove to be an effective way to influence the ‘Indian’ part of their organization with iQubeS’ norms and culture. In iQubeS the norms and culture seemed to focus on the aspect of sharing and collaboration, however it was apparent that the Indian organization was not part of the ‘innovation’ part, but this initiative could be interpreted as a step to make the Indian programmers more involved.

The ‘organizational advantage’

iQubeS has positioned themselves in a niche, but are able to serve a much larger market as their reputation is increasing of being best of what they do. This was e.g. evident in the development process where they used two competitors as partners (Evry & Webstep) to help them build the system, proving that their competitiveness is located in their experience and know-how from operations translated into the system which is hard to replicate.

The competitive advantage using a partner in India makes it possible to compete on far lower cost than having Norwegian programmers. Also in terms of risk regarding sudden market changes they will be able to swiftly reallocate the resources where it’s most needed. On the contrary cultural issues and problem with communication could appear and is therefore important to coordinate the organizational culture and values to enhance the solidarity.

A firm is a social community specializing in the speed and efficiency in the creation and transfer of knowledge (Kogut and Zander, 1996, cited in Nahapiet and Ghoshal, 1998). Standing in contrast with the transaction cost theory based on the assumption of opportunism and the resulting conditions of market failure, the supporters of social capital theory argue that firms have capabilities for creating and sharing knowledge that improve their innovative capabilities (Landry et al., 2002). This perspective elaborates on the organization's capability for creating and sharing knowledge, in relation to what Ghoshal and Moran (1996) termed 'the organizational advantage'. Nahapiet and Ghoshal (1998) view of organizational advantage is fundamental a social one, arguing that they had distinguished a clear stream of work that identifies and elaborates the significance of knowledge processes as the foundation of an organizational advantage.

Similarly Dyer and Singh (1998) emphasize the relational view of the firm's competitive in contrast to the common resource based view of the firm or the industry regarding brand value (e.g. Apple) or scale advantages (e.g. Exxon). The analysis suggests that a firm's critical resources may span firm boundaries and may be embedded in interfirm routines and processes, moreover arguing that collaborating firms can generate relational advantages through relation-specific assets, knowledge-sharing routines and complementary resource capabilities (Dyer and Singh, 1998). An example of this could be the model of continuous improvement 'collectively' with their customers demonstrates their high trust. The philosophy is grounded on mutual trust and shared ambitions of becoming better together. "We got contacted by Statoil and asked about our philosophy about sharing know-how in developing our modules, we talked for nearly three hours!" Klemetsen added. Statoil is monitoring iQubeS because they like the mentality of the close collaboration in accordance to their goal to make the regional industry become 'better together'.

Final reflections on the process

This process has given us two interesting however difficult interpretations on the overall process. First, the issue regarding the understanding of such a broad concept and its complexity. The interviews revealed a gradual understanding of the importance of their network in the development process and in establishing their organization. In the initial interview we got a lot of background information and interesting stories which were followed further in the process, but questions regarding the use of their network they mainly elaborated on their own experience and the use of LinkedIn.

However we found that they utilized LinkedIn as a tool in mapping their network which indicated a certain level of acknowledgement of the need of identifying potential contributors for the company. In the last phase of the personal interviews we perceived an increased understanding of the process leading to iQS, and that their experience did bring along a valuable network. E.g. how previous acquaintance is frequently changing employers making them valuable sources for information and contact-points which Klemetsen realized while elaborating about his former boss and suddenly got a big smile on his face adding to Andresen “he is by the way getting transferred to Eastern-Europe soon... We should actually give him a call, he would be an excellent re-seller!”

Second, social capital is an asset among individuals (groups, firms and communities), and as most assets they will be protected by the owner. Social capital is having a multifaceted perspective in e.g. the description of “the Senate Club” which show how some senators are part of the system of credits and obligations, while others outside are far less influential than those inside (Coleman, 1988). This is a particular example of a publically known club, but most of these associations are not, and admitting being part of it could get consequences. This is however not the main issue of this study, but in order to prove that being part of a certain network (that have given beneficial outcomes) is something that in many cases will not be shared.

