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An empirical study of organizational cooperation in large traditional and global projects execution

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An empirical study of
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Title: An empirical study of organizational cooperation in large traditional and global projects execution

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                     Professor Per Morten Schiefloe, NTNU

Abstract – scientific summary

Projects, by their nature, require organizations to collaborate. Despite this fact, there is relatively limited theoretical knowledge and empirical evidence regarding the organizational aspects of project collaboration. The key objective of this thesis is to increase the understanding of organizational cooperation in projects. The thesis relies on organizational cooperation theory for its main theoretical perspective, which is applied in the context of traditional and global project management research. The thesis is comprised of an overview (Part 1) and five papers (Part 2), which are based on three separate case studies.

Papers 1 and 2 examined organizational cooperation and challenges in projects in the oil and gas industry and in the construction industry. The empirical results were based on in-depth studies of seven large projects. The key contribution of Paper 1 is that it identifies the need to understand and manage interface challenges, the concept of "cooperative power" in projects as opposed to the more widely used concept of competitive power, as well as the need to use a collaborative model to implement the "cooperative power" concept in future projects. The key contribution of Paper 2 is a practical understanding of the implementation of partnering as a collaborative model to reduce organizational challenges in construction projects. It also includes a proposed partnering model that could be applied to future projects.

Papers 3 and 4 studied organizational cooperation and challenges in global projects and organizational aspects that might contribute to reducing the challenges posed by global projects. The empirical results were based on an in-depth examination of 40 large projects in 38 countries. The key contribution of Paper 3 is that it identifies the most challenging organizational issues in global projects (e.g. managing the external stakeholders in the projects), while Paper 4 describes organizational success factors in global projects (e.g. organizational support and a global project support organization).

Paper 5 compared the findings from Papers 1 and 3 (traditional and global projects). The key contribution of Paper 5 is advice to global project managers (e.g. strategies for reducing the organizational challenges posed by global projects).

The findings of this thesis highlight the importance of understanding and managing organizational cooperation and challenges, and provide new theoretical and empirical understanding of organizational cooperation and challenges in projects.

Ultimately, the empirical studies of traditional projects show the importance of managing and acknowledging your project partners by using cooperative power and a partnering approach. In the context of global projects, the results show that it is vital to have a holistic view of the project and its external surroundings, and to select managers and staff who have high RQ (relationship intelligence), along with IQ, EQ (emotional intelligence) and CQ (cultural intelligence).

Other important scientific contributions of this thesis are:
- An increased understanding of organizational challenges in projects
- Three new collaboration models
- The introduction of the concept of "cooperative power"
- A new definition of "organizational challenges"
- A new definition of "global projects"

Through five papers published or accepted for publication in international journals, this doctoral thesis presents several new practical models that can be used to implement the findings as a way to reduce organizational challenges posed by projects.

This thesis consists of an overview and the following five papers:

1. Aarseth, Wenche and Sørhaug, Hans Christian (Tian) (2009) Improving business performance in multi-company projects. Published in *International Journal of Business Performance Management*, Vol. 11, issue 4, pp. 364-382.

2. Aarseth, Wenche, Andersen Bjørn, Ahola, Tuomas and Jergeas, George (2012) Practical difficulties encountered in attempting to implement partnering. Accepted for publication in *International Journal of Managing Projects in Business*, Vol. 5, issue 2 or 3. 2012.

3. Aarseth, Wenche, Rolstadås, Asbjørn and Andersen, Bjørn (2012) Managing organizational challenges in global projects. Accepted for publication in *International Journal of Managing Projects in Business*, Vol. 5, issue 4.

4. Aarseth, Wenche, Rolstadås, Asbjørn and Andersen, Bjørn (2011) Key factors for Management of Global Projects. Published in *International Journal of Transitions and Innovation Systems*, Vol.1, issue 4, pp.326-345.

5. Aarseth, Wenche (2011). Global project leadership: Managing organizational challenges through RQ. Published *at the Nordic Academy of Management*, Stockholm, Sweden. 22-24 August 2011.

"Know or listen to those who know. " Baltasar Gracian, Spanish philosopher

Acknowledgments

Completing a PhD is hard work and is almost impossible without the support of good supervisors, colleagues, family and friends. One of the editors of an international journal put it in the best possible way: "You are very lucky, you have such good supervisors." I agree.

First of all, I would like to thank my main supervisor Professor Asbjørn Rolstadås. Without you, Asbjørn, this thesis would not have been possible. You have encouraged and inspired me since the first day we met a decade ago, and I will never forget that you have always been there to help me, guide and support me, and that you never said no. Your professional expertise and network in this research field is spectacular and has helped me tremendously. Thank you so much!

