



Norwegian University of
Science and Technology

Virtual teams across organizational boundaries

A case study of an inter-organizational relationship in the oil and gas
industry

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Submission date: June 2011

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3. Masteroppgave

Oppstartsdato 17. jan 2011	Innleveringsfrist 13. jun 2011
Oppgavens (foreløpige) tittel Virtual teams across organizational boundaries A case study of an inter-organizational relationship in the oil and gas industry	
Oppgavetekst/Problembeskrivelse Companies within the oil and gas industry on the Norwegian Continental Shelf (NCS) are implementing a strategic tool called Integrated Operations in order to increase the value potential of the resources on the NCS. Integrated Operations makes it possible for organizations to collaborate over large distances and across organizational boundaries. As such, it is important to understand how the use of virtual communication channels are affecting collaboration and the relationship between organizations that are interacting. This Master Thesis is based on the ongoing research project Kollektiv Læring between the R&D institutions NTNU, SINTEF and HiST, and organizations in the oil and gas industry. The thesis is going to analyze how a business relationship in the oil and gas industry is affected by the implementation of Integrated Operations and the use of virtual teams. This will be done by reviewing literature within this area of research, and through observations and interviews of actors working with Integrated Operations in a business relationship within this industry.	
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Oppdragsnavn 17. jan 2011	Oppdragsnavn (forrige) (titel) 17. jan 2011
<p>A case study of an inter-organizational relationship in the oil and gas industry</p> <p>Virtual teams across organizational boundaries</p> <p>Oppgavetittel/Problembeskrivelse</p> <p>Companies within the oil and gas industry on the Norwegian Continental Shelf (NCS) are implementing a strategic tool called Integrated Operations in order to increase the value potential of the resources on the NCS. Integrated Operations makes it possible for organizations to collaborate over large distances and across organizational boundaries. As such, it is important to understand how the use of virtual communication channels are affecting collaboration and the relationship between organizations that are interacting.</p> <p>The Master Thesis is based on the ongoing research project 'Kollektiv Ledelse mellom de R&D institusjonene NTNU, SINTEF and HST, and organizations in the oil and gas industry. The thesis is going to analyse how a business relationship in the oil and gas industry is affected by the implementation of Integrated Operations and the use of virtual teams. This will be done by reviewing literature within this area of research, and through observations and interviews of actors working with Integrated Operations in a business relationship within this industry.</p>	
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Originalen oppbevares på fakultetet. Kopi av avtalen sendes til instituttet og studenten.

Preface

This Master thesis is a case study of a virtual inter-organizational relationship in the oil and gas industry on the Norwegian Continental Shelf. The relationship is taking use of virtual teams through the implementation of Integrated Operations, which is an important focus area within this industry. This study has been a great learning experience, where I have gained knowledge about the importance of Integrated Operations and different work processes within the oil and gas industry.

I would like to thank associate professor Monica Rolfsen for providing constructive feedback and supportive guidance throughout the entire process of writing this thesis. Thanks to Linjebygg Offshore and their representative Helge Muledal for giving me the opportunity to observe their work processes and participate in fruitful discussions regarding the topics of my study. I would also like to thank Statoil representative Vidar Hepsø for providing valuable information and advices regarding Integrated Operations. Last, but not least, I would like to give my appreciations to SINTEF representatives Bjørn-Emil H. Madsen, Lisbeth Hansson and Torbjørn Korsvold for their knowledge sharing regarding the topics of this study.

Lars Henrik Hosøy, 13th of June 2011

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Abstract

Over the last years, rapid technological development has made it possible for organizations to increase their use of virtual teams. Unlike traditional face-to-face teams, virtual teams enable people to collaborate across virtual dimensions like geographical dispersion, time and cultural diversity. By making use of virtual teams, organizations are able to increase the efficiency and performance, as they can be more flexible than traditional face-to-face teams. There has been an increased focus on research within this field of work in line with the development of virtual teams. However, there are few studies that have investigated the affect virtual teams as a work process has on collaborative relationships across organizational boundaries.

This Master thesis is analyzing how inter-organizational relationships in the oil and gas industry can be affected by implementing Integrated Operations (IO) to their work processes. IO is a strategic tool using information and communication technology in order to change work practices and enabling people and organizations within this industry to work together through virtual communication channels. Organizations use virtual teams by installing *collaboration rooms* equipped with video walls and sound. In these rooms, people can communicate in real-time and across large geographical distances. This can potentially increase the effectiveness and simplifies collaboration both offshore and onshore. This study describes new challenges and opportunities in inter-organizational relationships between operator companies and suppliers due to the implementation of IO, and how working in virtual teams influences the relationships.

In order to explore these issues, a case study of a business relationship between two companies in the oil and gas industry has been conducted, where collaboration takes place across geographical distance and across organizational boundaries. These companies are using virtual teams as a basis for their collaborative work. Their interaction through virtual communication channels has been observed over a significant period of time, and semi-structured interviews have been used to support the findings from the observations. This is done in order to analyze the potential and challenges of implementing IO in this industry.

The main findings in this study show that there is a great potential for using virtual teams when interacting across organizational boundaries. Operator companies and

suppliers have the opportunity of developing closer relations by working in virtual teams as such teams simplify the processes of communicating. However, there are some significant challenges. Virtual teams are most successful when the actors collaborating have a personal relationship. This is most often the case when actors within the same organization are working together. People that are collaborating through inter-organizational relationships may have less knowledge of each other. Relationships where the organizations have an unequal power structure due to their size and influence in the oil and gas industry can be especially challenging. As the actors are trying to protect their own organization's interest, an unequal power structure can question the level of trust and potential for value creation within the team. This can potentially create boundaries and limitations when communicating through virtual communication channels as interaction through videoconference systems creates a less personal environment than traditional face-to-face communication. The main contribution of this study is that: taking use of virtual dimension in inter-organizational relationships increases the potential level of conflicts between organizations, complicates the communication process and consolidates the power structure in the relationship between the collaborating parties.

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1. Introduction

Hepsø et al. (2010) have documented four major benefits of collaboration within the oil and gas industry: reducing costs, enhancing quality, accelerate the speed of planning-execution and improved business agility. Increased knowledge and technical competence enables the companies in this industry to develop new tools to achieve safe, reliable and efficient operations in order to create new value (Skarholt, Næsje, Hepsø and Bye, 2009). A strategic tool that has been implemented by several oil companies on the Norwegian Continental Shelf (NCS) is Integrated Operations (IO). IO allows for a tighter integration of offshore and onshore personnel, operator companies, and service companies, by working with real-time data from the offshore installations (Skarholt, Næsje, Hepsø and Bye, 2009). The Norwegian Ministry of Petroleum and Energy defines IO as: “Use of information technology to change work processes to achieve improved decisions, remote control of processes and equipment, and to relocate functions and personnel to a remote installation or an onshore facility” (Skarholt, Næsje, Hepsø and Bye, 2009:821). Hence, IO is proposing both technological and organizational challenges for the companies in this industry. Most of the operators in this sector have investigated the improvement potential regarding IO, and have, at different levels, implemented parts of this within their own organization (Oljeindustriens Landsforening, 2005).

There are several levels of IO. The first level is often referred to as the first generation of IO. This involves using video-conferencing and virtual communication channels within an organization in order to integrate people and processes offshore and onshore (Oljeindustriens Landsforening, 2005). One of the purposes of the next level, also referred to as the second generation of IO, is to create integration across organizations through integrated operator and vendor centers. Similarly to the first generation, the implementation of the second generation of IO also involves that the organizations are working in a virtual manner. This includes use of specialized collaboration rooms where people interact through real-time video-conferencing, common information sharing networks, email and other attributes of web technology (Oljeindustriens Landsforening, 2005; Hepsø and Lippe, 2010). According to Blix (2005), companies in the oil and gas industry have investigated the potential of several similar projects to IO in the past that has failed. Common for most of them has been a predominant

technology focus while neglecting the importance of social practices and organization (Blix, 2005). This thesis will therefore mainly focus on the organizational aspects that can affect the implementation- and use of IO across organizational boundaries, where work processes will play an important role.

Established work processes where personnel are collaborating in virtual teams are a prerequisite for IO to be successfully implemented. According to Lipnack & Stamps (1997), virtual teams can be defined as: “A group of people who interact through interdependent tasks guided by a common purpose that works across space, time and organizational boundaries with links strengthened by webs of communication technologies”. As virtual teams do not interact on the same personal level as face-to-face teams, they are facing several challenges in order to establish successful collaboration (Duarte and Snyder, 2001; Krebs, Hobman and Bordia, 2006). This will particularly apply for relationships that are collaborating across organizational boundaries (Hepsø, 2008). According to Hepsø (2008), organizations within the oil and gas industry need to establish trust between them in order to collaborate with each other. Trust can also be viewed as a facilitator for more open communication, information sharing and conflict management in inter-organizational relationships (Blomqvist, 2002; Creed & Miles, 1996). How organizations are able to handle the challenges regarding trust when implementing IO will therefore play an important role on the outcomes of business relationships within this industry.

The aim of this study is two fold. Firstly, it will be explored how the use of virtual teams can affect the relationship between operator companies and suppliers in the oil and gas industry. Secondly, implications regarding collaboration that are developed as a consequence of implementing IO across organizational boundaries will be identified. This will be done in order to establish an awareness of the impact IO can have on business relationships, as well as proposing guidelines for future focus areas for people working with such processes. The following research questions will therefore be examined throughout this study:

RQ 1: How are inter-organizational relationships in the oil and gas industry affected by the use of virtual teams?

RQ 2: What implications regarding collaboration between operator companies and suppliers in the oil and gas industry are arising as a consequence of implementing IO and the use of virtual teams?

The collaborative relationship initiated by a frame agreement between Statoil and Linjebygg Offshore (LBO) serves as the case for this study. Statoil is one of the companies on the NCS that are using most resources on developing and exploring the potential of IO within this industry. The collaborative relationship between Statoil and LBO, where they are taking use of IO processes, will therefore provide a good fundamental grounding for understanding the main principles of IO and how it can affect such relationships. The work regarding the frame agreement is within the area of insulation, scaffolding and surface treatment (ISS) offshore, and it requires that both organizations are reorganizing their use of resources, as well as establishing frequent interaction between them.

This thesis starts out with a theoretical grounding that the further study will be based up on. This will be presented in chapter two. In order to establish what theoretical foundation that should be taken use of in this study, the research questions have been evaluated through a deeper investigation. The research questions propose several issues that are of great relevance for the further work in this study, and these needs to be explained. Firstly, a more deepen explanation of IO and the different generations of IO have to be given. Secondly, the main elements of virtual teams and their success factors need to be established. Thirdly, the meaning of inter-organizational relationships and the development of such relationships will be presented with emphasis on virtual working conditions. Fourthly, key success factors for enabling collaboration in inter-organizational relationships and through virtual communication channels will be established. It is important to create an understanding of these key dimensions related to the research questions in order to explore, discuss and analyze these issues with emphasis on the relationship between Statoil and LBO.

In the third chapter, the methodology used in the empirical work is presented. I will state the limitations and conditions for the study according to processes that have been used throughout the study of the relationship between Statoil and LBO. A description and presentation of their relationship and its work processes are given in the fourth chapter. This will form the basis for the analysis that is done in chapter five, where

the empirical findings will be connected and analyzed with emphasis on the theoretical grounding. In this chapter, the main focus will be on the dimensions that are identified as necessary to answer the research questions. Finally, a conclusion to my findings will be made in chapter six, where also the main implications for further research will be identified. The main findings from the analysis will then be connected to the research questions in order to propose an answer to these. The implementation- and use of IO in the oil and gas industry are going through an ongoing development phase. My findings can therefore be used as a supplement to further development as well as creating an awareness of important challenges and research areas for organizations working in this industry.

2. Theory

In order to be able to answer the research questions presented in the last chapter, a clarification of important theoretical aspects needs to be established. This chapter will therefore deepen the aspects that are important to address in this study. Firstly, a presentation of IO and its different levels of execution will be given. Secondly, an understanding of the concepts of virtual teams will be established. Thirdly, theory on inter-organizational relationships, and the development of such, will be presented and discussed with emphasis on implementing a virtual dimension. Fourthly, the aspects of collaboration in inter-organizational relationships and factors that enable collaboration in such relationships will be discussed. Finally, the research questions from the last chapter will be divided into sub-questions with emphasis on the theoretical clarifications that are made in this chapter.

2.1 Integrated Operations

In the autumn of 2004, Oljeindustriens Landsforening (OLF) initiated a program for value creation in the oil and gas industry that is called Integrated Operations (IO) (Oljeindustriens Landsforening, 2005). IO is a strategic tool that is using new and advanced technology, especially information and communication technology (ICT), in order to change work practices. Hence, it affects both technological and organizational issues. The purpose of this program is to achieve safe, reliable and efficient operations that in turn are going to contribute to increased value creation (Skarholt, Næsje, Hepsø and Bye, 2009). IO is closely related to integration and different ways of interaction in cooperative environments, and it allows for tighter integration of offshore and onshore personnel. An important contributor for such integration is the development of *collaboration rooms* where units onshore and offshore interact through specialized videoconference rooms. These *collaboration rooms* are equipped with video walls and sound in order for individuals to share information and make jointly decisions in real-time. By using these *collaboration rooms*, organizations can be able to move administrative tasks from offshore to onshore in order to make the oilrigs as operational as possible (Oljeindustriens Landsforening, 2005). Establishing interdisciplinary workforces onshore are making it possible for the companies to provide support for several installations on the NCS at the same time. This can contribute to faster, cheaper and safer decisions, and to improve the quality of the value creation on the NCS (Hovedprosjektskisse, 2010).

In both 2006 and 2007 it was conducted an evaluation of the value potential that exist by implementing IO. In 2006 it was estimated that IO could create value on the NCS worth 250 billion NOK by the year of 2015 (Oljeindustriens Landsforening, 2006). The latest evaluation, the one in 2007, estimated that IO could generate value creation on the NCS worth 300 billion NOK (Oljeindustriens Landsforening, 2007). Much of the differential amount is due to further development of new technologies, new processes and that the estimates now stretches for the whole lifecycle of the oilfield instead of just until 2015. The main portion of the value is argued to be in the next 2-7 years due to declining production and considering net present value (NPV). The estimates are in addition estimated with the reservation that the companies are able to realize these values that IO can provide. It is important that such numbers are evaluated cautiously. Suppliers that are gaining considerably advantages by the focus on IO are the ones that have conducted these two reports. An intensified implementation of IO in the oil and gas sector will provide them with increased orders of their products and services in a long-term perspective. On the other hand, there is commonly agreed upon by most of the actors in this industry that IO can contribute to increased value on the NCS.