We did not perceive the founder’s as reluctant to share essential information and resources, but it was something we had to take into consideration during the findings and analysis.

Chapter 6: Conclusions

The intention of this thesis was to investigate how social capital is a source for innovation. The innovation process is complex, and we were interested in examining if there are activities outside the regular R&D process that improved the two case-companies innovative capabilities. The theory of social capital provided a good backdrop for analyzing the non-R&D activities and the results of this thesis provide support for the assumption that social capital is a source for innovation and facilitates cooperative behavior.

The research aim is to contribute to a superficial understanding of the overall process by studying one particular input (social capital) in the innovation process within a local innovation system part of an international industry.

Due to the complexity of the concept of social capital the expectations were not to provide any clear cut answer of what forms are more important than others, but rather to examine how social capital has affected the two companies in their innovation activities.

The literature review indicated that important forms of social capital for innovation could be; trust and norms in building relations and knowledge sharing; access to information channels and the position in the network in searching and attracting ideas, partners and customers; goodwill and shared experiences for exchanging commodities and having a common goal that promotes an innovative environment and collective action. The study confirmed most of these assumptions as we similarly found evidence for a strong foundation of trust and set of norms in the region for both companies, particularly strong in the Depro-case. Moreover the importance of the position in the network, which was evident Depros' reputation of competence and commitment, and in the iQubeS founders' individual recognition and goodwill in attracting clients and investors for developing iQS.

First, we will present the separate conclusions from the case studies. Discussing how social capital is a source for innovation in Depro and iQubeS. Identifying the role of social capital as a source of innovation outside the traditional R&D process and examine if some actors are more equipped with social capital and hence affect the innovation process.

Second, the intention of this thesis was to not to compare the two case companies, however as the thesis progressed we found that there was some correlation findings that we would like to present in this section.

Depro conclusions

In the Depro case we found strong evidence of social capital in all the three dimensions and that each of the dimensions provided sources of innovation for the company. Furthermore we found a strong level of trust in the region, a shared culture, strong norms surrounding teamwork and a willingness to help each other, even if the companies were competing.

Relational dimension

Much of the innovations in Depro are user-driven, and they do not speculate in developing products for mass production. To be able to have a reasonable level of innovation they need to have customers who are willing to challenge them to provide a solution. This is where the high level of customer-trust towards Depro gives them a source of innovation. We also found that the high level of customer-trust gave Depro more freedom in experimenting and selecting solutions for the customer. This form of trust was founded in Depro's good reputation of competence and commitment.

The other form of trust we analyzed is between the competitors and Depro. We also found a high level of trust in this relationship. This provided valuable source for innovation as it gives Depro access to many resources that would not be otherwise available. The high level of trust meant that they could ask competitors for help; or search for solutions outside their organization without being afraid that someone would exploit their knowledge. The high level of trust builds on the regional norm of becoming 'better together'.

We also found that the strong functional norms in the company promote teamwork and quality that provided sources of innovation. The norms encouraged the employees to go the extra mile to find better solutions. However, we found that despite the strong innovative focus, there was a strong conservative norm in the industry. This norm created a problem as they are dependent on the customers coming to them with the intention to change something, and give them work.

The high levels of trust and strong norms also created a good environment for the accumulation and exchange of goodwill. Especially in the Jæren area the accumulation of goodwill is also used as a form of currency, or leverage between the actors. This system is heavily dependent of trust and norms, to be able to function.

Structural dimension

The structural dimension provides a network, and a basis for the form of social capital discussed above to function. All the different types of social capital discussed are closely interlinked, and none of them would provide a benefit on their own, or been effective. In the structural dimension we found that a high level of network closure. Depro have strong favoritism towards local actors, and are automatically skeptical towards people from outside their region. Supporting Tidd and Bessant (2009) notion that trust becomes a problem when it is based on network and not competence or commitment. They were more likely to hire someone from their own network, rather than the best candidate from another. They are also more likely to work together, or build goodwill with a local company. This bias could result in lost opportunities. Currently they have been able to recruit people, and have a good access to projects in their network, however, as they plan to grow, their skepticism towards people from outside their network could become troublesome. Although they do not see it this way at the time.