Second, I have probably the best co-supervisor in the world: Professor Bjørn Andersen. Bjørn, I cannot even *think* of a way to thank you for all that you have done for me during these years. Also, when I understood the need for different approaches to my study, Professor Per Morten Schiefloe said yes immediately to be my second co-supervisor, for which I am very grateful. Per Morten, you look at things from new perspectives, which has been invaluable to my work.

Professionally and personally my supervisors have contributed to and encouraged both my academic interest and the quality of my work. Thank you!

I have also been extremely lucky with my co-authors. Professor Tian Sørhaug, University of Oslo, Norway; Professor George Jergeas, University of Calgary, Canada; and Dr. Tuomas Ahola, Aalto University, Finland: thank you so much for authoring papers with me. I will be honoured to write papers with you in the future as well.

Several people have helped me with difficulties and practicalities related to my survey and figures. Thank you Oddbjørg Mikkelsen for helping me with Questback. Thank you so much

Picture from research on the Grane platform in the North Sea.

Many thanks to my colleagues at SINTEF, NTNU and particularly IPK, with a special thanks to Elin Tronhus at the NTNU Library. Finding previous publications, articles and books is an important part of the PhD process. Elin, I will not forget all of your help, for which I thank you.

The greatest inspiration though, has come from a little girl who does not even understand how much she has helped her mummy. Tina is 4 years old and was born 9 months after I had been granted a 4-year-long PhD scholarship. She is my angel; she has been my inspiration and my best motivation. Tina, I love you with all my heart.

Trondheim, December 2011

"The key is to keep company with people who uplift you, whose presence calls forth your best." Epictetus, Greek philosopher

To Tina (4)

To my closest family; my mum, for all those years of homework together with me in primary and secondary school, my dad, for always believing in me, and my two younger brothers Kjetil and Halvard, his Henriette and my nephew Mats, for being my closest friends.

Executive summary (intended for management)

Cooperative power is critical knowledge in traditional projects

Projects that are executed in the home country of the initiating organization or company (traditional projects) face important challenges that result from the tensions between internal actors, such as suppliers, contractors and sub-suppliers. Research shows that the actors often rather compete than cooperate. Collaboration and communication skills are essential to increasing the efficiency of project execution. Project delays, conflicts and cost overruns can be the result of failing to understand this requirement. "Cooperative power" is a concept that emphasizes this need. Competitive power and competitiveness have been studied and presented in management courses for many years, but empirical research shows the need for something different in the execution of large scale projects: cooperative power and cooperativeness. Collaboration and communication across organizational borders are demanding, whether internally in an organization, between organizations or with the external surroundings, and good projects might fail because of a limited understanding of cooperative power.

The power of the authorities and legislation is underrated in global projects

In global projects the power of the authorities and government in different countries are clearly underrated. Relationship building with the external stakeholders, such as domestic authorities, legislation and government, is needed. Global projects require project managers and staff that have RQ (relationship intelligence) in addition to the more widely used IQ, EQ (emotional intelligence) and CQ (cultural intelligence).

New models developed

There is a tremendous body of knowledge available on traditional project management, e.g. literature on project risk and control, but the literature on the organizational and relationship side of projects is rather scarce. This thesis presents several new models that can be applied in project execution to reduce organizational challenges.

Sammendrag/ pressemelding (in Norwegian, intended for media)

Samarbeidskraft er kritisk for å gjennomføre prosjekter

For å lykkes med gjennomføringen av prosjekter er god samhandling og kommunikasjon mellom de ulike aktørene avgjørende. Dette øker effektiviteten og kvaliteten i prosjektene. Motsatt, kan dårlig samhandling og kommunikasjon bety store kostnader, og i verste fall føre til at gode prosjekter stopper opp eller må skrinlegges. Det gjelder både dårlig samhandling og samhandlingsutfordringer internt mellom selskaper i prosjekter, og utfordringer knyttet til samhandling med de eksterne omgivelsene.

Samarbeidskraft er et nytt begrep, som brukes for å beskrive potensialet i god samhandling og kommunikasjon. Gjennom studier av prosjekter både nasjonalt og globalt er det klare fellestrekk i prosjektene. Dårlig samarbeidskraft og manglende forståelse for hvem du bør spille på lag med kan oppsummeres som den viktigste mangelvaren. Konkurransekraft er et mye brukt begrep, men i gjennomføringen av store prosjekter kan vi nesten snakke om det motsatte, nemlig samarbeidskraft. Samhandling og kommunikasjon på tvers av organisasjoner er svært krevende. Det gjelder internt i prosjektet mellom virksomheter, men også samhandling med de eksterne omgivelsene, der gode prosjekter rett og slett havarerer fordi aktørene ikke får dette til.