In order to benefit from IO, one of the most important factors is to make changes in existing work processes (Oljeindustriens Landsforening, 2005). According to this report, the processes that are in most need of changes are the ones that have the largest effect on value creation and costs. These are identified to be well planning and execution, well completion, production optimization and maintenance management (Oljeindustriens Landsforening, 2005). Changes in work processes are to integrate them between personnel onshore and offshore in order to take advantage of different areas of expertise. By operating processes onshore, it is possible to support several installations at the same time, and it reduces the needed number of people on each installation. Hence, IO is contributing to increase production at the same time as it reduces costs (Oljeindustriens Landsforening, 2005; Skarholt, Næsje, Hepsø and Bye, 2009).

IO can be divided into different generations as range of use and challenges regarding this range are continually developing. The figure below is giving an overview of the different generations and their level of integration, involving stages that have been implemented in the industry today and the ones that are intended for the future.

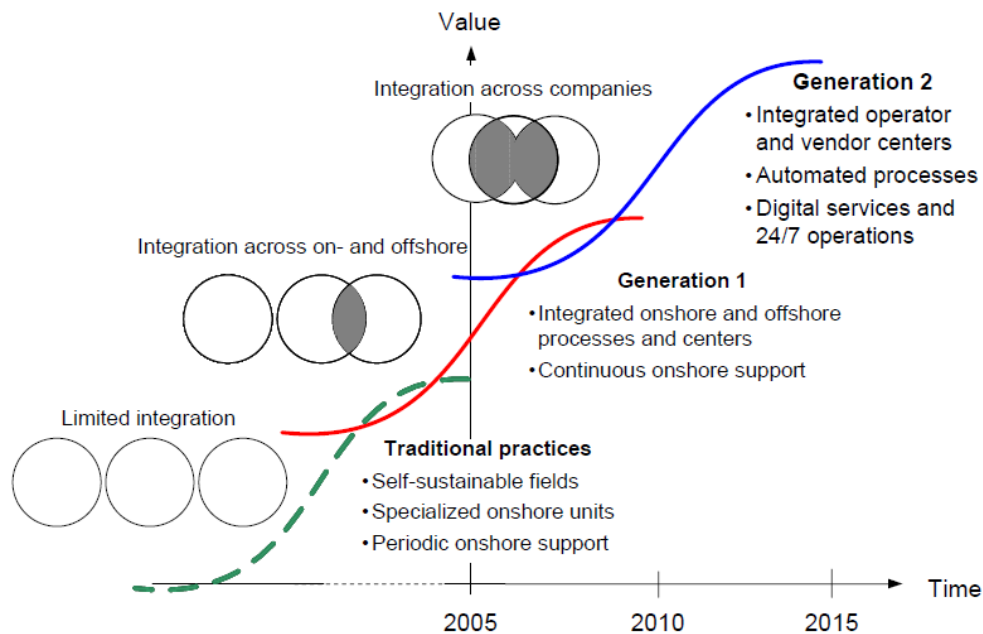


Figure 1: Steps of integrated work processes (Oljeindustriens Landsforening, 2005)

2.1.1 Integrated Operations Generation 1

The first generation of IO integrates processes and people offshore and onshore through the *collaboration rooms*. Today, all major operators on the NCS are studying the potential of IO, and implementing elements of IO in their operations (Oljeindustriens Landsforening, 2005). However, the companies are on different stages of the implementation process and their future strategies on how to benefit from IO.

Even though the involved companies are on different stages of the implementation, there are some common elements that are emphasized. In order to facilitate real-time collaboration, it is built onshore centers that communicate with offshore staff through collaboration facilities and – solutions. Personnel that hold the competence to take decisions and manage several areas are the ones who are managing these centers. The support is operative 24/7 for processes like drilling, and usually 12 hours a day for

other processes. IO also provide the companies with the possibility to monitor operations in real-time in order to compare actual data with simulations. This can be used to forecast future outcomes, optimize operations and to solve problems in a cooperative environment between onshore and offshore personnel. Some teams onshore have, to some extent, been delegated authority to make decisions within their field of work in order to provide continuous support for offshore operations.

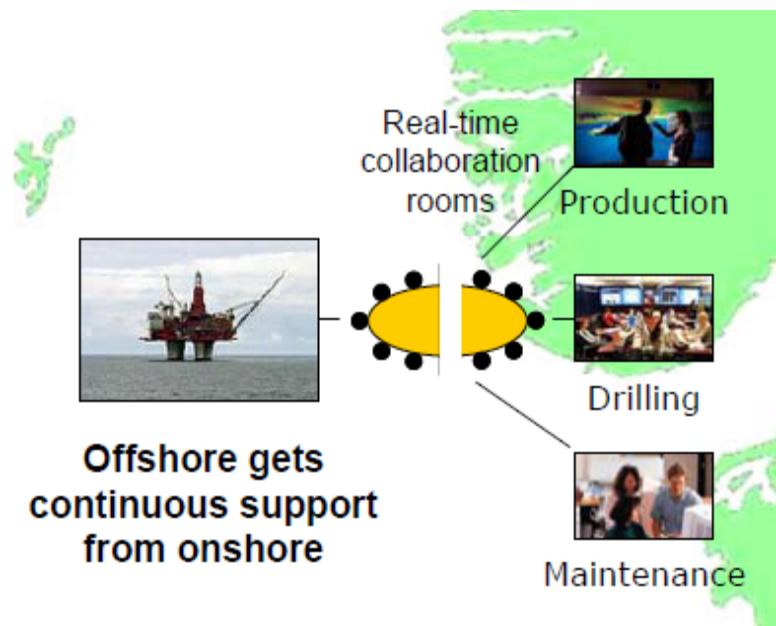


Figure 2: Overview of how the first generation of IO is implementing offshore and onshore personnel (Oljeindustriens Landsforening, 2005)

2.1.2 Integrated Operations Generation 2

According to OLF (2005), there is a focus in the oil and gas industry on developing a second generation of IO that is expected to replace the first generation in the period between 2010 and 2015. Where the first generation of IO primarily is focused on integrating onshore and offshore interaction within each organization, the second generation of IO is intended to integrate operator – and vendor onshore support centers. It is supposed that this integration is going to lead to an increase of digitalization in this sector, where large shares of the services that are provided from onshore personnel are going to be transferred over the internet (Oljeindustriens Landsforening, 2005).

The second generation of IO is proposing large changes from the way operation is managed today. It is intended that oil and gas fields should be operated by support centers onshore from both operators' – and vendors' personnel. Even though the operators still are going to have the overall responsibility of the operations that are carried out on the field, vendors will be taking over some of the smaller decision making tasks and provide the operators with real-time information over internet based technology.

According to Hepsø and Lippe (2010), there are some gaps between the scenario that second generation of IO is proposing and available technology and methods in the oil and gas industry. The challenges they suggest needs to be addressed is development of capability platforms in order to increase the level of integration of individuals, organizations and technology regarding IO. Additionally, web technology needs to be further developed as a consequence of new ways of organizing how the organizations are working. In order to integrate operators and vendors, there is a need for a shared technological language and methodologies. Employees from each company have to understand mutual work processes in order to be able to collaborate successfully across company boundaries. If these challenges are successfully managed, oil and gas fields can be managed by onshore support centers that are geographically dispersed and collaborating in a virtual environment.

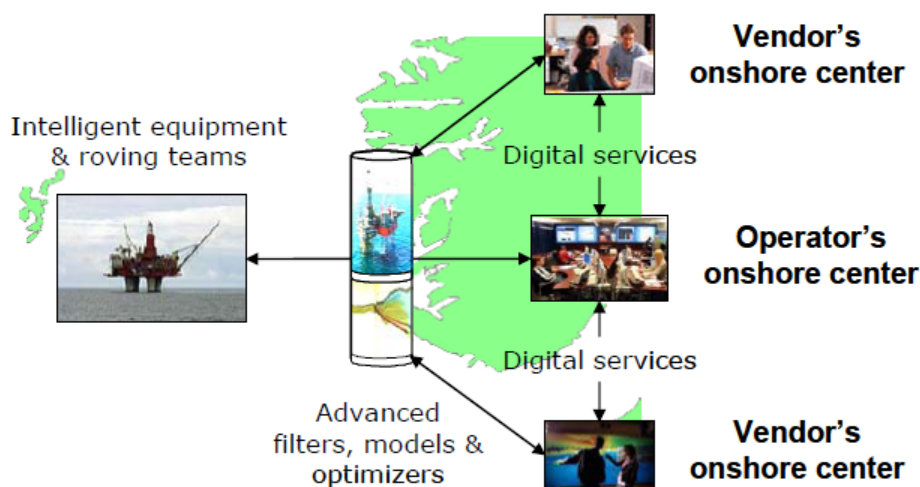


Figure 3: Overview of how IO integrates operator and vendor support centers (Oljeindustriens Landsforening, 2005)

2.2 Virtual teams

Kristof et al. (1995) defines virtual teams to be “(...) temporary, culturally diverse, geographically dispersed, electronically communicating work groups”. Another definition is that virtual teams are groups of individuals who work together from different locations, performing interdependent tasks, share responsibility for outcomes, and rely on technology support for much of their interactions (Staples and Webster, 2007). Gibson and Cohen (2003) are in addition to these definitions arguing that members of virtual teams also interact across organizational boundaries (cited in Staples and Webster, 2007). Most definitions of virtual teams are commonly mentioning geographically, time and organizational boundaries when describing virtual teams. However, as from the definitions above, cultural diversion is also one of the possible boundaries that are crossed in such teams.

Regarding IO, one can argue that the individuals that are collaborating through the first generation are interacting across boundaries of location and time. Individuals are located both offshore and onshore, and they are interacting through ICT solutions that are (except from real-time video conferences) separating them by time. When people at different organizations are working together through the second generation of IO, they are also interacting across organizational- and cultural boundaries in their virtual working environment. As working offshore is a shift work that is different to what most people onshore are used to, there may be cultural differences between offshore and onshore personnel on how they pursue the work they are doing. In situations where onshore support centers are located around the world, cultural differences may be present as people from different countries can be used to different expectations and work practices. This is however something that will not be examined further, as this study focuses on virtual teams that are operating onshore and offshore on the NCS.

2.3 Inter-organizational relationships

It is argued that “(...) a network is a structure where a number of nodes are related to each other by specific threads” (Håkansson and Ford (2002)). One can say that in an arrangement like this, the different business units in the network are the nodes and the threads represent the relationship between them. Each business unit can be bound together with the others in a variety of different ways through its relationships.

The reasons why companies interact through business relationships depend on several dimensions (Håkansson and Ford, 2002). Some are exclusively interested in economical benefits from the relationship. Others focus on knowledge sharing and the desire to create synergies within their own organization on the basis of their interaction with other companies. When resources or activities are shared through a network, there will be either a positive or a negative connection between them. All connected relationships within a network will be affected from what happens in another relationship. The development of any relationship is therefore dependent on what have happened between other companies in the relationship and in other relationships one is involved in. Other factors that the development is dependent on are what have happened in the past in the relationship, and which experiences and knowledge the companies have learned from previous interaction with other organizations.

According to Ford (2001), there are clear differences in what circumstances that should be in place to make it relevant to establish a buyer-seller relationship. The product and process technology within the involved companies are important to consider. The buyer and seller market structures are also important and hence the availability of alternative buyers and sellers. The main reasons for many companies to develop close relationships rather than play the market is that they can obtain benefits in form of cost reduction or increased revenue (Ford, 2001). In order to accomplish that, there is important for the involved actors to make adoptions towards the relationship. Hence, the participants develop a commitment to the other parties where trust between them will play an important role (Ford, 2001).

There are three paradoxes companies have to be aware of when they interact in business relationships (Håkansson and Ford, 2002). The first paradox implies that a company has to identify and decide how involved they should be with their suppliers

and customers. Close relationships with other actors can be valuable in order to develop and share knowledge. When taking use of virtual teams when establishing business relationships, organizations can be able to expand their horizon and create collaboration across larger geographical areas. This could provide them with broader range of potential collaboration partners, which further can increase the possibility of developing close and successful business relationships. However, a well developed network and strong ties between the participants could restrict the freedom of the companies to change and evolve differently than what is preferred from the network (Håkansson and Ford, 2002). The second paradox refers to the balance between influencing and being influenced in a network. A company's relationship to other actors is a great opportunity to affect and influence the other party. The same relationships will correspondingly be seen as opportunities for the other actors to affect one own. The last paradox is regarding control. A company will in some cases try to exercise control over the other actors in the network in order to secure its own interests. An attempt to exercise control like this can lead to a less innovative network, which further would decrease the company's ability to be innovative as well. It can be more difficult to exercise control over another actor when collaborating through virtual communication channels. This is due to the work processes where actors are geographically dispersed and hence, more complicated to monitor. This can enhance the organizations desire to exercise control over the other actors, and to implement strict routines in the relationship. These three paradoxes are important to emphasize for companies that are developing business relationships and participating in networks in order to find a balance they will benefit from.

2.3.1 Development of inter-organizational relationships

There are several different scholars that describe how inter-organizational relationships can be developed (e.g. Porter, 1980; Ford, 1980; Ford and Rosson, 1982; Thorelli, 1986). The most commonly acknowledged views can be placed in three categories; stages theory, states theory and joining theory. All of these views are more or less correlating on which levels an inter-organizational relationship can experience, however, they do differ on how these levels can be achieved. For the purpose of this study, the scholar on states theory is most relevant and is therefore the theory on development of business relationships that will be used in this thesis.

According to the states theory, the relationship between involved actors in a network changes from one state to another in a random order as the network develops (Ford, 1997). This meaning that the states represent a condition for the relationship at a point in time. As one can see from figure 4, the relationship can travel back and forth between the states as the relationship develops. It is the dashed lines in the figure that is illustrating the movement between the different states.

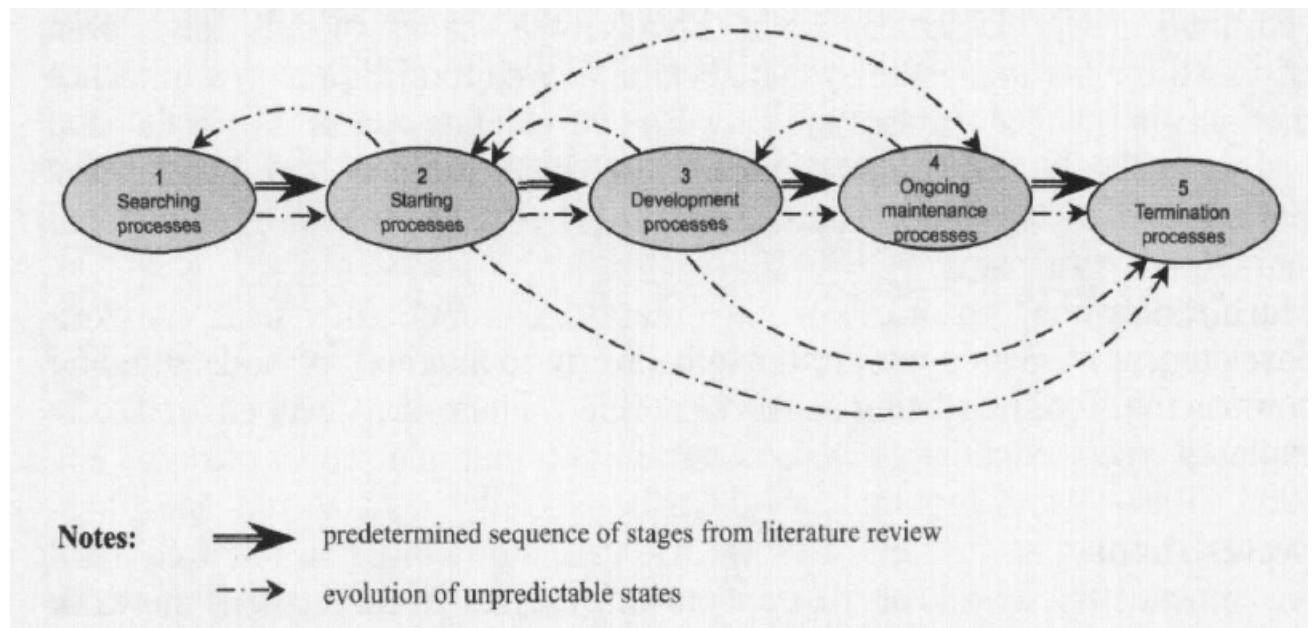


Figure 4: Example of stages and states theory (Batonda and Perry, 2001)

In the searching process, buyers are often trying to seek out new sources of supply and develop relationships with new suppliers (Ford, 2001). It can therefore be necessary for the buyer to evaluate potential vendors in terms of which changes that are required, experience, uncertainty and distance. The decision to evaluate a potential new supplier could evolve from an episode in an existing relationship, and there is no commitment between the buyer and the supplier in this state.