The network closure also provides Depro with benefits in their innovation process. While, they operate in a global industry, they were able to maintain a close network of local actors. This closure makes it possible for the strong norms discussed above, to be enforced and function appropriately. The closure also helps to continue to build trust, and a platform for collaboration.

Cognitive dimension

In the cognitive dimension we found that Depro had a strong focus on building a community, both at work for the employees, and in the local area for the employees families. They are building a “Depro community”. This community provides a strong foundation for the trust and norms needed for the innovation environment.

The micro brewery and other social activities is also contributing to creating something communal that they share, that is not directly work related. The activities gives the employees shared experiences and creates a shared culture and shared values, providing a positive spillover effect on the work-environment.

iQubeS conclusions

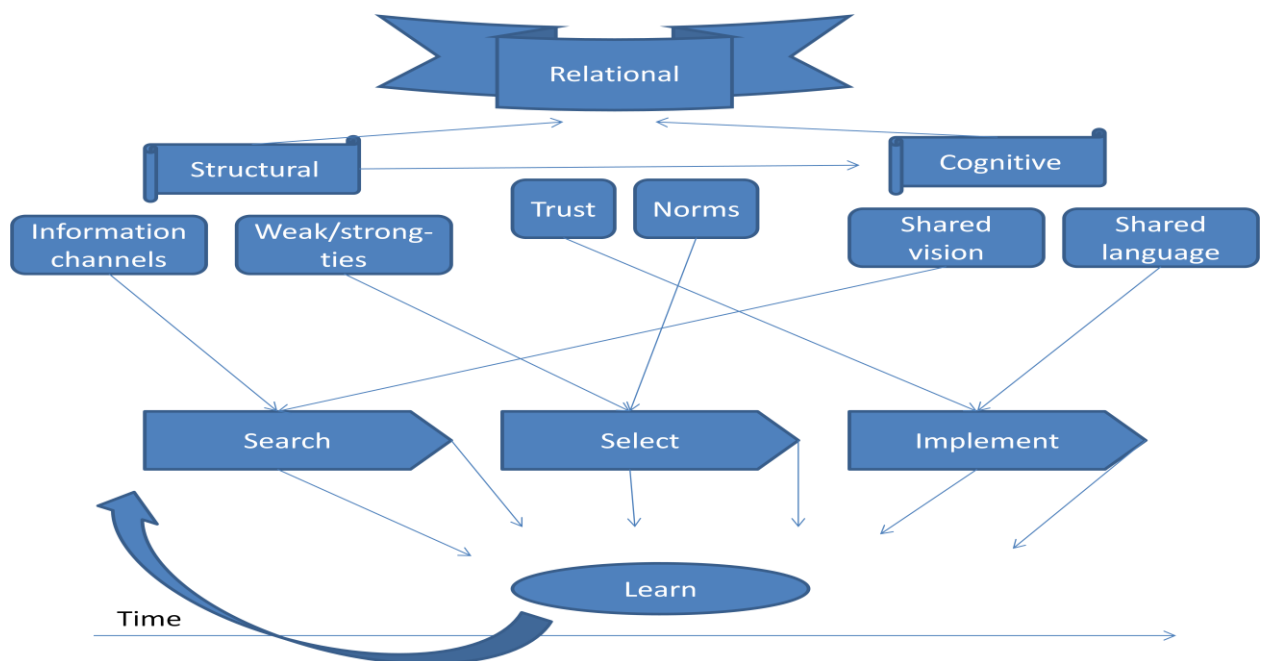
The significance of social capital was primarily apparent through the heavily networked founders and their trustful collaboration toward internal and external actors. The close tie between the founders created a unique and productive partnership with a lot of enthusiasm that have been transferred into the organizational culture, and is now an important asset to successfully enhance their innovative capabilities and expand the target market.