Myndighetskontakt avgjørende i globale prosjekter

I prosjekter innenlands er det mest utfordrende å få til kommunikasjon mellom samarbeidsaktørene internt i prosjektene, der en ser klare trekk til at aktørene heller konkurrerer enn å samarbeide. Det kan for eksempel dreie seg om samspillet mellom leverandør og bruker, og mellom driftsteam og prosjektteam. I globale prosjekter er det samhandlingen med de eksterne aktørene som er mest krevende. Å bygge relasjoner med lokale myndigheter, lovgivere og andre premissgivere i det aktuelle landet er kritisk for å gjennomføre prosjektet. For å gjennomføre prosjekter er det altså ikke nok å ha kompetanse på prosjektstyring og risiko. Prosjektene må også bemannes med det som i denne avhandlingen kalles relasjonell kompetanse (RQ).

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Nye modeller utviklet

Det finnes mye litteratur på tradisjonell prosjektledelse, der risiko, styring og kontroll er i fokus. Denne avhandlingen viser at i prosjekter med komplekse og krevende omgivelser, og/eller krevende interne utfordringer, er den tradisjonelle tilnærmingen utilstrekkelig. Slike prosjekter krever en tilnærming som ivaretar de ulike aktørene. Modeller for samhandling er lite beskrevet i prosjektlitteraturen, og i avhandlingen presenteres flere modeller som kan anvendes praktisk for å få til samhandlingen i prosjekter.

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Abbreviations

CQ   Cultural Intelligence

EQ   Emotional Intelligence

GCM   The Global Challenge Model

GPS   The Global Project Strategy Model

GSM   The Global Project Success Model

IQ   Intelligent Quotient

RQ   Relationship Intelligence

Papers and declaration of authorship

The thesis consists of an overview and the following five papers:

Publ. nr	Paper	Declaration of authorship
1	Aarseth, W. and Sørhaug, H.C. (2009) Improving business performance in multi-company projects. Published in *International Journal of Business Performance Management*, Vol. 11, no. 4, 2009. pp. 364-382.	The first author conceptualized and planned the paper along with Sørhaug. The first author also collected the data and conducted the analysis, and wrote the paper together with Sørhaug.
2	Aarseth, W., Andersen B., Ahola T., Jergeas, G. (2012) Practical difficulties encountered in attempting to implement partnering. Accepted for publication in *International Journal of Managing Projects in Business*, Vol. 5, Issue 2/3.	The first author conceptualized and planned the paper along with Andersen. The first author also collected the data and conducted the analysis, and wrote the paper with Andersen, Ahola and Jergeas.
3	Aarseth, W., Rolstadås, A., Andersen, B. (2012) Managing organizational challenges in global projects. Accepted for publication in *International Journal of Managing Projects in Business*, Vol.5, issue 4.	The first author conceptualized and planned the paper along with Rolstadås. The first author also collected the data and conducted the analysis, and wrote the paper with Rolstadås and Andersen.
4	Aarseth, W., Rolstadås, A. and Andersen B. (2011) Key factors for Management of Global Projects. Published in *International Journal of Transitions and Innovation Systems*, Vol.1, issue 4, pp.326-345.	The first author conceptualized and planned the paper along with Rolstadås. The first author also collected the data and conducted the analysis, and wrote the paper with Rolstadås and Andersen.
5	Aarseth, W (2011). Global project leadership: Managing organizational challenges through RQ. Published at *the Nordic Academy of Management*. 22-24 August 2011.	The first author conceptualized and planned the paper. The first author also collected the data, conducted the analysis, wrote the paper and presented it at the Nordic Academy of Management.