The connection between the involved actors is being established throughout the starting process. Since there are little experience- and personal relationships between the actors, many of the judgments made of each company will be on their reputation (Ford, 2001). Due to the lack of knowledge it will be likely that all actors are going to have low commitment at this point. It is therefore critical that the buyer and the

supplier are willing to assess a potential level of trust between them if further negotiations are going to take place (Ford, 2001).

If a relationship reaches the state where the actors have signed a contractual agreement or have started to increase their interaction and transfers of products or services, the relationship are experiencing the development process. “Much of a company’s evaluation of a supplier or customer during the development of their relationship will depend on perceptions of their commitment to its development” (Ford, 2001:326). There are several ways one can try to demonstrate and increase commitment. Both formal and informal adoptions can be made, either through contractual agreements or measures that develops over time (Ford, 2001). By setting up sales, buying or support offices in a specific market or geographical area, one can demonstrate ones commitment to the market. It is also possible to emphasize commitment to a relationship through the way one organizes the contact and interaction with the other actors (Ford, 2001).

When a relationship has been established and the terms are agreed up on, the relationship will have an ongoing maintenance process in order to be successful. This state is characterized by creating mutual importance between the actors. In order to reach this state, an extensive contact pattern needs to be developed (Ford, 2001). This involves implementing systems and procedures at both the buyer and the supplier. Strong personal relationships between employees at the involved parties are important in order to accomplish mutual problem solving and sharing of information. Adoptions like these will contribute to show the companies’ commitment to the relationship. At the same time there will be a danger that a company is becoming overly dependent on a supplier or a customer. The ideal situation would be if an actor feels that it is important for the other actors at the same time as it has to work hard to be preferred over others. In addition, companies have to be aware of that their perception of the others’ commitment may differ from the actual level. If one takes this into account, the companies can be able to establish a stable situation for the relationship. The fifth state, the termination process, is when the actors decide to end a relationship. It can be several different reasons for why a relationship reaches this state. In this state, the actors will stop their collaboration and agree to end the frequent interaction between them.

2.4 Factors that facilitates collaboration

It is natural to assume that most inter-organizational relationships are dependent on the participant's ability to collaborate with one another in order to create a successful relationship. However, the level of collaboration may vary dependent on the complexity of the tasks and goals for each relationship. There are different factors that facilitate collaboration within inter-organizational relationships. According to Batt and Purchase (2004), "trust within relationships is important for all firms to operate within their network". Whether the trust is dictated through the use of written contracts or it is created through frequent interaction, the presence of trust is important to achieve successful virtual collaboration (Batt and Purchase, 2004; Duarte and Snyder, 2001). When collaborating through inter-organizational relationships, it is also important to address how different sources of conflicts can affect the relationship (Panteli and Sockalingam, 2005). Further, conflicts will play an important role when implementing processes related to virtual teams as the virtual working environment is changing the way organizations and individuals are interacting. Hence, conflicts can affect the collaboration between the actors in such relationships

2.4.1 Trust

Several studies have identified critical success factors in inter-organizational relationships. Many of them are regarding trust as one of the most critical factors (Blomqvist, 2002; Ford et al., 1988; Sako, 1998). Blomqvist (2002) also argue that trust is needed as a condition for inter-organizational cooperation to evolve. Further, trust is viewed as a facilitator for more open communication, information sharing and conflict management in such relationships (Blomqvist, 2002; Creed and Miles, 1996). By establishing positive relations in terms of factors like these, involved actors could be able to develop a collaborative environment where business performance and competitive advantage would be enhanced. Dyer and Chu (2000) argue in their study that supplier trust is highly correlated with stable and consistent buyer processes, and that trust is representing commitment toward long-term interactions (cited in Blomqvist, 2002). It is therefore very clearly that the degree of trust between organizations has an impact on their level of collaboration.

The term of trust can be perceived in many different ways. However, there are mainly two distinctive views one can categorize different definitions of trust into, the psychological and the non-personal. According to Ring (1996) trust can sometimes be

treated as “A trusts that B, with whom A is considering a transaction, will not spend a lot of time looking out for A’s interests”. He argues that this definition is cynical, and that it perhaps encourages actors in a network to be extra aware of each other. A less cynical way of defining trust is that “A will trust B because it is in A’s interests to do so” (Ring, 1996). Common for these definitions is that they are somewhat defining how actors can benefit economically from trusting another actor. These views could therefore be considered as non-personal. A more psychological definition of trust is that “(...) trust exists when one party has confidence in the honesty, reliability, and integrity of their partner” (Coote et al., 2003; cited in Harrel and Daim, 2009).

Development of trust in inter-organizational relationships

Several scholars argue that there are different types of trust, and researchers have established different frameworks of how trust can be developed. When developing such frameworks and theses, different aspects of trust and contexts are emphasized between the respectable scholars. However, most researchers agree that it is possible to develop trust both towards individuals and towards organizations (Doney & Cannon, 1997).

Ring (1996) argues that trust has to be conceptualized into two distinct forms in order to fulfill two functions of trust. The first function he is referring to is that trust can be a substitute for formal control systems through reliance on less formal norms and sanctions. The second function is that there has been proven that trust is an enabling condition facilitating the formation of cooperative inter-organizational relationships. The first form he distinguishes trust into is what he refers to as *fragile trust*. This kind of trust is reliant on the circumstances surrounding the situation (Ring, 1996). *Fragile trust* often occurs when two relatively unknown parties are interacting with each other, and they are in need of establishing trust towards one another. They then have to determine how much the other actor can be trusted in order to continue the interaction, and the risk involved are often the crucial factor deciding if the relationship will be continued or not. This view has similarities to what Doney and Cannon (1997) found in their examination of the nature of trust in buyer-seller relationships. Their results suggest that trust can be required just to enter into a customer’s consideration set from a supplier point of view. One can therefore draw parallels with Ring’s arguments as *fragile trust* permits economic actors to deal with

each other in guarded ways. According to Ring (1996) this is a rational and calculated approach to trust.

The second form of trust Ring (1996) emphasizes is *resilient trust*. He argues that *resilient trust* is a more solid and stable form of trust that surpasses risk calculations of a relationship, and that it is grounded in interpersonal care and concern. According to Ring (1996) this is also a contributing factor of why many inter-organizational relationships rely on more symbolic and less formalized types as governance, such as common values, cultural norms and traditions. Rings' view on *resilient trust*, and the environment it occurs in, has similarities with Hartman's trust model (cited in Wong & Cheung, 2004). Hartman's model explains why people place their trust on another party through three bases of trust; *competence trust*, *integrity trust* and *intuitive trust*. It is however necessary to point out that this model is focusing on construction projects, but it will be natural to assume that some of the elements are transferable to other settings and industries. *Competence trust* is based on the perception of others' ability to perform the required work (Hartman; cited in Wong & Cheung, 2004). *Integrity trust*, also referred to as ethical trust, is based on the perception of others' willingness to protect the interest of their counter parts over a construction project (Hartman; cited in Wong & Cheung, 2004). *Intuitive trust*, also referred to as emotional trust, is founded upon the party's prejudice, biases or other personal feelings towards the counter parts (Hartman; cited in Wong & Cheung, 2004). From these definitions one can argue that Hartman's bases of trust are comparable to what Ring are emphasizing regarding *resilient trust*. Table 1 contains factors that Ring (1996) associates with *fragile* – and *resilient trust*. From these factors, it is possible to see how the results from Doney and Cannon (1997) and Hartman's trust model are correlating with Ring's definition of *fragile- and resilient trust*.

Table 1: Factors associated with fragile and resilient trust (Ring, 2002)

Table 1
Factors Associated with Reliance on Trust

<i>Fragile Trust</i>	<i>Resilient Trust</i>
Business Sense	Integrity
Consistency of Behavior	Loyalty
Availability	Discreetness
Predictability	Motives
Accessibility	Interpersonal Competence
Functional Competence	Openness
Judgment	

Contrary to several other scholars, Harell and Daim (2009) argue that trust is placed on individuals, meaning that even though you think you can trust institutions you actually trust the individuals in the institutions. In terms of this view, trust can be explained by circles known as a *radius of trust* (Harell and Daim, 2009). The circle of particular interest related to virtual teams and interaction across organizations, is the circle of *swift trust*. *Swift trust* is based on trusting team members for the role they are performing in the team and not on their personal qualities (Harell and Daim, 2009). This view is correlating with Meyerson et al. (1996) who argue that when *swift trust* is present in a virtual team, members tend to relate with each other based on roles rather than individuals, and this is contributing to develop a more professional environment. Further it is suggested that *swift trust* could be viewed as strong enough to survive the life of a temporary group, as much virtual teams are intended to be (Meyerson et al., 1996). This type of trust assumes that each member is aware of the others' roles and responsibilities in the team (Panteli and Sockalingam, 2005). As these assumptions are developed in advance of the team interaction, the members basically import trust rather than develop trust during their collaboration (Meyerson et al., 1996). In a study of global virtual teams, Jarvenpaa and Leidner (1999) found that *swift trust* was present, but in a very fragile and temporal manner. Regardless of the initial level of trust in the teams they studied, only a small number of teams saw an improvement in the levels of trust over time (Jarvenpaa and Leidner, 1999). These findings support Meyerson et al.'s (1996) argument that virtual teams that experience *swift trust* import trust instead of developing it during the collaboration period. It is

though worth mentioning that Jarvenpaa and Leidners' (1999) study only included mail exchange and no real time interaction within the team.

Different levels of trust

According to Mouzas et al. (2007), business relationships must be conceptualized by understanding both inter-personal and inter-organizational relationships. In order to make such relationships both manageable and theoretical conceptual, Mouzas et al. (2007) argue that the concept of trust needs to be supplemented by an additional dimension. The dimension they are suggesting is the rational construct of reliance. However, it is worth mentioning that they do not argue that reliance covers all inter-organizational aspects that are not covered by trust, but reliance is one possible complementary construct to trust that covers additional rational elements of such relationships (Mouzas et al, 2007:1018).

Trust and reliance are terms that have been used interchangeably by several marketing scholars over the years (Mouzas et al., 2007). In order to get an understanding of the dimensions Mouzas et al. (2007) are proposing, it is necessary to understand what they are emphasizing when they are using these concepts of trust and reliance. An example of this is their argument that there is a difference between trusting someone and "relying on somebody to do something". The different perceptions between the conceptual dimensions of trust and reliance are presented to a larger extent in table 2.

Conceptual dimension	Trust	Reliance
Structural mode	Beliefs Sentiments Attitude	Agreement Institutions Conduct
Basis of reciprocity	Morality	Interest
Construct source	Emotions	Rationality
Relationship level	Inter-personal	Inter-organizational
Relationship grounding	Commitment	Reasonable expectations
Relational essence	Dependency Vulnerability Risk	Complementarities Certainty Calculability
Sanctioning mechanism	Voluntary	Penalties
Enforceability	Unenforceable	Enforceable

Table 2: Conceptual dimensions of trust and reliance (Mouzas et al., 2007)

Based on these dimensions, Mouzas et al. (2007) have identified business relationships through a framework, figure 5, where the level of inter-personal trust and inter-organizational reliance are the variables. The characteristics of these relationships differ by the level of trust and reliance, where relationships with high levels of both variables are the most stable ones. Correspondingly, relationships with low levels of both variables are regarded to be fragile (Mouzas et al., 2007).

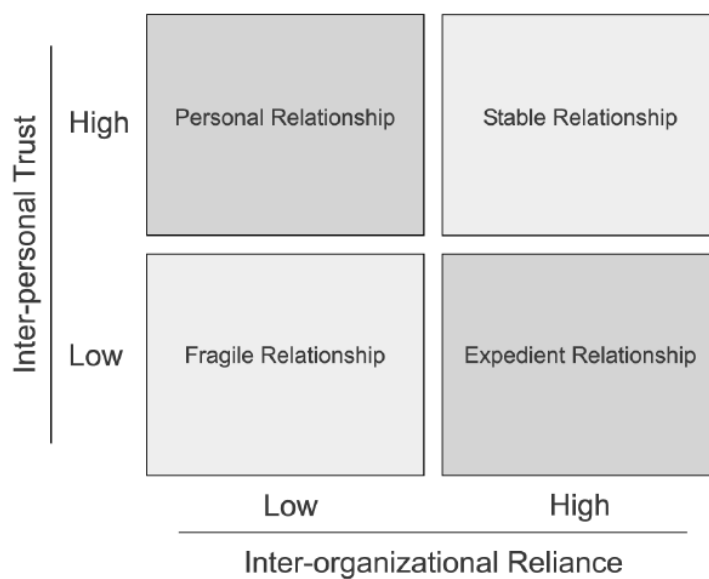


Figure 5: Trust and reliance in business relationships (Mouzas et al., 2007)

Panteli and Sockalingam (2005) have examined the three types of virtual alliances, and strategies for developing trust and minimizing dysfunctional conflicts in such alliances. These are *star-alliances*, *value-alliances* and *co-alliances*. The basis for their study is Lewicki and Bunkers' (1996) three types of trust corresponding to different stages of a virtual business relationship; *Calculus-Based Trust (CBT)*, *Knowledge-Based Trust (KBT)* and *Identification-Based Trust (IBT)*.