I. Social capital is a dynamic asset consisting of different forms in various levels and in different contexts

We argue that the combination of the different forms of social capital supported the innovation process of the IT-management system iQS, and in establishing the organization. The founders' social capital was in particular decisive in attracting investors and customers even before starting the process of developing iQS. However the context did also provide with a good environment for the process, the local environment contained a collectively industry norm supported by high levels of trust and shared experience, which promoted close collaboration and sharing to become 'better together'.

II. Regional social capital influence the organizational social capital

The figure gives an overview of how the three dimensions are connected, and where the different forms of social capital were identified in the process of establishing iQubes.



The dimensions are closely interlinked and could prove helpful in understanding the big picture. We found the relational dimension to be the foundation in the process and evident in the trustful relationship between the founders and the productive norms in the region. As social capital is primarily drawn from social interaction, and the relational dimension reflects assets created through social interaction this was an expected finding. However, we argue that the founders have a lot of social capital in their relationship, and with this foundation it creates a good fit with the regional norm and in influencing the organizational culture.

The cognitive dimension was significant both in terms of the close collaboration and in the region among external stakeholders (customers, partners, investors) particularly in the implementation phase. Without a shared language and vision for the applicability of the software, the necessary trust for an essential investment would probably not be justified. Similar to what Tsai and Ghoshal (1998) found, common values and a shared vision encourage the development of trusting relationships.

The region shared a language, and the industry a vision of becoming the benchmark in the world. The founder shared a vision of following the ‘future in the IT-industry’ which they argued to be the most important tool for companies to achieve its business goals, i.e. supporting the regional norms and the industry’s vision to become ‘better together’.

III. A shared vision is essential in bonding, and fostering trust and norms

In the structural dimension, the founders’ individual reputation and recognition proved very important, this was evident in all stages of the process. Moreover the large network of both weak and strong ties, and the use of the Baker Hughes network as a referral channel to spread the word of iQubeS and attracting potential clients and partners.

Expanding: structural holes vs. closure

Time is important to gain a mutual understanding, trust and to reach a certain position in the network. As a recent start up iQubeS relied heavily on the network of the two founders, however four years later the iQubeS organization have to establish a network in their own right. They do so by promoting their competences and commitment through industrial channels and the local community. They also participate on the many industry fairs, and as sponsor of the local football team and handball team in order to meet fellow contributors at closed events. This is an example of how a shared language in terms of an informal ‘industry

or sport talk' brings actors together in an informal setting that initiate social interaction and a foundation of a trustful collaboration.

iQubeS seems to benefit from this approach by enhancing their industry reputation in the region, and promoting the iQubeS vision to other industries. iQubeS also appear to have a relatively high degree of network closure with their customers. Recently they developed a risk-analysis tool together with Solstad Shipping and because of their reputation and enthusiasm a certain level of trust were quickly established, and both parties were contributing essential know-how in the process resulting in an excellent module for existing iQubeS' customer to implement, and to a reduced cost for Solstad Shipping.

IV. Closure enforces the social capital among the organizations in the network, but weakens it toward external actors

The network closure is necessary to enforce the trust in the network, but iQubeS need to consider the opportunities of expanding in order to span the structural holes between the industries. This is however a complicated trade-off which depends on the company's strategy of expanding or nurturing already existing ties and collaborations. Burt (2000) supported the argument of Granovetter (1973) that the closure of networks will limit the networks abilities over time. Moreover Burt (2000) argued that "closure is about stasis" (p 355), as closure only gives actors within the closed group an advantage, i.e. the organization are dependent on the network to include all the resources they need. Access for new actors or collaboration with other groups is difficult because of the lack of trust between networks, or in other words lack of social capital in Burt's perception.

V. Structural holes promote innovation while closure could hinder

Although we interpret that hiring Andresen to set up a new sales and key account department as an attempt to expand the business to serve other industries as well as the oil and gas. The key account management is important in nurturing interfirm linkages, and is essential in processing the available social capital. Klemetsen did also seem determined that iQubeS had to expand outside the regional comfort zone in Stavanger, and as Klemetsen elaborated in the last interview; "iQubeS is still in a start-up phase concentrating about our region, but when we decide to expand abroad, we have a fruitful network making it much easier to enter international markets!"