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PART 1

THEORETICAL AND INDUSTRIAL BACKGROUND

AND KEY FINDINGS

"Believe you can and you're halfway there." Theodore Roosevelt

1. Introduction

1.1 Background

1.1.1 Limited published research on issues of organizational cooperation in projects

One of the most significant organizational developments in recent years has been the significant growth in *projects* across different sectors and industries, defined as "temporary endeavours undertaken to create a unique product, service or result" (PMBOK, 2008, p.5). Evidence of this can be found everywhere: Thousands of new members are enrolled annually in project management professional organizations, enterprises have been pushing their operating models towards project-based work, and universities offer an increasing number of courses and certification programmes in project management (Morris and Pinto, 2004). Project management is now the dominant model in many organizations for implementing strategy, transforming a business, and as a way to fuel continuous improvement and new product development (Winter *et al*., 2006). The direction for future research in project management, and issues facing both researchers and practitioners now seem to be well *beyond the hard systems perspective* (Winter *et al*., 2006). Winter *et al.* (2006) concluded that one of the main research directions for project management in the future was a need to look at the interaction between people, practices, stakeholder relationships, politics and power, and to help practitioners actually deal with this complexity in the midst of practice. Morris and Pinto (2004) found the same need and suggested expanding PMBOK to include a number of new topics, including organizational issues, people and relationship management, with the latter described as development of relationships within a firm, at the interface with other firms (Smyth and Edkins, 2009), or between firms (Biong and Nes, 2009). PMBOK is an acronym for the Project Management Body of Knowledge, which is considered the recognized standard for the project management profession (PMBOK, 2008). Morris and Pinto (2004) described research based on existing data on project overruns from 3600 projects, where traditional project management turned out to be *insufficient* to ensure project success. They consequently concluded that there will be a growing need for project managers who can look beyond the internal processes of their projects to the *organizational contexts* within which projects must be managed. Pinto emphasized the importance of organizational issues by choosing to feature this topic in the first chapters in his new book (Pinto, 2010). Morris (2010) also concluded that the aim of future research on project management should be to improve practice, and that research contributions to date are somewhat remote from the problems that practitioners face and the needs of people who are trying to manage the organization of projects. Peter Morris

and Jeffrey Pinto are both recognized Professors in the field of project management, and have published 230 articles and 21 books as well as having received the first International Project Management Association's (IPMA) "Research Achievement Award" for "work in establishing the domain and the discipline of the management of projects" (Morris) and the Distinguished Contribution Award from the Project Management Institute (PMI) (Pinto). Both individuals are therefore extremely valuable contributors to the development of project management.

Morris and Pinto (2004) and Winter *et al.* (2006) observed that project research that emphasizes organizational cooperation and the practical side of projects are scarce. The scope and objectives of this thesis are designed to address this gap, specifically by conducting an in-depth study of organizational challenges in projects, as explained in the following pages. First, the challenges inherent in organizational cooperation in projects are presented, followed by the limited published literature on issues of organizational cooperation and an industrial background on why the topic is important.

Traditionally, projects have been regarded as ways of carrying out tasks and most of the literature and standards on project management have taken the traditional task perspective approach (Andersen, 2011). The essence of the task perspective and managing a project is typically that an implementation plan is made, an organization is set up, resources are budgeted according to the plan, the plan is executed and the end product is delivered (Andersen, 2011). Several authors have explicitly recognized and defined projects as organizations (e.g. Donk and Molloy, 2008; Lundin and Söderholm, 1995) and projects, by their nature, require organizations to cooperate.

The challenges inherent in organizational cooperation in projects can be divided into two main categories:

1) Internal organizational challenges, e.g. interface challenges, routines, procedures, roles and responsibilities

2) External contextual organizational challenges, e.g. external environment challenges, external stakeholder challenges, cultural challenges, leadership of cultures.

 (Fig. 1).

External *Contextual organizational challenges*

High

Relationship
approach

Traditional
project management
approach (task
approach)

Internal organizational Challenges
              :

High
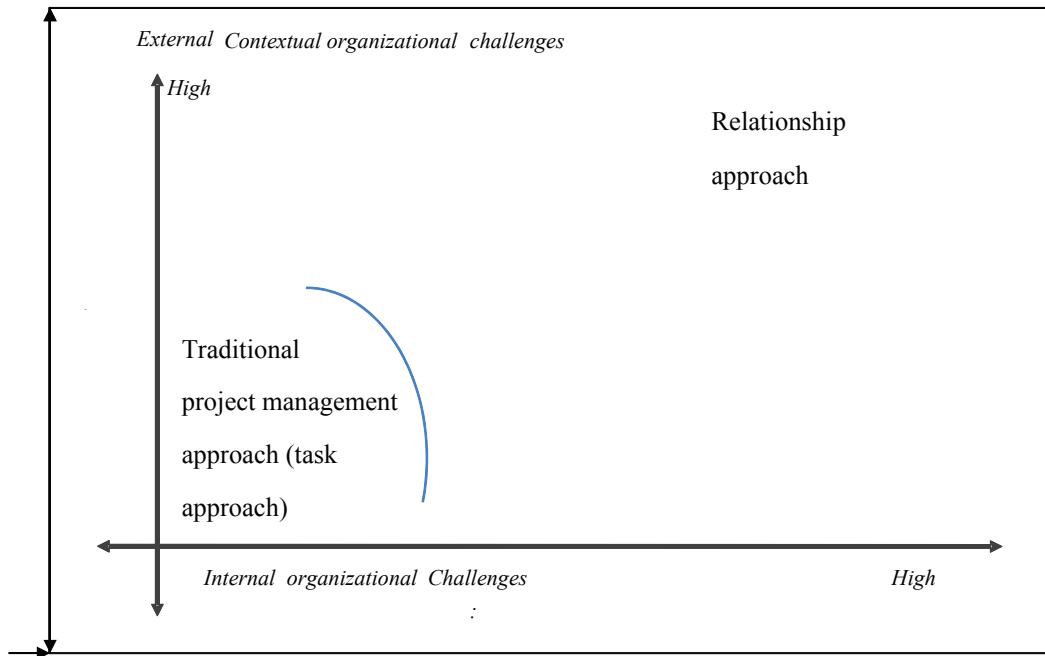
Figure 1. Organizational cooperation challenges in projects