The fundamentals for *CBT* is the rewards for establishing a business relationship, and fear of the consequences for violating the trust in the relationship. At this level of trust, the sanctions from breaking trust are more dominant motivators of trustworthy behavior than the rewarding outcome of the relationship (Panteli and Sockalingam, 2005). *KBT* is developed through information sharing about the involved actors, and

this level of trust is developed over time (Panteli and Sockalingam, 2005). Lewicki and Bunker (1996) argue that the more information based on experience one has about an actor in the relationship, the more able one is to predict their actions. Further, it is suggested that regular communication result in frequent information sharing which will increase the ability to think alike about one another (Lewicki and Bunker, 1996). According to Nonaka and Takeuchi (1995: cited in Panteli and Sockalingam, 2005), an increased level of the development of shared values and understanding, contributes to more effective knowledge sharing. *IBT* is characterized by mutual understanding where actors are feeling confident that their interests will be protected within the relationship, and that there is no need for monitoring the other actors (Lewicki and Bunker, 1996). The collaborating actors are developing shared values where they are working in complex harmony, which in turn creates a collective that is stronger than the sum of the individual actors (Lewicki and Bunker, 1996). At this level, the trust among them is so strong that it is possible to share valuable and sensitive information within the relationship and hence, increase the potential for new knowledge creation (Panteli and Sockalingam, 2005). Therefore, these three stages of trust development are not only important in developing mutual trust in an inter-organizational relationship, but also in increased knowledge sharing and collaboration within such relationships (Panteli and Sockalingam, 2005). These levels of trusts are linked in a sequential iteration where trust at one level enables the development of trust at the next level. This is illustrated in figure 6, on the next page.

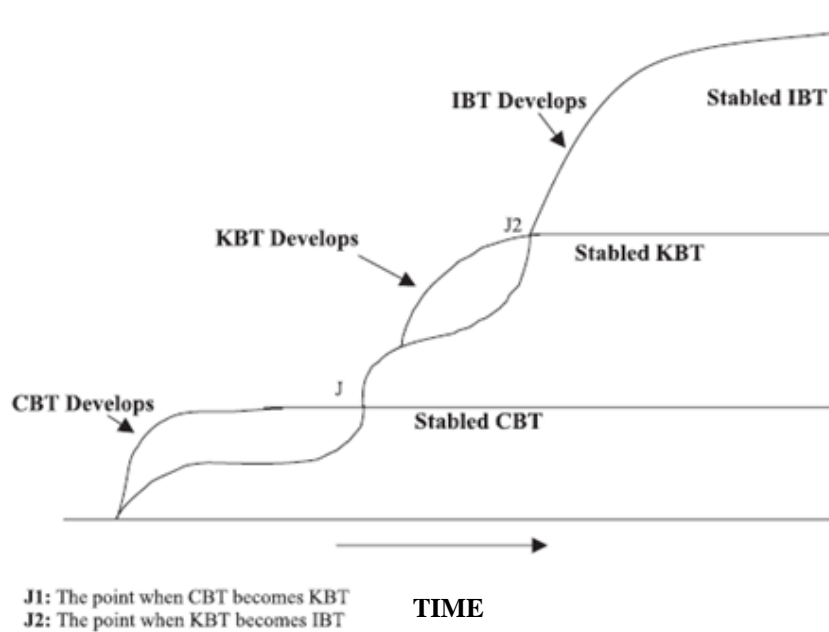


Figure 6: Stages of trust development (Lewicki and Bunker, 1996)

Extended framework for identifying the role of trust

When Mouzas et al.'s (2007) are differentiating between inter-personal trust and inter-organizational reliance in business relationships they are making it possible to distinguish between individuals and organizations when identifying different types of relationships. Being able to identify different types of business relationship based on the level of trust can provide organizations with valuable information of what they should focus on improving in a relationship. The improvement potential in each inter-organizational relationship will naturally be determined in accordance with the level of trust that is required in order to develop the level of collaboration, knowledge and information sharing the relationship is aiming for. Inter-organizational relationships where standardized products or services are transferred across organizations do often not need high levels of trust, as the required knowledge and information sharing is at a minimum. Opposite, relationships with high degrees of complexity and joint value-creation can require much collaboration between organizations and that they are willing to share important information in order to create value for the relationship. Hence, such relationships need higher levels of trust.

By adding more dimensions for consideration (e.g. inter-personal trust and inter-organizational reliance), Mouzas et al. (2007) are making it easier to identify the role of trust in inter-organizational relationships. However, their model is only measuring

the level of trust and reliance to be either high or low. It can be difficult to measure whether these levels are high or low in many situations. Further, a differentiation such as this, is not describing what characteristics these levels of trust or reliance are containing. A more precise scale of trust levels could provide valuable information as organizations can have a different perception of which dimensions that are important for them in order to identify which type of relationship they should be aiming for.

In order to develop a more accurate understanding of how trust can influence different types of inter-organizational relationships, I propose to include Lewicki and Bunker's (1996) three levels of trust; *Calculus-Based Trust* (CBT), *Knowledge-Based Trust* (KBT) and *Identification-Based Trust* (IBT), in Mouzas et al.'s (2007) model of identifying trust in business relationships. This is done with emphasize on the characteristics regarding virtual inter-organizational alliances Panteli and Sockalingam (2005) have implemented to Lewicki and Bunker's (1996) levels of trust. Hence, it would also consider the dimension of virtual collaboration when engaging in business relationships. An illustration of how these two models can be combined is shown in figure 7. Following on Mouzas et al.'s (2007) differentiation of inter-personal trust and inter-organizational reliance, the model in figure 7 is also differentiating between trust and reliance when implementing Lewicki and Bunker's (1996) levels of trust (e.g. Calculus-Based Trust is still called CBT in context of inter-personal trust. For inter-organizational reliance, it is called Calculus-Based Reliance, CBR).

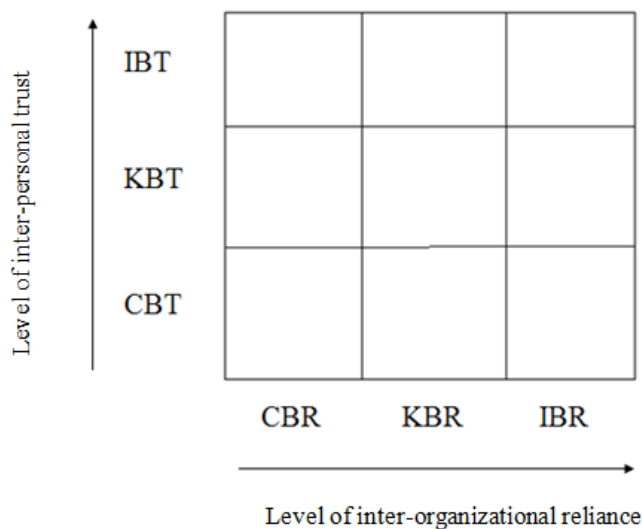


Figure 7: Trust and reliance in virtual inter-organizational relationships

2.4.2 Conflicts

Conflicts have been defined in several different ways over the years. Rex (1981) argue that the core issue of conflicts is “the situation in which A fully understand what is expected from him, but rejects the line of conduct that B requires. Furthermore, A is prepared to pursue both his own goals and the line of action by which he proposes to achieve them” (cited in Vaaland and Håkansson, 2003). This view has similarities to Hocker and Wilmots (1985) argument that conflicts can be defined as “(...) an expressed struggle between at least two inter-dependent parties who perceive incompatible goals, scarce rewards, and interference from the other party in achieving their goals” (cited in Panteli and Sockalingam, 2005). Pondy (1967: cited in Vaaland and Håkansson, 2003) is defining and categorizing conflicts through three attributes. Firstly, every conflict is a result from a sequence of interlocking conflict episodes. Secondly, conflicts are intimately tied up with the stability of organization. Thirdly, conflicts may be functional or dysfunctional.

Conflict stages

Following on Pondys’ (1967: cited in Vaaland and Håkansson, 2003) conflict stages, conflicts can be seen as gradually escalating to a state of disorder. These stages are *latent*, *perceived*, *felt*, *manifest conflicts* and *conflicts aftermath*. The *latent conflicts* can be based upon competition for scarce resources, drives for autonomy or divergence of goals. They can be seen as the condition or underlying sources of the conflicts (Vaaland and Håkansson, 2003:128). *Perceived conflicts* may occur from *latent conflicts*. If not, they are a result from misunderstanding of the involved parties’ true position in the relationship. It is possible for actors to take actions and prevent *latent conflicts* into escalating further. In inter-organizational relationships, the interaction is often managed by few people from each company. These representatives are exposed to a large pressure from their environments if they are dealing with tasks that are challenging their companies’ values. This can often lead to conflicts. If these conflicts are being personalized by the involved people, they are called *felt conflicts*. The stage referred to as *the manifest conflicts* implies that in some cases, the behavior of one participant can frustrate the goals of at least some of the other participants. This can also be one of the reasons why some conflicts are in need of a neutral, third party in order to solve a disagreement. In the same way as the development of each conflict is based on several previous episodes, an experienced conflict can affect an inter-organizational project or relationship later on (Vaaland and

Håkansson, 2003). This stage is called *conflict aftermath*. The affect one conflict has on future collaboration is dependent on how the involved parties have evaluated and gained knowledge from the previous conflict.

The second attribute to conflicts is correlated with the connectedness of several situations that can lead to a conflict in a business relationship (Vaaland and Håkansson, 2003). Conflicts can sometimes be embedded into a larger context, where one conflict develops as a result from other situations that have occurred. It can therefore be necessary to examine if there is another reason for why a conflict develops.

Pondys' (1967: cited in Vaaland and Håkansson, 2003) last attribute to conflicts is that they can be functional or dysfunctional. Dysfunctional conflicts are negatively related and may contribute to a disruptive and dissociating collaboration environment (Coser, 1956: cited in Vaaland and Håkansson, 2003). Functional conflicts are those who lead to enhanced development within a business relationship. Gadde and Håkansson (1993) have developed a framework for identifying combinations of buyer-seller relationships in context of the degree of collaboration between the actors and the degree of conflicts within the relationship (cited in Vaaland and Håkansson, 2003). As one can see from figure 8, well-developed buyer-seller relationships are characterized by a high degree of conflict, and a high degree of collaboration. Vaaland and Håkansson (2003) argue that the degree of cooperation in a complex inter-organizational project is very important. This is due to the technological complexity, strong activity interdependency, time pressure and the large number of actors involved. This is in similarity to what Panteli and Sockalingam (2005) argue as important factors in *co-alliances* of virtual organizations. Vaaland and Håkansson (2003) suggest that there are both positive and negative elements with conflicts in inter-organizational relationship. A low degree of conflicts can reduce cost and increase the progress in a project, however, functional conflicts can contribute to innovation and value creation (Vaaland and Håkansson, 2003).

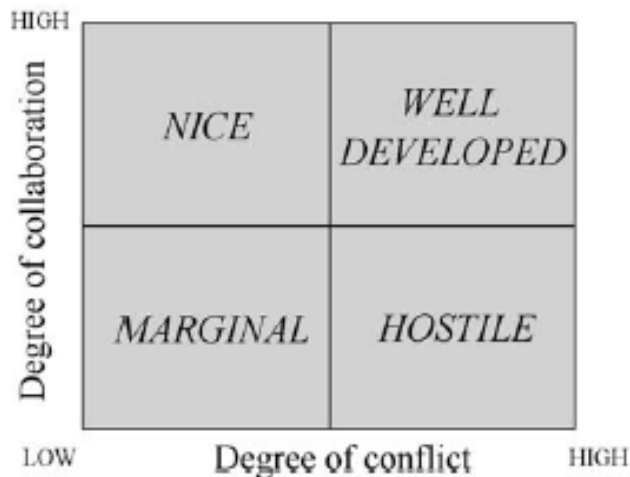


Figure 8: Degree of conflict versus degree of collaboration (Vaaland and Håkansson, 2003)

Following on Panteli and Sockalingam's (2005) examination of virtual alliances presented earlier in this study, different degrees of conflicts are occurring in different types of alliances. This is due to the level of trust that is desired to be developed, and the required level of knowledge sharing in each alliance (Panteli and Sockalingam, 2005). In *star-alliances* that are experiencing CBT, the level of task- and relationship conflicts tend to be low due to the way tasks are structured and the potential for mutual rewards (Panteli and Sockalingam, 2005). However, as most agreements in such relationships are contractual and the dominant actor controls most of the arrangements, the potential for process conflicts is high in the establishment of such relationships. If the alliance manage to evolve to *KBT*, the level of task- and relationship conflicts tend to stay low, but the dominant organizations may try to rearrange agreement as a result of an increased degree of mutual dependency. Hence, process conflicts may develop (Panteli and Sockalingam, 2005). *Value-alliances*, both at the *CBT* or at the *KBS* level, have the same potential to develop task-, relationship- and process conflicts as *star-alliances* (Panteli and Sockalingam, 2005). The main reason why these alliances have the potential to develop relationship conflicts is that all of the involved actors are dependent on each other, as all stages in the value chain will be affected if one of the actors fails to meet their obligations. According to Panteli and Sockalingam (2005), the levels of task- and process conflicts tend to be high in *Co-alliances* at every level of trust in Lewicki and Bunkers' (1996) trust model. This is argued as the power in the relationship is balanced between the

actors, and that the progress of the relationship is dependent on how different knowledge and core competences are managed in order to create increased value. If relationship conflicts occur at the *CBT* level, an intended project may fail as many *co-alliance* projects are in need of high levels of trust within the relationship (Panteli and Sockalingam, 2005). However, if such alliances are able to develop *KBT* or *IBT*, there is an increased potential to overcome possible relationship conflicts due to the strong level of trust.

	Star-alliance	Value-alliance	Co-alliance
Nature	Single dominant party for task allocation	Single dominant party for process coordination	All parties share equal status/responsibility
Dominant Knowledge Type Transferred	Explicit	Explicit	Tacit and Explicit
Trust Development	CBT to KBT	CBT to KBT	CBT to KBT to IBT
Trust and Conflict: Dynamics and Development			
-CBT	Low-Task Conflict Low Relationship Conflict (but has potential to escalate to Moderate/High)	Low-Task Conflict Low Relationship Conflict (but has potential to escalate to Moderate/High)	High-Task Conflict Low Relationship Conflict (but has potential to escalate to Moderate/High)
-KBT	High Process Conflict Moderate Task Conflict Low Relationship Conflict	High Process Conflict Moderate Task Conflict Low Relationship Conflict	High Process Conflict High-Task Conflict Low Relationship Conflict
-IBT	Low/Moderate Process Conflict	Low/Moderate Process Conflict	Low/High Process Conflict
	N/A	N/A	High-Task Conflict
	N/A	N/A	Low RC
	N/A	N/A	Low/High Process Conflict

Table 3: Conflict in virtual alliances (Panteli and Sockalingam, 2005)

Sources of conflicts

According to Shin (2005), the way virtual teams manage internal conflicts is critical to their success, and it is therefore important to explore what leads to conflict and how this can be resolved. Further, this can potentially enhance the effectiveness of virtual teams. There are four different virtual dimensions that characterize virtual teams, and these are presented in table 4 (Shin, 2005).