Cross-case conclusions

We chose to narrow the field of study to one industry and one region which naturally limits the conclusions to be applicable for other industries and regions. Consequently we argue that the cross-case conclusions presented are specific to the Stavanger region and not Norway or the industry in general. However, the aim is also to provide managers and decision makers with insights to the forms of social capital influencing the innovation process.

The thesis' findings illustrates that both companies profit from a homogenous and trustful environment in the Stavanger region and the industry they operate within. The high level of trust in the region between supplier and customers has contributed to a secure and prosperous environment for innovations. However, we argue that both companies could benefit from exploiting their use of social capital and explore networks outside their immediate region to access more heterogeneous knowledge and diverse innovation networks.

Overall, the results of this thesis provided support for the assumption that social capital is a source for innovation and facilitates cooperative behavior. The forms of social capital and the three dimensions assessed we found that the relational dimension to be fundamental in the process for both organizations. Moreover we found indications that the structural dimension affected both the relational and the cognitive by how the companies were perceived by other companies and how the structure of the network promoted either closure or openness.

In the cross-case conclusion we will focus on the three main findings in this thesis. *First, trust and norms foster an innovative environment which is essential within the organizations and among the companies. Second, network ties, and particularly strong ties in homogeneous or closed networks could both enhance and become a barrier for innovation if not carefully managed. Third, exploit and get to know the environment in order to understand the norms and how to manage the innovation process.*

1. Trust and norms foster an innovative environment

The thesis has analyzed how the two companies work as an organization, and how they take advantage of the local business environment. Our findings for both companies show that they benefit greatly from the homogenous and trustful environment in the Stavanger region that they operate within. The high level of trust in the region, both among competitors, and between supplier and customers has contributed to a very productive and prosperous environment. Accordingly this has led to the Stavanger region becoming world leading in developing innovative solutions for the oil and gas industry.

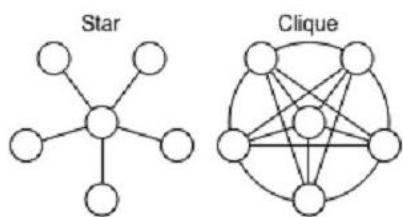
However, the high level of social capital be attributed to the general high levels in Norway at a national level. Studies presented by Rohstein and Uslaner (2005) explained that Norway in particular had high level of trust at an individual level towards each other's and as innovations are characterized with a lot of uncertainties the significance of trust is essential in promoting an innovative environment. Seen in relation to Coleman's (1988) emphasis on the advantage of healthy structures of relations, he argued that these structures help establish obligations among social actors, create a trustworthy environment, open channels for information, and promote norms which could sanction conflicting behavior.

In e.g. the Depro case we found that the companies look after each other by talking together and warning each other if they encounter actors or companies who have false intentions. The information in the industry spreads quickly and if a company fail to deliver, or violates the norms they are quickly excluded from the collaboration in the region.

We found that the Stavanger region and the oil and gas industry had a set of norms, but these seemed to differ whether it was a Norwegian company or an international company.

"Becoming better together" was the industry norm imposed by Statoil (the main Norwegian actor) in the network. The focus for the companies in the region is to enhance their own competitiveness by pulling together, even with the competitors.

2. The network ties – reducing transaction cost and challenge status quo?



Burt (1992, 2000) argued that the network structures were the social capital, and the advantage was in the way the actors are connected. Both companies are holding important positions in their respective networks, but their network structure seems to fundamentally differ. Both companies were part of some sort of an

innovation network. Depro had particular strong ties in a closed network within their region (clique), while iQubeS seemed to be in a slightly more open network than Depro, but relatively closed with mainly one-to-one interaction in their innovation processes in e.g. developing new modules (star). The literature review indicated the importance of access to information channels and the position in the network in searching and attracting ideas, partners and customers.

In examining the consequences of social capital for action, Nahapiet and Ghoshal (1998) identified social capital to increase the efficiency of action because of the reduction of the transaction cost (Putnam, 1993) and because of the increased efficiency of information diffusion through minimizing redundancy (Burt, 1992). “For both partners, the transaction costs will be lower when dealing with a firm with which they are familiar: they are likely to have some degree of mutual trust, shared technical and business information and existing personal social links” (Tidd et al., 2005, p. 289). Accordingly we argue that the network ties and innovation networks are of outmost important in keeping up with the changes in a rapid improving industry. Even if Stavanger is currently world-leading in offshore technology the network ties among regional clusters and internationally within the industry is decisive to challenge the status quo.

3. Exploit the environment – where is the?

The two cases have illustrated how social capital in different forms, and at different levels provide a source of innovation. Some of the criticism towards the social capital theory is the vagueness of the definitions and lack of measurability. The case study were unable to contribute with a way of measuring social capital, nor was it the intention. We did however find that the nature of both innovation and social capital are closely interlinked. The process of innovation and the creation of social capital are not isolated events with a clear start or an end. Both need to be developed and invested in over time, and include a high degree of uncertainty. We found that social capital can aid the innovation process by reducing uncertainties through a trustful and collaborative environment and increasing efficiency through reduced explorations (transaction) costs.

The two cases illustrates how it is important to know the environment you work in, and take an active part in the social sphere, by building networks, trust, reputation and a shared language and vision. Identifying the forms of social capital within your environment provides the greatest potential for innovation. In these cases both companies seem to be aware of the high levels of trust, and was able to exploit this to their benefit. Focusing on building strong norms limits the need for control, and gives the employees more freedom to experiment, as they are governed by the norms. The social capital in a region or organization can change rapidly, and being aware of it presence can provide the actors useful insights to its potential, and how to develop it further.

Chapter 7: Recommendations

In the final chapter we present separate actions the two companies can implement to better utilize the available social capital, and further develop it as a resource within and outside the organization. The recommendations reflect the need of being aware of its dynamic structure, and its significance on the process when managing an innovation.

Recommendations Depro

Depro is planning to become twice the size they are today within 2015, and accordingly it would be valuable to take into consideration the social capital of the company in this process. In a rapid expansion it becomes more difficult to maintain the company culture, and closeness they have today. Until now the company has been built gradually, and in relation to this we have three recommendations for the Depro management team to consider.

1. Continue strong focus on social activities and knowledge sharing

Our findings indicated that the close relationship between workers, and strong team focus is the most important social capital assets for their innovation capabilities. The team focus is dependent on high levels of trust among the workers, and good functioning norms. When hiring new people they need to be integrated quickly into the Depro community, and given the opportunity to build trust with the others.

The use of “kosekroken” is a very unique informal arena to build these new relationships, and implement norms. The future challenge is to maintain its efficiency as the numbers of employees grow, and it could prove difficult to get all the actors to participate like they do today. Another potential danger is that one could get a division of “new” and “old” if they hire too many in a short time span. Introducing more than one informal arena (“kosekrok”) could provide an alternative solution, however it will also make it more difficult to keep an overall view of the activities, and identify the potential problems and solutions.

The brewery is also an activity that is unique to Depro, and they should use it well. The brewery provides the employees with an opportunity to build their team spirit on a regular basis, without it being work related. It also helps to build their network, as it gives actors a talking point in the network, as with Mr. Crane, Depro could become the company with the brewery.

2. Become more aware of their social capital assets, and know how

In our findings we found that Depro did not always protect their knowledge. The helping spirit in Jæren is very important, and is one of the key factors in facilitating the regional innovation capabilities. However, as the industry grows out of the region, and Depro get more international, the naivety, and willingness to help can become a problem for the company. Much of their skills and know-how takes years to build, but can be given away in a simple phone call. Making the employees more aware of what type of information is valuable, and keeping a better track of what services they do for their competitors would make them better prepared for international business. By keeping a closer track of the knowledge and knowledge sharing in between competitors it could potentially also minimize the problem of free riders.

In this process they should also consider the value of their accumulated goodwill. Many of the resources available to Depro are a result of goodwill. These resources would sometimes not be possible to buy, or get access to in other ways. Recognizing the true value of this, and using its full potential would benefit both parties by reducing risks and uncertainties regarding innovative projects and collaborations.