Virtual dimension	Source of conflict
Spatial dispersion	Members work without face-to-face interaction or supervision. It is therefore difficult for team members to receive guidance or instructions. They have also fewer opportunities to clarify task and roles in the group than face-to-face teams. This can potentially become a source of conflict.

Temporal dispersion	Members work without face-to-face interaction or supervision. It is therefore difficult for team members to receive guidance or instructions. They have also fewer opportunities to clarify task and roles in the group than face-to-face teams. This can potentially become a source of conflict.
Cultural dispersion	Virtual teams can consist of members from different cultures and backgrounds. With a diversified composition, the team members could vary in terms of their values, personality and work and communication styles (they could emphasize different aspects). Even though this could also be a source of conflict in face-to-face teams, it is more critical in virtual teams since these usually consist of more diverse members. The absence of face-to-face interaction can also be a reason why cultural differences are so important to consider in virtual teams.
Organizational dispersion	Refers to the degree to which a virtual team consist of members who work across organizational boundaries. A multi-organizational nature in a virtual team could cause identity issues. It can also be difficult to develop cohesiveness in a virtual team where the members are from different organizations. It is found that weak identity and low cohesiveness can lead to conflict in virtual teams.

Table 4: Sources of conflict associated with virtual dimensions (Shin, 2005)

The absence of traditional mechanisms of control (direct supervision) may prevent virtual team members from trusting one another (Shin, 2005). Since they rarely see one another, this can be a critical source of conflict in virtual teams. If trust is not present in a virtual team, the actors are likely to be reluctant to share information and ideas and to collaborate, which in turn can lead to conflict among them (Shin, 2005). Furthermore, as virtual teams consist of individuals who possess diverse backgrounds and have rarely met or worked with one another before, they are often not familiar with each other's competencies and past performances.

2.5 Clarifications

The theoretical aspects that are relevant for this study have now been presented and discussed throughout this chapter. In order to categorize the analysis later in this study, the research questions presented in the first chapter can be divided into more manageable sub-questions. The answer to the research questions can then be given based on the solutions to all of the sub-questions. Firstly, it is important to figure out the reasons for why Statoil and LBO have established a business relationship that is taking use of virtual teams, as their incentives can affect how they will commit themselves towards the relationship. Secondly, the development of the relationship needs to be identified in order to evaluate how the implementation of IO has affected their work processes and ability to collaborate. Thirdly, important factors that contributes to enable collaboration between Statoil and LBO in their virtual relationships needs to be analyzed. Earlier in this chapter, trust and conflicts has been argued to be such factors. The level of trust and sources of conflicts in the virtual relationship between Statoil and LBO can therefore be used to identify implications regarding collaboration between them. Hence, the research questions can be revised and divided into the following sub-questions that will be discussed when analyzing the relationship between Statoil and LBO later in this study:

- What are the organization's incentives for engaging in a virtual inter-organizational relationship?
- How has the virtual relationship developed?
- What is the role of trust in the virtual interaction between Statoil and LBO?
- What are the sources of conflict in the virtual interaction between Statoil and LBO?

3. Methodology

The purpose of this study is primarily to analyze how inter-organizational relationships in the oil and gas industry are affected by taking use of virtual teams. Based on the nature of the research questions, a qualitative approach is used during the study of this Master thesis. In contrast to quantitative research, qualitative research tends to focus more on words than numbers, and is more commonly used when analyzing the nature of smaller selections rather than exploring a larger range of people (Bryman, 2008). Hence, it is a natural approach when analyzing the inter-organizational relationship between Statoil and LBO.

In order to develop a theoretical grounding, a literature review and discussion of the different theoretical aspects has been performed. As argued in the last part of the introduction, the choice of theory has been done based on its relevance and contributions to answering the research question. Literature on primarily virtual teams, inter-organizational relationships, and trust and conflicts within business relationships has been collected from academically recognized journals and databases. This is done in order to identify what is already known, which concepts that are relevant and unanswered questions within this field of work.

Research design

When choosing between qualitative – or quantitative research one is choosing which research strategy that is to be used in a study (Bryman, 2008). However, even if you choose the one or the other, you need to decide which research design and research method you want to use (Bryman, 2008). It can be difficult to sometimes understand the distinct differences between the research design and – method. According to Bryman (2008), a research design is the framework that is used for the collection and analysis of data. This can include the variables that need to be considered when conducting the study, generalizing the groups of participants that will be a part of the investigation and understanding the connection between those. Further, the research method is the technique that is used for collecting data.

For this study, a case study has been chosen as the research design. This is done as the study analyses a business relationship between two organizations in the oil and gas industry, which therefore will function as the basis for the case study. Virtual relationships can behave and be characterized differently depending on which

industry one is analyzing. There are few studies that have investigated these variables from such relationships in the oil and gas industry, and the research is therefore in need of analysis and findings that can be done from a case study of a virtual inter-organizational relationship within this industry.

According to Stake (1995), case study research emphasizes the complexity and particular nature of the case in question. The most common use of the term case study is that it is a study associated with a specific location, such as a community or an organization (Bryman, 2008). Following these terms, the case study is therefore associated with the oil and gas industry, where the specific organizations that are of interest are Statoil and LBO. Case studies can be conducted in studies with either a qualitative – or a quantitative approach. Even though it can also be interpreted with quantitative research, it is common to employ case studies in combination with a qualitative research strategy. Observations and interviews are often used as these can be particularly helpful in detailed examination of a case.

Observations and interviews

When studying groups of people and the way they work, there is often a problem that there is a difference between what people say they do and their actual behavior (Bryman, 2008). Hence, I have chosen to take use of observations in order to directly being able to be exposed for the behavior of the people in my study. This is therefore the primarily research method that is used throughout this study. Over a period of four weeks, I was present at LBO's operation central during their internal meetings with the installations offshore and during operation plan meetings between them and Statoil. It was important to spend a significant amount of time observing several of these meetings in order to observe the actors' behavior over time. Observation over separate occasions like these contributes to secure the quality of the findings, as several observations reduces the risk of being exposed to an unique situation that is not representational for the relationship.

When conducting the observations, I decided to take use of non-participating observations. This means that I was only observing the other actors without actively being a part of the meetings. Before my observations began, I created an observation schedule that I wanted to use in order to measure and allocate the behavior related to pre-defined topics. This has similarities to what Bryman (2008) defines as central in

structured observations. During the first meeting I observed, I experienced that the observations schedule was not covering all the aspects that could be of relevance for my study. I therefore decided to take use of unstructured observations as well, in order to record in as much detail as possible the general behavior of the participants and the discussions of the meetings.

Following each meeting, I had the opportunity to discuss my impressions and ask clarifying questions with the operation central manager at LBO and other employees that had attended the meetings. This made it possible for me to note questions during my observations and then have them answered and explained immediately after each meeting. Due to this, I only conducted one summarizing interview with a LBO representative at the end of my observation period, as I had already asked and discussed my questions with several of the participants in relation to the meetings. My summarizing interview was a semi-structured interview where I had prepared questions and topics, but also gave the participant the opportunity to talk about aspects that he considered as important to the way LBO manage their work related to the frame agreement with Statoil. This method of interviewing also gave me the opportunity to ask follow-up questions and clarify the answers I was given during the interview. This interview lasted for about one hour.

Limitations

When conducting observations and interview of the behavior of people in a case study like this, there are some limitations that are important to consider. According to McCall (1984), observations can provide more reliable information and greater accuracy of the participating actors, as one are able to see for one self how people are working and interacting with each other. However, every research design and research methods have limitations, where especially issues regarding reliability and validity are important to consider (Bryman, 2008).

According to Bryman (2008), reliability is concerned with the question of whether the results of a study are repeatable. This is difficult to accomplish in qualitative research as the circumstances for the study can vary over time. This will also be the case for the collaboration between LBO and Statoil, as their relationship can evolve and develop over time. Some of the factors that are characterizing their relationship today may not be present or that important later on in their relationship. It could therefore be

difficult to make the similar findings if this study had been conducted later on. However, the observations that are made in this study are discussed with some of the people that are observed. This has contributed to make the findings more accurate and acknowledges by others.

The validity of a qualitative research can be considered through internal – and external validity (Bryman, 2008). Internal validity means whether there is a good match between the researchers observations and the theoretical ideas they develop. I had little previous experience or knowledge about Integrated Operations before I started this study. During the fall of 2010, I conducted a pre-diploma study where I did a literature review of the concepts of Integrated Operations and theoretical dimensions that could affect the implementation of IO in the oil and gas industry. However, I had none additional experience of the oil and gas industry and was not familiar with the work processes that is enabled by the use of IO in this industry. As I have spent a significant amount of time at LBO's operation central, and had the opportunity to discuss and interact with people that are using IO, I have developed knowledge about how organizations are taking use of IO. This has helped me to understand important aspects of work processes, and the oil and gas in general. By dividing the research questions into several more manageable sub-questions, I have secured that the observations and the theoretical ideas are corresponding. However, a different approach to this study may have given me different findings when answering the research questions. A potential limitation to my observations is that I have primarily studied and discussed the behavior of LBO in the relationship between them and Statoil. However, as I have also observed Statoil during their meetings with LBO and talked to some of their representatives beforehand of this study, this reduces the risk of this potential limitation.

External validity refers to the degree that the findings can be generalized across social settings and is applicable for other samples of studies (Bryman, 2008). Even though some of the findings may be unique for the relationship between Statoil and LBO, there are some similarities that can be applied to other studies, especially within the oil and gas industry. The power structure between operator companies and suppliers will most likely be similar in other buyer-seller relationships in this industry. As IO is an important focus area in the oil and gas industry, other organizations are also implementing work processes that are enabled through the use of IO. It is therefore

natural to assume that much of the findings are applicable for other virtual inter-organizational relationships, especially within the oil and gas industry.

4. A case study of a virtual inter-organizational relationship in the oil and gas industry

In this chapter, the empirical collections of data and findings from the case study examined in this Master thesis will be presented. The study analysis a virtual inter-organizational relationship in the oil and gas industry, and the following sections will present and describe different elements of this business relationship. This is done with emphasis on the sub-questions presented in the clarification section in chapter two.

4.1 The case organizations

4.1.1 The LBO organization

LBO is a Norwegian based company that offers services and solutions to the oil and gas industry both offshore and onshore. Their areas of operations include engineering, inspection and maintenance, installation and removal, and operator training courses. The company specializes on developing technically safe and cost effective solutions on oil and gas installations. In addition, they provide services such as scaffolding, rigging operations, insulation, surface treatment and maintenance. These services can be executed as an independent supplier or in partnership with other companies. The LBO headquarter is located in Molde, Norway, and they have department offices located in Trondheim and Stavanger. The company is primarily engaged in projects on installations on the NCS. However, they have also established a subsidiary company, Linjebygg Offshore Inc. in Houston, Texas in the United States. Including another subsidiary company, MainTech AS, LBO has about 470 employees.

4.1.2 The Statoil organization

Statoil is an international energy company that is headquartered in Norway. Their main operations are exploration, development and production of oil and gas. Statoil is present in 34 countries around the world, and their biggest activities are located in Norway, where they are the largest operator on the NCS. The company is also a license holder on several oil and gas fields on the NCS. Statoil has approximately 20,000 employees that are divided into seven business areas. The business area of Development and Production Norway is organized into four different locations of operations on the NCS; North Sea (southwest of Norway), North Sea (west of Norway), Norwegian Sea and Barents Sea.

4.2 Background for developing a collaborative relationship

Insulation, scaffolding and surface treatment (ISS) are some of the services within the area of maintenance and modifications on offshore installations. Previously, frame agreements for insulation, scaffolding and surface treatment have been part of more extensive frame agreements. Maintenance and modification contracts was awarded by the oil companies to certain contractors, which further used sub-contractors like LBO to perform some of the services that was needed according to the contract. Some of the companies that have been awarded larger frame agreements for maintenance and modification services are Aibel AS, Aker Solutions AS, Reinertsen AS, Fabricom AS and Apply Sørco AS.

As a part of Statoil's work on developing their processes and strategies within their department of procurements, they have now chosen to enter into frame agreements regarding ISS separately from the larger maintenance and modification agreements. This is done in order to secure greater diversity and increase the competition among the different bidders (Statoil press release; July 2010). The ISS contracts are now more standardized than it was earlier, and according to senior vice president of procurement in Statoil, Anders Opedal, "this will enable Statoil to follow up the contracts in a more streamlined manner. We want a more hands-on approach with respect to ISS deliveries. As well as boosting competitiveness, we expect that this approach will also bring about increased quality while maintaining costs at the right level" (Statoil press release; July 2010). In the summer of 2010, Statoil awarded these types of frame agreements directly to suppliers of ISS services for the first time since the merger between Statoil and Hydro's oil and gas division in 2008. Kaefer Energy, BIS Industrier, Beerenberg Corp. and LBO were the first suppliers to enter such agreements with Statoil.

The frame agreement that has been entered between Statoil and LBO has duration of 4 years, with the option of two two-year extensions. According to the agreement, LBO will provide ISS services on three of Statoil's installation on the NCS; Heidrun, Norne and Njord A/B. All of these installations are located in the Norwegian Sea on the NCS (see figure 9). The annual value of the awarded contract is approximately 140 MNOK. Previously, the ISS services that suppliers like LBO performs for oil and gas companies like Statoil was financially compensated according to the actual number of hours the supplier used to perform a task. This meaning that after any job or

services was finished, the supplier got paid for the total number of hours their employees had used working on a certain project. In addition to such a traditional type of hourly pay, the suppliers would receive different types of bonuses dependent on their efficiency and performance during a project. In the new frame agreements, a supplier receives a fixed sum for their services that have been estimated and agreed up on beforehand of any project. This payment is estimated based on the operations that are planned to be done on the different installations, and it should also cover all of the supplier's expenses regarding salaries for personnel, both offshore and onshore, and cover expenses related to organizational work onshore. However, extraordinary, unforeseen incidents that occur offshore and that have to be managed immediately will be compensated independent from the fixed payments stated in the frame agreement.

The main differences from the two mentioned procedures of agreements between a buyer and a supplier are that the new agreements will increase the suppliers' risk and requirements. Even though the payment for the supplier could vary according to their level of efficiency and quality of their services in the previous agreements, the contract would always secure profitability for the supplier. The supplier would always earn money, as they were paid by the hour. In the new, standardized frame agreements for ISS services between Statoil and its suppliers, the suppliers are having the risk of not earning any money from the contracts if their estimates are incorrect. This requires that the estimates that are given are correct, and it makes it even more important for the supplier that they have implemented effective routines throughout the whole organization. In addition, it is important that their employees offshore are able to maintain the required level of quality for their services at a high level of efficiency. The administrative part of the LBO organization need to use a great amount of resources in order to properly plan and execute the tasks from the agreement. This is labor they are using indirectly on the contract, and is therefore a cost they have to cover themselves. If they use too much money on organizing the projects and to implement new work processes, they can in a worst-case scenario end up losing money on the frame agreement. This is though a scenario that requires several important things to fail at the same time, but still something LBO has to emphasize and carefully evaluate all the time.