3. Hire people from other regions and industries

While building the Depro community, they need to get some new inputs. Currently they have a much focused team, with a narrow field of experience and geographical concentrated. In their expansion plans they could benefit greatly from recruiting from other regions or industries. Although they want long term employees who are dedicated in order to develop their skills and know how, they can also get valuable and more diverse (heterogeneous) input from people they hire. The closed network they operate in will only have limited possibilities of resources, and new inputs could prove valuable. Getting people from other networks would also aid to establish trust with new and diverse networks. This can provide access to new customers, new skills and resources. The networking example provides a valuable argument for expanding their network. People from other industries have access to other networks, and can function as brokers, as discussed by Burt (2000) to create new or better value. One possibility is to try an exchange program with another industry in Norway or in the oil industry abroad. However, we argue that it would be better with an industry that is not a potential competitor, for example the defense industry that they have already collaborated with on the pressure canister project. This would potentially lead to new valuable diverse insights, and access to a broader specter of networks and resources.

Recommendations iQubeS

iQubeS future prospects look promising, and the business is not dependent upon investors equity to grow. The nature of their business and how the organization is structured with a sub-division in India have reduced the risk and decreased the need of a substantial flow of capital. The reputation of the firm is increasing as the founder's personal social capital (network, reputation, goodwill, loyalty and trust) and their human capital (knowledge and expertise) is being transferred to the firm's identity and organization.

New questions, old context are a common frame used to explain the emerging innovation challenges that companies now need to face. As the world is becoming increasingly globalized, even local SMEs is no longer isolated from global competition. This reflects an interesting part of this study which is the regional closeness in a huge international industry. Operating in Stavanger where most of their network is located iQubeS can serve an international market through the oil and gas industry and their international Baker Hughes network. From a structural point of view this is a competitive advantage which gives iQubeS access to a large and specialized market within their own region where strong regional norms and trust is established.

Because of the size and type of business we argue that iQubeS' innovation capabilities is also dependent upon interfirm linkages and even with a structural competitive advantage at the moment, iQubeS need to expand their networks. With this in mind and the conclusions from the previous chapter we present three recommendations for the iQubeS management. Our conclusion reflected various forms of social capital, mainly in terms of the heavily networked founders. However within the organization this could lead to challenges without a proper structure in processing the acquired information, knowledge and goodwill gained through these ties. Similarly to the discussion regarding the potential and actual absorptive capacity (AC) in the organization, we recommend iQubeS a three-step plan to increase the actual use of the available social capital:

1. Map the available network and forms of social capital
2. Establish a proper structure in processing the social capital
3. Exploit the use of social capital to become a more attractive collaborative partner.

The recommendations are also aimed at supporting a rapidly growing organization with a goal to expand their business. iQubeS is defined as a small business between 15-50 employees, but are currently in an vital transition to become a SME exceeding at least 50 regular employees.

1. Map the available network and social capital

By mapping the network and social capital we aim at the importance of identifying and classifying acquaintances according to their future potential value for iQubeS. This could be potential contact points, employees, re-sellers, partners, investors and suppliers.

However aligning with their strategy, iQubeS are in an important transition, and as mentioned by one of the founders, their network is too large to keep track of, which support the need of a proper mapping. iQubeS is still a minor player in the IT-industry, but are rapidly growing and gaining shares in a lucrative oil and gas business. Andresen's assignment to establish a new department responsible for sales and key account management is important in terms of fostering interfirm linkages and acquire further innovation input outside the region and in other industries (as in the continuous improvement model).

By mapping the network iQubeS will be able to identify valuable sources and potential structural holes in their current network. Moreover, the goal is to determine the status and value of the different sources, and if e.g. bridging network between industries would bring additional value to what iQubeS is able to process today. Consequently a proper mapping of the network and social capital will improve the decision basis and allocation of resources to nurture important sources identified in the process.