As LBO is performing services for Statoil offshore that is planned to be done over several years, their relationship can be viewed as a long-term buyer-seller relationship. The influence each of the actors has towards the relationship is very different. Even though Statoil are in need of having suppliers to execute tasks offshore, they are the ones with the most power in the relationship, and they have the possibility to decide most of the terms in the frame agreements. When they have estimated which requirements a certain frame agreement should contain, Statoil has the option to choose among several different suppliers based on which of the offers that suits them the best.



Figure 9: Statoil's producing fields in the Operation North (Statoil Annual Report; 2010).

4.3 Work processes

The frame agreement between Statoil and LBO sets some requirements to the two organizations regarding work processes. This is especially affecting LBO, as Statoil is considered as the buyer in the relationship and therefore has the possibility to decide the terms of the contract. One of the main conditions for even awarding LBO the contract was that they established an operation central that uses IO principles in order to be able to virtual collaborate both internally within the organization and towards Statoil. This involves that the operation central is equipped with videoconference systems and other ICT solutions in order to communicate across geographically dispersion (e.g. facilities that enables communication between offshore and several

locations onshore at the same time). The operation central is organized in such a way that one employee, an operation central manager, has the overall responsibility for securing efficiency, progression and quality of the work LBO are performing offshore on a daily basis. Further, there are project managers that are responsible of following each of the installations, and employees that are functioning as project support for the overall operation. As LBO are sub-contracting some of the services that are presented in the frame agreement with Statoil, a representative from one of their collaboration partners, BIS Industrier, is also involved in some of the work at the operation central.

4.3.1 Work orders

For each installation, representatives from Statoil and LBO are collaborating in order to establish which services that need to be done at the respective installations in the future. A pre-defined work period, where the required work is specified, is called a planning period. It is developed a work-order plan for each planning period. The work-order plan is a series of work orders where each of them are describing a certain task that needs to be done, which area of expertise that are required, the earliest start date, the earliest execution date and how many hours of labor the task is estimated to take.

Order	OpA	Operation short text	Functional location	Earl.start da	EarliestEndDa
*C34CLB		Linjebygg ISO Tilkomstteknikk/klatr			
22073292		Kampanje - inspeksjon etter sterk vind.	1170-5Y592		
22073292	0050	Områdeinspeksjon, M33	1170-5Y592	27.05.2011	27.05.2011
22088931		Montere delugedyse ved brønn A8.	1170-7150006		
22088931	0010	Montere Delugedyse ved brønn A8	1170-7150006	27.05.2011	28.05.2011
22089474		Deatortank - Sandblåsing og maling			
22089474	0060	Beredskapsplan/øvelse.		27.05.2011	29.05.2011
22087046		Lekkasje i flens på PWRI anlegg	1170-44L625-14"-PW-G		
22087046	0085	Ta ned eagleklemmer og taljer PWRI	1170-44L625-14"-PW-GD20P	06.06.2011	06.06.2011
*C34CLE		Linjebygg ISO Rengjøring			
22039445		12M FV-PROD DELUGE VALVE SKID WATER	1170-7150016		
22039445	0050	12M FERSKVANNSPYLING/OPPSAMLING	1170-7150016	06.06.2011	06.06.2011
22039441		60M FV-PROD DELUGE VALVE SKID WATER	1170-7150003		
22039441	0050	60H FERSKVANNSPYLING/OPPSAMLING	1170-7150003	09.06.2011	10.06.2011
22039442		60M FV -PROD DELUGE VALVE SKID WATER	1170-7150021		
22039442	0050	60H FERSKVANNSPYLING/OPPSAMLING	1170-7150021	09.06.2011	10.06.2011
*C34ISU		Linjebygg ISO Isolasjon			
21996482		1Z13-Isolerte rør system 27 M33W/M33E	1170-5Y527		
21996482	0010	F: Montering av isolasjonspuiter/kasser	1170-5Y527	15.04.2011	17.04.2011
21958634		1Z13-Isolerte rør system 27 M33W/M33E	1170-5Y527		
21958634	0045	F:Oppmåling Ventiler/flenser	1170-5Y527	13.05.2011	12.06.2011

Figure 10: An example of work orders (LBO Operation Central, 2011).

Except from unforeseen critical incidents that are in immediate need to be performed, LBO's personnel offshore shall not at any time execute tasks that are not described in the work-order plan. This is somewhat different from how the specifications of the required work according to the frame agreements were carried out earlier. Previously, LBO was asked to assist and perform maintenance and ISS services on short notice for other organizations offshore. Even though there were many standardized tasks that had to be done, much of the services that LBO performed could be ordered on a daily basis. The importance of following the work-order plan today is to be noticed in the following quotations from one of the employees at LBO:

Our personnel offshore should not at any time deviate from the work-order. The work-order plan should be followed as one of our most important guidelines. The only exception is that if something critical occurs that needs to be solved immediately. (Participant 1; Participant 2)

The quotation from *Participant 1* and -2 at LBO's internal meetings is showing how important the company values the work-order plan. The procedures regarding this plan is decided by Statoil when entering the frame agreements, and it is one of the most noticeable changes in their new strategic direction towards new standards for ISS contracts. When LBO personnel offshore have executed an order on the work-order plan, the ISS managers offshore is responsible for reporting and changing the status of the order in the different planning tools that are used. The services LBO performs towards Statoil is reported in an ERP system called SAP. In addition, LBO is registering their work in Sharepoint, which is the system they are using internally. The reason why LBO also are using their own reporting- and planning tools is because they have contracts with other customers than Statoil that are using different tools than SAP. It is therefore important for LBO to have their own planning- and reporting tool in order to have everything they do properly registered in their own systems. By reporting and registering all the work that is done in SAP, Statoil is able to follow the progression of the work orders and measure the efficiency of the services LBO is providing. The reports on each work order can also be used to make

more accurate estimates of similar tasks in the future. This can make it easier to plan future numbers of employees offshore and the amount of hours that are needed in order to execute each task. This is also of great importance to LBO, as it can contribute to reduce the risk of proposing wrong estimates when bidding on other frame agreements in the future.

4.3.2 Key Performance Indicators

Statoil is using a large range of Key Performance Indicators (KPIs) to measure the performance of the processes and tasks they are contracting out to their suppliers. This is also the case for the frame agreement between Statoil and LBO. Making use of KPIs is a part of a larger performance management system that is implemented at Statoil. According to Statoil, the overarching principle with this system is to develop a closer link between the performances of the different actors they collaborate with and the remuneration the actors receive. This can also be used to measure employees within their own organization. The goals of the performance have two dimensions; delivery and behavior. Both of these dimensions are equally important and are given equally weight at any evaluation. For each of the five perspectives HSE, finance, operations, market, people and organization there are established delivery goals. In each of these perspectives, it is developed KPIs that is used to measure the quality and performance within this field of work. Goals regarding behavior is based on Statoil's values and leadership principles that refer to the behavior that is needed and expected in order to achieve the delivery goals (Statoil Press release, March 2010).

From a supplier perspective, it is very important for LBO to follow Statoil's requirements regarding the KPIs in order to create and sustain a good business relationship with Statoil.

Everything we do both onshore and offshore is measured by KPIs, and Statoil are going to use our performance regarding these measurements when they evaluate the work we perform. It is therefore very important for us to achieve great scores on every indicator that is measured in order for us to stay ahead of our competitors in the future (Participant 1, LBO).

The statement above shows some of the commitment LBO has towards Statoil's work on KPIs. Even though not all of the things that are measured are directly relevant for LBO internally, they focus on emphasizing all of the elements they are measured on, as they are aware that they are important for Statoil. Examples of elements the indicators are measuring are the quality of the work, the time used for each work order, the efficiency of the work performed at the installations, how the work is organized and the overall financial status of the frame agreement. These measurements are registered and analyzed through SAP, where Statoil at all times can control and monitor how LBO is performing according to the contract. Each of the indicators has a grading scale where the level of achievement in each category will form the basis for an overall performance on a scorecard. Statoil will use the scorecard results when they evaluate the relationship with LBO, and when they need to compare this relationship with other potential suppliers in the future.

A large portion of the services that LBO personnel is performing on Statoil's offshore installations is mainly installation and maintenance work, while the main engineering preparations are carried out by personnel onshore. As much of the personnel offshore are holding a more practical area of expertise and personnel onshore are having more theoretical qualifications, this could potentially be a source to misunderstandings between personnel offshore and onshore. However, LBO has chosen to solve this potential challenge by appointing one of their employees that are having great experience from both offshore and onshore work as their operation central manager. Hence, the operation central manager can be able to detect potential conflicts and understand both parties to a larger extent.

As the work processes to some extent is different regarding if the meetings are internal within the LBO organization or with Statoil, the following sections are differentiating between these two types of meetings

4.3.3 Internal meetings at LBO

The operation central that LBO has established in relations to the ISS contract is located in Trondheim, Norway. Every week there are internal meetings within the LBO organization between the operation central and each of the installations offshore.

People working in the operation central, employees located in Molde and employees working on the respective installations are joined together in operational meetings through usage of videoconference equipment. Usually, Health, Safety and Environment (HSE) coordinators, projects support and logistic coordinators working in Molde are present on the meetings. ISS manager and chairmen from each of the service areas are representing the personnel offshore. Project manager, project support and a representative from one of the sub-contractors, BIS Industrier, are the ones who are attending the meeting from the operation central in addition to the operation central manager. The ICT-solutions that are installed at each of the locations makes it possible for the participants to follow the same presentation on their projection screen in real-time. This is done in order to increase the efficiency of the meeting at the same time as it makes it easier to avoid misunderstandings during the discussions. A standardized minute and agenda is drawn up in advance, and it includes all of the key items that are to be discussed during the meetings.

Before the internal meeting with one of the installations offshore begins, the people at the operation central uses the ICT system to call up the other locations in order to establish the connection between them. When the other locations confirm the incoming call, a video-frame of each of the participating locations is shown on a screen in each of the collaboration rooms. It is possible to adjust the zoom and angle of the camera as well as adjusting the microphones that are transmitting the audio. Even though the subjects of the meetings are important and serious, the atmosphere in the internal meetings is somewhat characterized by an informal and friendly tone. The following discussion gives an illustration of how internal meetings can start:

(All of the locations confirm the incoming call, and video transmission is established).

Participant 1: Hi Molde. How are you today? Finally, the weekend is over.

(All participants are laughing).

Participant 2: Hi Trondheim. We are fine, thank you.

Participant 1: And there we have Norne with us as well. Do you have the same terrible weather as us today?

Participants 3: Don't even talk about it. It is so windy that we can't do anything that requires us to work at large heights.

Participants 1: I see. (...) Well, have there been any observations that we should know about the past week, Norne?

(The meeting continues).

Even though the meetings can have an informal and soft introduction, the employees are at the same time focused on having a successful and productive meeting. As most of the actors that are attending these meeting are working within the same organization, they have knowledge about each other and have previously met face-to-face in several occasions. The people working at the operation central have also good knowledge to the representative from BIS Industrier as he is stationed - and working at the same facilities. How LBO can benefit from the knowledge between their employees is illustrated in the following statement:

I have previously worked offshore on all of the installations we are responsible for in this frame agreement. In addition, I have worked with most of the ISS managers and chairmen we have offshore. This enables the operation central to have a broader understanding of the work we are performing offshore. It also makes it possible to better evaluate the information we get from the personnel offshore, as I personally know them beforehand and really know the meaning of what they are saying (Participant 1, LBO).

The operation central manager is responsible for managing the meetings and he secures the efficiency, progression and overall performance of each meeting. He is leading the meetings by going through each of the elements from the pre-defined

agenda. As the other participants have their area of expertise within some of the topics that are discussed in the meeting, the operation central manager address the questions and topics to them when they are to be discussed. Hence, the other participants are in other words only playing an active role in the meetings when the group is discussing items within their area of expertise. As such, the operation central manager is going through the agenda, and then receives feedback and comments from the persons responsible for each of the topics that are discussed. These procedures are implemented in order for the meeting to be as effective and constructive as possible. However, all of the participants have the possibility to interrupt and tell the others if they have comments or something to say in a discussion that is not within their field of work.

4.3.4 Operation plan meetings between Statoil and LBO

Every second week it is held operation plan meetings between Statoil and LBO. As Statoil have awarded frame agreements for ISS services on their installations to several service companies, they have chosen to jointly hold operation plan meeting with both LBO and another company at the same time. As this third company is not one of the participating organizations in this Master thesis, the company will be given a fictional name, Service Partner AS, in order to protect their interests. Many of the services that LBO and Service Partner AS are performing are done at the same installations and are also to some extent correlating. Holding joint meetings will therefore increase the efficiency of the follow-up work and coordination, as well as giving the service companies the possibility of experience how the other companies are managing their tasks and routines. The representatives participating on these meetings from Statoil are located in Stjørdal, and the representatives from LBO and Service Partner AS are both located in Trondheim. Service Partner AS is also including one of their sub-contractors located in Sweden to the operation plan meetings with Statoil. This brings the number of different locations participating in these meetings to a total of four locations.

The purpose of the operation plan meeting is to follow-up the work that is done at the different installations within each planning period. Even though LBO continuously is reporting the work they are performing, it is necessary for both actors to interact and communicate in order to plan and evaluate the status of each work-order. Most of the services that LBO is performing offshore are maintenance work, and this has to be

coordinated with the other operations offshore. In addition, the operation plan meetings are supposed to function as an arena where both actors are able to present and discuss reasons for why implication and unforeseen challenges has occurred and how these can be solved.

The representatives from Statoil are the ones who are managing the operation plan meetings. When people from the different organizations, which are geographically dispersed, are joined together during such meetings, it is important that all of the actors arrive the meeting to the scheduled time and are well prepared. According to the operation central manager at LBO, these are some of the most important factors in order to have successful collaboration throughout the meetings.

It is very important that people arrive to the meetings according to schedule. In contrast to around-the-table meetings (e.g. face-to-face meetings), much of the productiveness and concentration during the meetings are dependent on that no one arrives late to the virtual meetings. (...) One of the requirements to make such meetings successful is that everyone is prepared. You do not have the time to browse through all of your papers while you discuss something. In addition, you cannot hide your lack of preparation by being anonymous, as everyone has to fulfill a certain role during the meetings. It is therefore very important for us to be on time and well prepared to the meetings we have with Statoil in order to make the collaboration successful and to show our professionalism (Participant 1, LBO).

The tone and the atmosphere in the operation plan meetings are very formal. The participants are from different organizations with little or no knowledge about one another from before the frame agreement was signed. This characterizes these meetings as everyone is focused on being effective and informal with no small talks or informal conversations at any time during the meetings. All participating actors are able to see the screen Statoil is sharing through the system. Usually, the shared screen is presenting an overview of the different work-orders and their current status. The work orders on Statoil's operation plan is categorized between the different

installations and sorted by the responsible supplier. The person managing the meetings from Statoil starts at the top of the operation plan and inform the suppliers if there has occurred, or is planned, any changes for each work order due to other operations on the installations. If there are some notifications that are mentioned about a certain work order, the Statoil representative address the issue to either LBO or Service Partner AS, dependent on which of them who are responsible for performing the work order. This makes the routines for the operation plan meeting similar to the routines at the internal LBO meetings, where it is the operations central that moderate and controls the progression of the meetings. How Statoil moderate the operation plan meetings with their suppliers is illustrated in the following discussion:

Participant 4 (Statoil): If we look at WO S92#####, we cannot see that this has been reported to be executed according to plan. What is the status on this order?

Participant 1 (LBO): According to our employees offshore, they have finished insulation on two of the three pipes in this order. We are still within the estimated time frame and expect to successfully meet this deadline. The reason why it haven't been finished yet is because our personnel had to postpone some of the work due to other more prioritized orders that came in last week.

Participant 4 (Statoil): Very good. What about WO S02#####! How is the progression on this order? Are you planning to execute this task as scheduled?

(...)

The discussion above shows how Statoil address their inquiries to the supplier that is responsible for the order they want information about. The information can give them valuable input on factors that are not possible to find from the reports in SAP. This is because the operation plan meetings provide everyone with the opportunity to explain the reasons for why certain changes or implications have occurred.

As mentioned previous in this chapter, awarding an ISS contract directly to a supplier without using a sub-contractor is something Statoil have started with recently. It is therefore several new experiences in work practices for both Statoil and LBO, and such an inter-organizational relationship are enabled by the development of IO. Both actors need to make changes within their own organization in order to be able to successfully collaborate with each other. Statoil require that LBO is implementing changes to their work processes offshore, and this is especially affecting how they organize and execute the work orders. Even though both Statoil and LBO want to establish the new routines and work processes on a desirable level as soon as possible, they are aware that this is an organizational challenge that will take time to implement successfully. However, Statoil expect that their suppliers are using large resources on this change- and reorganization process in order to quickly adapt and deliver progression in their results. This is something that is heavily emphasized from Statoil's point of view. If the suppliers are not able to increase the performance and implement routines as quickly as desired, Statoil at least expect them to be honest and open about it. An example of this is shown in the following discussion:

Participant 4 (Statoil): There is something we would like to discuss with you before we end the meeting. In order for us to monitor the work you are doing for us offshore, we need to be able to have a good reporting system. When we made changes in the work processes regarding work orders, immediate registration and reporting in SAP is one of the requirements in order to make this work. This is especially important when it comes to reporting the actual number of hours that is used for each work order so we are able to compare this with the estimated figures. However, we are now half way through this planning period and we are discovering that both of you have not reported many of the work orders properly. Just look on the screen how empty the columns for reporting each work order are. What do you have to say to this, LBO?

Participant 1 (LBO): I have to admit that we have not managed to reach a satisfying level regarding reporting. Many of the orders you

are showing to us now have been executed according to plan, but we have not been able to register and report our actual number of hours yet. This is something that we will do within a short time. We are very focused on improving these routines, both offshore and onshore. We expect to improve our performance as our personnel now have more knowledge about the new work processes and are getting used to the routines.

Participant 4 (Statoil): I understand. It is very important that we start to see results on the work that is done regarding registration and reporting. This has to improve. However, it is satisfying to hear that you are focusing your attention on improving these tasks.

Participant 4 (Statoil): (...) Why haven't you registered all of the hours that have been used on the different work orders offshore, Service Partner AS? There are several expired work orders that we cannot find in the section for executed orders.

Participant 5 (Service Partner AS): Oh? I am almost certain that we have registered the most of the orders that are shown as empty on your screen. I don't know why they are not presented here, but perhaps there is trouble finding them in your system?

Participant 4 (Statoil): That was a little bit weird. I cannot see why we shouldn't find them here if they are registered.

(...)

At this point in the meeting, the participants from Service Partner AS try to figure out why the work is not reported properly. The two representatives from Service Partner AS are starting to communicate by whispering to each other. In addition, one of them is using their computer to search for answers in their systems while the other one is browsing through her papers. It is clearly that the representatives from Service Partner AS are not well enough prepared to the meeting. The noises they are making is very

reveling and disturbing for the other location because the microphones are very sensitive and are picking up every little sound. They try to engage their sub-contractor from Sweden in order to clarify if they have made the reports or not. This process of using time to figure out the cause of the problem affects all of the other actors in the meeting, and it becomes difficult to continue the discussion in a proper manner.

Participant 6 (Statoil): If there is something wrong with our software, we have the responsibility to fix this as soon as possible. If that is the case, we have to bring in our IT-crew and make them find out what is causing these problems.

(It is revealed that there is nothing wrong with Statoil's system. Service Partner finds out that many of the work orders that have been executed are not reported, and some of them are registered in wrong planning periods.)

Participant 4 (Statoil): This is not how we want the procedures to be followed. We will consider going back to some of the previous procedures if this is not quickly improved. We need to schedule a new meeting afterwards where we can back-trace your registrations and reporting.

The discussion that took place when Statoil and Service Partner AS were trying to figure out what had went wrong was fragmented and ineffective. Usually, the topics that are discussed are planned in advance so everyone knows what the meetings are all about. In this case, it was an unforeseen situation that occurred, and the participants had little knowledge of how such situations should be solved and discussed over a videoconference meeting. Even though the locations are connected through high-speed Internet lines, there is a noticeable delay in the transfer of video and audio. This affected the conversation when Statoil and Service Partner discussed the cause of the problems regarding work orders. The delay on audio contributed to misunderstandings, as it led several participants to speak at once and interrupt each

other when they thought it was their time to talk. In addition, people can only see the other actors on the screen in front of them, which makes it more difficult to detect body language and behavior. These limitations may have contributed to the tense- and, to some extent, frustrating atmosphere that developed during the discussion.

5. Analysis

In this chapter, the empirical data in this study is going to be analyzed with emphasis on the sub-questions that was presented in the end of the second chapter. Based on the theoretical grounding, the research questions was divided into more manageable sub-questions that includes the organization's incentives for engaging in a business relationship in the oil and gas industry, the development of their relationship, and the role of trust and sources of conflicts within their relationship. The following analysis is therefore structured and categorized based on these sub-questions, and together they will be used to answer the overall research questions of this study.

5.1 Incentives for engaging in a virtual inter-organizational relationship

As Ford (2001) argue, companies tend to interact through business relationships in order to gain economical benefits from the relationships, create synergies within their own organizations, create value-adding activities based on increased knowledge sharing, or a mixture of these arguments. According to LBO, one of their most important motives for investigating the potential of IO is to make themselves more attractive towards operator companies like Statoil. LBO is a relatively small actor among several competitors that provides ISS services on the NCS. Implementation of IO enables them to develop closer relations with Statoil, and having installed collaboration rooms and state of the art IO technology was one of the most important requirements when Statoil awarded them the frame agreement presented in chapter 4. Statoil can be regarded as the buyer in this inter-organizational relationship they are engaged in with LBO. A long-term relationship with Statoil can therefore be economically lucrative for LBO if the conditions of the agreement are followed and the implementation of new work processes is successful. This is however dependent on the whole organizations ability to adapt the principles of the contract, as they are having the risk of loosing money if this fails. Further, a long-term relationship can give them a competitive advantage as they have the opportunity to create synergies with a dominant actor like Statoil, and potential be able to create mutual dependency. For Statoil, the main goals of establishing a relationship with LBO that is using IO is to increase the level of efficiency, create more competition among the suppliers, and to reduce costs. This can be achieved by being able to interact over large geographical

distances in real-time through the virtual communication channels that are proposed by the implementation of IO.

In light of Håkansson's and Ford's (2002) three paradoxes on inter-organizational relationships, participating in collaboration through use of IO have several challenges. Even though close inter-organizational relationships can be valuable for the participating actors, such relationships can also restrict the companies to evolve in other ways than preferred by the network (Håkansson and Ford, 2002). LBO has to implement the work processes that Statoil wants them to, both offshore and onshore. This is a requirement they have to follow to only be considered as a supplier for the new types of frame agreements. Statoil is a very powerful actor in the oil and gas industry, and they are having great influence on the work that is done on the NCS. As they have the option to choose between several suppliers, they are able to set pressure and control many of the terms in the contract with LBO. However, they do not want to take financially advantage of their suppliers, as Statoil are in need of good and sustainable suppliers throughout all of their operations. Statoil outsource much of their work, and they would not be able to continue their operations if none of the potential suppliers are able to survive in the market. Statoil's requirements can potentially create implications for LBO if the organizational changes they are making are fundamentally different from the procedures regarding IO at other potential customers. This can make it difficult to establish relations with other actors in the future, and potentially increase the level of dependency towards Statoil. As Statoil are the ones who have the power to control the direction of the relationship, a relationship like this will therefore be exposed to Håkansson and Ford's (2002) paradox that focuses on the balance between influencing and being influenced and control in the relationship. Their positions in the industry and unequal power structure will therefore make Statoil the actor that will have the most influence and control over the relationship between them. Findings of my observations suggest that Statoil is trying to exercise control over LBO in their virtual relationship. Their use of KPIs and monitoring of LBO's performance is heavily emphasized throughout the relationship with LBO. They would most likely also have monitored the performance of LBO without the use of IO, but the implementation of virtual dimensions have increased their desire to exercise this control as the participants are geographically dispersed. This can potentially lead to a situation where LBO can become more focused on the

dimensions of the KPIs than the performance of the actual work offshore. Statoil is then having the risk that their suppliers are not trying to improve their performance beyond the requirements of the KPIs.

5.1.1 The development of the relationship

Earlier when Statoil awarded the contracts for ISS services as a part of larger maintenance and modification agreements, there was a sub-contractor that functioned as an intermediary in the relationship between Statoil and LBO. One can therefore argue that there almost was a non-existing relationship between them as the interaction and relationship was random according to which sub-contractor the intermediary chose to use. If Statoil had any inquiries or comments about the services they asked for, they discussed it with the sub-contractor, which later on would discuss it with suppliers like LBO. There was in other words a minimum of direct communication and interaction between Statoil and LBO. This is something that now has changed drastically due to the new procedures Statoil is using where they award ISS agreements directly to the suppliers.

By taking use of Ford's (1997) model on *states-theory*, it possible to analyze the development of the virtual inter-organizational relationship between Statoil and LBO. One can determine that the relationship definitely has experienced and developed through the first two processes. Before the agreement was awarded to LBO, several suppliers handed in offers during a tender, where Statoil had the opportunity to compare the different suppliers. In this state, the searching process, there was no commitment between them. They had only entered a tender, which is a normal situation both of them had previous experience of. According to Ford (2001; cited in Batonda and Perry, 2001), many of the judgments the companies makes of each other are done based on their reputation in this state of the relationship. Both organizations had previous indirect experience of each other. LBO personnel offshore had worked on installations that are operated by Statoil, so they are used to being aware of- and indirectly interact with one another. It is therefore possible to say that their business relationship somewhat passed the starting process after they signed the frame agreement, and went immediate into the development process. In the development state, the frame agreement has been signed. As there are very large amounts of money involved in such agreements, much of the basis for the commitments between actors in the oil and gas industry is contractually agreed upon in advance. This is done in

order to secure all of the actors' interests, and to establish a fundament of trust and commitment towards the relationship (Ford, 2001). LBO is showing their commitment to the relationship by changing many of their work processes and implementing the principles of IO. Statoil, on the other hand, are illustrating their commitment by awarding LBO the responsibility for all of the ISS related tasks on three of their installations offshore. In addition, the length of the agreement and the possibility of extension are showing that Statoil are willing- and want to establish long-term buyer-supplier relationships.

Even though a process of implementing procedures in both of the organizations has started, one cannot argue that the inter-organizational relationship has experienced the ongoing maintenance process. This state is characterized by the actors' mutual importance to each other (Ford, 1997). The unequal power structure between them implicates, and can potentially challenge, the foundation of the relationship. They are both aware of the fact that Statoil is the dominant player who can control much of the terms in the relationship. This is something that LBO knew before they entered the relationship, as this has been the case of several buyer-supplier relationships in the oil and gas industry in the past. However, these circumstances can make it very difficult to develop the relationship further to other states, especially as the supplier can feel that they are much more dependent on the operator than the other way around. As long as this unequal power structure is current, the companies can have difficulties of experiencing processes where everyone is sharing knowledge and are totally committed to the relationship. However, continuous focus on improvements and adjustments along the way can make them able to develop their relationship further and experience other more desirable states in the future.

5.2 Collaboration across organizational boundaries

As presented in chapter 2, this study will focus on the dimensions of trust and conflicts when addressing potential implications of collaboration between Statoil and LBO through the use of IO. The following sections will therefore address the sub-questions that were proposed regarding the role of trust and sources of conflicts.

5.2.1 The role of trust

As the presence of trust is regarded as a requirement for developing successful collaboration across organizational boundaries, it is important to evaluate and discuss the level of trust between Statoil and LBO.

By emphasizing on Burn et al.'s (2002) model of virtual inter-organizational arrangements, it is possible to determine that the frame agreements create a *value-alliance*. Statoil is the core organization in the relationship, and LBO performs needed services on their installations as a supplier in the industry value-chain. LBO has the responsibility to execute their tasks according to the contract, while Statoil ensures this by following the plans that are made and to provide information about the processes. Such relationship does not always require that the actors are sharing high levels of sensitive information with each other, as the tasks the supplier performs eventually will be standardized repeating processes. However, as both organizations are in a phase where they are establishing new work processes through the implementation of IO, they are in need of developing a fundament of trust in order to successfully collaborate.

According to the operation central manager at LBO, they trust that Statoil want them to perform their tasks as well as possible. If there are some implications regarding the work that is to be executed, LBO feels that it is possible to discuss these implications with Statoil in order to solve the challenges together. However, the structure of the financial rewards in the agreements and the way Statoil is measuring the performance, may prevent LBO from completely commit themselves to the relationship. The motivation for the trust that is present can therefore be more dominated by the sanctions of breaking this trust than the potential rewarding outcome of the relationship. However, the organizations are frequently collaborating, are developing experiences of the others' behavior and are developing an ability to predict each other's actions. Hence, the trust between them at an inter-organizational level can be

characterized as *knowledge-based*, or at least in the interface between *calculus-based* and *knowledge-based*.

The participants on the operation plan meetings have little personal knowledge about each other. Before the work on collaborating through videoconference began, the actors had some face-to-face meetings where they determined the conditions- and shared information on how the frame agreements should be executed. It is the same people that are representing LBO on the operation plan meetings, but there are sometimes different representatives from Statoil that are managing these meeting. As they are usually collaborating through virtual communication channels, they are having restrictions on developing further personal knowledge and awareness among them. In addition, the meetings are used to share increase the level of efficiency. Due to this, and the geographical distance, they are therefore not having the opportunity to work together and develop personal relationships. The employees at LBO mainly trust the representatives from Statoil since they represent their customer, and as they have an impression of Statoil being a dominant and successful actor in the oil and gas industry. Hence, it is possible to argue that the collaboration between Statoil and LBO is experiencing *swift trust*, which is characterized more by *inter-organizational reliance* than *inter-personal trust*. One can therefore use the extended framework for identifying trust in virtual inter-organizational relationships presented in the second chapter, in order to identify the level of trust between Statoil and LBO. This is illustrated on the next page in figure 11.