Innovation is about taking risks and deploying what are often scarce resources on initiatives and projects which may not succeed, however by utilizing the information benefits and knowledge sharing through networks it could provide with a reduced risk. iQubeS have a number of opportunities available to enable learning, and studies of organizational learning suggest that it can be supported by e.g. structures and procedures to facilitate the operation of the learning cycle (Tidd and Bessant, 2009). By reflecting on innovation processes like the one of iQS, the iQubeS management could search for patterns and separating 'the wood from the trees' like evaluating the specific sources influencing the process. However, before exploiting the social capital further, iQubeS need to be sure they have established a proper structure to process and extract knowledge from the benefits of having a large and diverse network.

2. Establish a structure within the organization

Establishing a proper structure in processing the social capital is important in order to utilize the social capital available to the organization. In this case a small organization as iQubeS the emphasis has been on the external aspect, however reflected in the literature review and in the Depro case it is equally important to nurture the internal social capital within the organization. We suggest that the iQubeS management could focus on supporting informal social relations and tacit social arrangements in order to encourage the development of strong personal and team relationships, moreover promoting norms that enhance the collective feeling of a shared vision. This could be various team-building exercises for the whole organization, and give employees equity options to take an increasingly part of the collective feeling and the shared vision.

As we have argued, social capital is important in building an innovative organization by having diverse inputs from interfirm linkages, promoting trust and norms encouraging innovative behavior. Key components of an innovative organization mentioned in Tidd and Bessant (2009) is a shared vision, an appropriate structure, effective teamwork, a creative climate and an external focus. In iQubeS we found evidence for all these components, and in particular the unique shared vision among the founder's which had affected the organizational culture.

Krebs (2008) argued that social capital is simply derived from the employee's network, but difficult to utilize because it requires a structure within the organization to combine the knowledge and experience of others. Similarly Tidd and Bessant (2009) emphasized the importance of having a proper organizational design that enables creativity, learning and interaction.

The organizational design is however above the scope of this thesis, although we suggest that as important to have access to numerous of networks, iQubeS need to let their employees allocate time to reflect upon previous projects, new ideas, and focus on nurturing their individual network that could have potential benefits for the organization. This could be e.g. attending industry fairs or tracking their network in LinkedIn.

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3. Exploit the role of the 'broker' between industries

As iQubeS is mainly specialized in the high technological oil and gas industry, there is a potential for knowledge spillovers between industries that are not connected. iQubeS' customers is today mainly within the oil and gas industry or construction and carpentry which is also characterized by many ongoing projects and strict procedures and documentations.

We recommend iQubeS to exploit the role of the broker because they could access a wider range of potential partners and customers, and enhance their position in the network becoming an attractive partner for others. If iQubeS would be able to establish themselves across industries open to share knowledge gained in the oil and gas industry to other industries they will become even more interesting for potential customers because of their diverse knowledge and network across industries. As emphasized by Tidd et al., (2005) the size of an organization is essential in how to manage the innovation process, and that smaller organizations benefits from their agility and rapid decision-making. Conversely due to resource constraints smaller organizations need to build a structure of networks in order to access resources not contained within the organization which brings us to the discussion between a closed network and an open network by Coleman (1988) and Burt (2000). Today iQubeS seems to rely on a more or less closed network within the region and the oil and gas industry. This has been essential in establishing the amount of trust needed in the form of trust toward the founders and trust in the continuous improvement model to work (that everyone else will share and contribute). iQubeS is dependent upon their continuous improvement model to keep the competitiveness and produce new innovative modules or systems, however by attaining a brokering role the shared learning among the partners will enable iQubeS and their clients to spread the risk and reduce the costs of developing new modules and systems.

Managing to reach a certain position in the network and attaining the brokering role is a gradual process which needs time and resources to pay off in a long term perspective. As Nahapiet and Ghoshal (1998) demonstrated, difference between firms may represent differences in their ability to create and exploit social capital. Evidence for this suggestion is found in studies of knowledge-intensive firms that have been shown to invest heavily in resources, including physical facilities to encourage the development of strong personal relationships, personal trust, norm-based control, and strong connections across boundaries (Alevesson, 1991, 1992; Starbuck, 1992, 1994; Van Maanen & Kunda, 1989; cited in Nahapiet and Ghoshal, 1998).

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