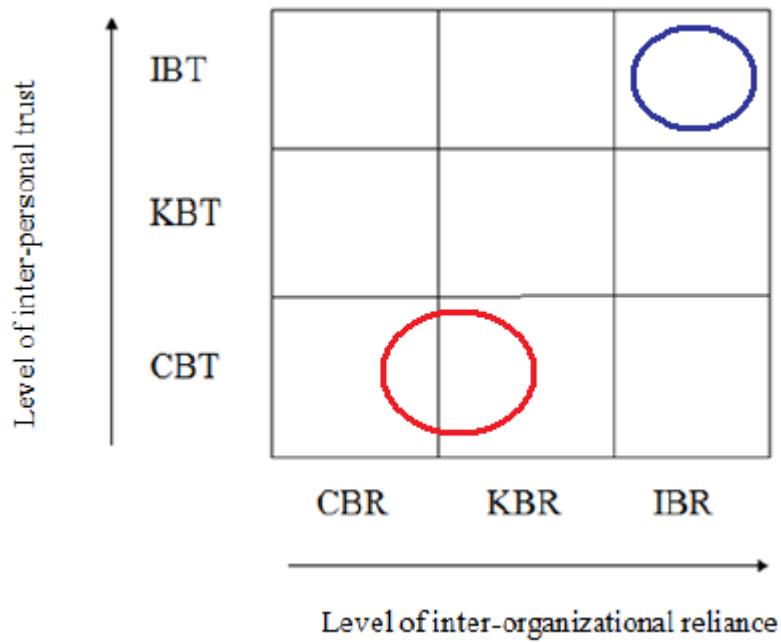


Figure 11: Level of trust and reliance between Statoil and LBO.

As one can see from figure 11, the relationship between Statoil and LBO can be characterized by inter-personal calculus-based trust and a level of inter-organizational reliance somewhere in the interface between calculus-based and knowledge-based. When evaluating if this is a satisfying level of trust in the relationship, it is important to determine the requirements of the relationship. The frame agreement implies that there is going to be frequent operation plan meetings in order to follow the status- and future plans of the work offshore. If the intention of these meeting is to have standardized discussions where everyone are familiar with the topics and processes, there is not a need for higher levels of trust between them. This is because standardized tasks do not require a high level of trust in order to be executed. Under such circumstances, the levels of trust they are experiencing today will give them the foundation to share the knowledge that is required. However, if the actors are going to use the operation plan meetings to discuss important subjects in a two-way conversation and create solutions and values together, they need to develop higher levels of trust and reliance. In addition, the boundaries and implications virtual communication channels are having on such discussions can challenge the level of

trust between them. It can then be important to make changes in order to increase the levels of trust in the relationship if this is the goal of the operation plan meetings.

5.2.2 Sources of conflicts

The discussion during one of the operation plan meetings that is presented in chapter four implies that there are some challenges in the use of IO when collaborating across organizational boundaries. This especially applies to the situation when the representatives from Statoil and Service Partner discussed the reporting of executed work orders.

According to Gadde and Håkansson (1993), inter-organizational relationships can be characterized and measured by the degree of collaboration and conflicts. In order to successfully implement the work processes across organizational boundaries that are enabled through IO, the organizations are required to have a high level of collaboration between them. If they at the same time manage to establish a high degree of functional conflicts, they can be able to develop what Gadde and Håkansson (1993) are referring to as *well developed* relationships. Such relationships can enhance value-creation and increase the efficiency and quality of the work that is performed within the relationship.

When evaluating the degree of conflicts in an inter-organizational relationship, it is important to distinguish between functional and dysfunctional conflicts. During the operation plan meeting where Statoil and Service Partner discussed if the work orders had been properly registered, the situation was affected by the surroundings. As the videoconference system makes it difficult to anticipate when someone is going to say something, the participants started to speak all at once. This happened because both actors had arguments they wanted to present for the other. The delay when transferring audio contributed to further implicate the discussion. As such, the conversation started to emerge to a dysfunctional conflict that was enhanced by the use of virtual communication channels. In addition, the lack of preparation from Service Partner disturbed the other participants, and it led to further frustration among the others. The topics they addressed in this discussion, reporting of performed work orders, could initially be a functional discussion. However, the virtual dimension affected the discussion in a dysfunctional manner. This made it difficult to focus on

the initial topics, and the tense discussion that occurred would therefore most likely have been much more functional if this meeting was held face-to-face.

In virtual relationships, conflicts can emerge from several types of dispersions as individuals can be dispersed over several dimensions (Shin, 2005). The situation between Statoil and Service Partner occurred as a consequence of geographical- and organizational dispersion. Especially Service Partner was reluctant to expose the fact that they haven't performed their tasks properly. Following on Pundy's (1967: cited in Vaaland and Håkansson, 2003) conflict stages, this situation can be viewed as *a manifest conflict*. The behavior of Service Partner and their lack of preparation frustrated the goals of Statoil, as Statoil are requiring their suppliers to properly implement new work processes. The situation itself was not particularly that important, but it was embedded into a larger context where the work processes was not followed as intended. This shows how conflicts can develop as a result of other situations, where the virtual dimension between them contributed to the development of the conflicts. This can potentially affect the organizations ability to achieve collaboration at a desirable level.

5.3 Challenges and opportunities by implementing IO work processes

The work on the frame agreement between Statoil and LBO is proposing new work processes at both organizations, and implementing these processes is still in the start-up phase. It is required a significant amount of sacrifices and commitment from the participating actors in order to make this relationship successful. As there can be high levels of risk related to entering such relationships, some precautions has been made. In order to secure the work LBO is performing at the installations, Statoil are arranging frequent operation plan meeting with their suppliers. In addition, the focus and importance of the KPI's is presented to their collaboration partners to show some of their expectations. These measures are done in order to evaluate and perform quality control so that Statoil can secure their own interests. On the other hand, LBO are looking over their own interests by trying to establish closer relations to Statoil, which is one of the dominant operator companies on the Norwegian Continental Shelf. By doing so, they have to manage their resources and reorganize key processes within their own organization. Even though much of the changes are already started to

be implemented, there are several challenges that need to be solved in order to develop the collaborative relationship both organizations desire.

5.3.1 Practical implications for IO work processes

One of the main opportunities of implementing IO across organizational boundaries is to increase efficiency and enable collaboration across geographical dispersion (Skarholt, Næsje, Hepsø and Bye, 2009). However, when the power structure between operator companies and suppliers are so unequal in the oil and gas industry, organizations are having the risk of not being able to achieve these opportunities. As mentioned earlier in this chapter, both Statoil and LBO are taking large precautions when collaborating with each other in order to secure their own interests. This is understandable as the frame agreement between them involves transactions of large resources and financial commitment. However, it can lead to a situation where the dominant actor, in this case Statoil, is more focused on monitoring the performance of their suppliers rather than commit to the relationship. An examples of this is the significant amount of resources they use on the operation plan meetings with their suppliers in order to monitor the status of the work orders that are performed offshore. Even though this is a step on giving more responsibility to the suppliers and the operation plan meetings are held to get feedback on elements that are uncertain from the reporting systems, it can be perceived as unnecessary monitoring and use of resources.

Establishing more continuous interaction between the employees at Statoil and LBO can increase the level of efficiency. As stated by onshore personnel at LBO, some of their offshore employees can have troubles of seeing the benefits of implementing new work processes related to IO, and some of them feel that this only increase the amount of reporting they have to execute during their shifts offshore. This is because they need to report the work both in LBO's own planning tools, SharePoint, as well as in Statoil's system, SAP. This can be perceived as unnecessary for them as they have none frequently interaction with Statoil personnel onshore, and therefore do not directly experience the potential benefits from these processes. In order to increase the commitment towards the frame agreement among LBO personnel offshore and to increase efficiency, it can be established a virtual bulletin board or chat services that can be operated by the ISS managers from LBO offshore. Much of the work these managers are performing offshore consists of administrative tasks in order to inform

the onshore organization on the different work orders. As the execution of the work orders are already frequently being reported the way the operations are done today, an implementation of a virtual bulletin board could give the actors a possibility to ask questions regarding topics they feel are unclear based on the reports. This applies for employees onshore both at Statoil and LBO. If for example one of the representatives at Statoil is curious if why a certain work order has not reported as executed, he or she could make a request regarding this through the bulletin board to the responsible ISS manager from LBO. These addressed issues should only include short clarifying questions, as the main part of the interaction between Statoil and LBO should be through the operation central. However, frequent interaction among all the members in the relationship will also correspond to Duarte and Snyder's (2001) views on achieving success in virtual teams, as increased interaction contributes to create knowledge between the actors. By simply answering the request, the ISS manager can be able to inform the representatives at Statoil in real-time, and secure continuous progression of the work orders. If the representatives from Statoil are updated on the status of the work orders in advance of the operation plan meetings with LBO, these meeting can potentially contain more fruitful discussions of the further work that needs to be done rather than conversations explaining the reports. It can also contribute to develop a higher level of commitment between the organizations, as it can create a collaborating environment where the LBO operation central are being less monitored. By doing so, LBO personnel can be more involved in a two-way discussion during the operation plan meetings at the same time as Statoil are continuously having knowledge of the work that is performed.

As presented earlier in this study, LBO and Service Partner AS are individually discussing their own work orders with Statoil during the operation plan meetings. As none of them are performing any tasks for each other, they do not interact during these meetings. This leads to a situation where Statoil are having separated discussions with the two of them. When Statoil are having enquiries towards LBO, Service Partner AS is observing their discussion in silence, and vice versa. In other words, such way of operating these meetings are only effective for Statoil. Having joint meetings with both LBO and Service Partner AS at the same time can therefore potentially create dissatisfaction among the suppliers, as they have to share Statoil's attention with others. In addition, LBO and Service Partner are competitors in the oil

and gas industry. Successful implementation of IO across organizational boundaries requires that the actors are able to share knowledge and information. It can be difficult for LBO to share sensitive information, knowledge and reveal problems they need help to solve when one of their competitors are observing their interaction with Statoil. This can lead to a situation where LBO is trying to secure their own interests by not sharing information and potential weaknesses. This can complicate their commitment towards the relationship and question their ability to develop trust towards their relationship with Statoil. If the operation plan meetings are held separately with LBO and Service Partner AS, Statoil can reduce this risk and show their suppliers that they are committed to the relationships they have with them. This can contribute to create a more collaborative environment between the involved actors. It would not be complicated to arrange these meetings individually. Today, these meetings are scheduled to last for about one to one and a half hour. If they for example arrange individual meetings with LBO at the same time as today, these would last for approximately 30 to 45 minutes. Statoil can then schedule the meetings with Service Partner to start when the meetings with LBO have ended, and this would therefore be as effective for Statoil as the arrangement they are having today.

5.4 Summary of my analysis

The analysis throughout this chapter has used the theoretical grounding from chapter 2 and the empirical findings from chapter 4, in order to answer the sub-questions presented earlier. This will be used to find a solution the research questions of this study. It is therefore important to summarize the main findings from my analysis.

Statoil and LBO have different incentives for engaging in a virtual inter-organizational relationship. Statoil's main goals are to increase the level of efficiency, reduce costs and to create greater competition among their suppliers. On the other hand, LBO aim to establish closer relations with an important operator company on the NCS, and they will use the experiences from their relationship with Statoil to become a preferred supplier for them in the future. A long-term relationship with Statoil is also financial desirable for LBO. These incentives are possible to fulfill and achieve through the use of virtual teams and implementation of IO. This makes them able to interact without the use of an intermediary sub-contractor, and to communicate in real-time over large geographical distances.

The implementation of IO has made it possible for the organizations to engage in an inter-organizational relationship. The work processes of IO across organizational boundaries are a relatively new experience for both organizations. The relationship between Statoil and LBO is still in the development phase. In order to develop their relationship to a desirable level, they need to focus to improve and evaluate their experiences continuously. This can potentially lead them to an ongoing maintenance state, where they have developed knowledge about each other and trust that their interests are taken care of by the relationship.

In order to be able to collaborate within the relationship, it is important that the organizations are aware of the role of trust and the different sources of conflicts. The organizations need to create a certain level of trust between them in order to be able to interact through virtual communication channels. The required level of trust is dependent on what they desire to achieve from the virtual collaboration. My findings have shown that there is enough trust between Statoil and LBO that they are able to interact and discuss standardized tasks. However, if they want to share knowledge and participate in value-creating discussions through the use of IO, they are in need of developing higher levels of trust.

The use of IO across organizational boundaries is creating several sources of conflicts. The fact that organizations are interacting through virtual communication channels across large geographical distances can complicate the communication process. Conflicts and dysfunctional discussions can evolve as a consequence of the boundaries and implications of collaborating through a virtual dimension.

6. Conclusion

Analysis and solutions to the sub-questions was discussed in the previous chapter. In this chapter, solutions to the research questions of this study will be presented. The aim of this study has been two fold. Firstly, it has sought to deepen an understanding of how inter-organizational relationships in the oil and gas industry are affected by taking use of virtual teams. Secondly, this understanding is used as a basis for identifying implications regarding collaboration that is arising as a consequence of implementing IO in this industry.

My analysis and empirical findings show that operator companies and suppliers are able to develop closer relations by taking use of virtual teams. By having the possibility to frequently interact through virtual communication channels, operator companies can collaborate directly with their suppliers without using an intermediary to mediate the interaction between them. This is a setting that is enabled by the use of virtual teams, and it is desirable for both parties as it increases the efficiency, reduces costs and develops a mutual dependency between them. However, this study has also shown that the use of virtual communication channels is easier to implement and is more successful when used within an organization than across organizational boundaries. The geographical dispersion and the surroundings make it difficult to predict each other's behaviors and create knowledge about one another when interaction through videoconference systems. People who are working within the same organization often have great experience and knowledge about the other actors from face-to-face interactions, and they can therefore use this knowledge when virtually collaborating. There are several dimensions that are affecting the collaborative environment when taking use of virtual teams across organizational boundaries. Virtual interaction creates especially implications regarding the role of trust and sources of conflicts. In addition, unequal- power structure and levels of influence between the organizations in the relationship can affect the possibility of successfully being able to work together. When such conditions are present, it is very important that the actors have enough trust and awareness towards one another so that they are able to collaborate as intended. Further, my findings also show that use of IO across organizational boundaries has less implications when the topics are predefined and one of the actors are managing the conversation, in contrast to unprepared two-

way discussions. This is because of the boundaries that are created by the use of virtual interaction, where discussions can more easily develop to dysfunctional conflicts between the participating actors.

The empirical data my analysis is based on is collected from the virtual collaboration that is performed internally at LBO, and between LBO and Statoil. Even though there are some factors that are exclusive for this certain relationship, it is naturally to assume that much of the findings are applicable for other virtual inter-organizational relationships, especially within the oil and gas industry.

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