Examples of internal organizational challenges in projects are interface challenges between
collaborating organizations, unclear routines, roles and responsibilities between the different
actors in the project. Examples of external contextual organizational challenges are external
stakeholder challenges from for example government and authorities' interference in the
project, and cultural challenges due to different cultures involved.

From Figure 1 one can see that when internal and external contextual organizational
challenges are low and almost non-existent, the traditional project management approach
(task approach) would suffice. When external and/or internal contextual challenges are high,
the traditional task approach will be *insufficient* and a relationship approach is required (Fig.
1). The different approaches are explained further in figure 2.

Examples of the topics and knowledge required when external and/or internal organizational
challenges are high are organizational cooperation, interaction between people, interface

management, communication, knowledge about the organizational context and holistic understanding to name a few (Fig. 2).

Approaches	• **Task approach** • Traditional project management approach	• **Relationship approach** • Cooperation • The projects organizational contexts and surroundings
Illustration of focus		
Examples of topics	• Internal project processes e.g. scope, quality, budget, resources, time • Implementation plan made, an organization set up, resources budgeted according to plan, the plan executed and the end product delivered	Organizational cooperation *in* the project, e.g. interaction between people and companies in the project, collaboration, interface management, shared understanding and win-win. Organizational cooperation between the project and the external environment, the organizational surroundings, the organizational context, holistic understanding

Figure 2 Approaches to project management

The body of knowledge on the organizational cooperation topics in projects shown in figure 2 are rather limited (Morris and Pinto, 2004). This can be seen in a model that illustrates the limited literature findings on organizational cooperation in temporary organizations (Fig. 3).

The body of knowledge on technical structural issues in permanent organizations (called "engineering literature" in Fig. 3) is tremendous (Meier and Conkling, 2008). Meier and Conkling (2008) searched for engineering literature from the 1950s until the present using Google Scholar, and even given the limited scope of the search tool they used, found an extensive number of articles and books on engineering literature. The same is true for organizational issues in permanent organizations (called "organizational literature" in Fig. 3) (e.g. Orr *et al.*, 2011; Daft and Lewin, 1990) as well as for technical structural issues in temporary organizations, i.e. situations where projects have been seen as tools to complete a technical task (project management literature) (e.g. Orr *et al.*, 2011, Packendorff, 1995).

However, compared to this body of knowledge, the literature on organizational cooperation issues in temporary organizations is limited (called "Organizational cooperation and project leadership") (Fig. 3).

Organization Scope

	Permanent	Temporary
Organizational cooperation issues		
Challenges	**Organizational Literature**	**Organizational Cooperation and Project leadership**
Technical issues	**Engineering Literature**	**Project management Literature**

Significant amounts of literature ☐
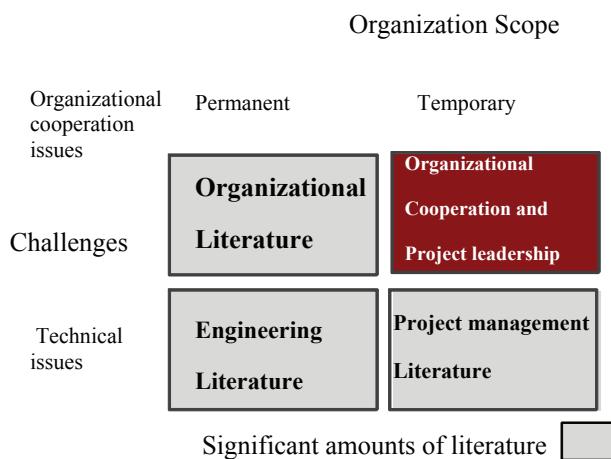
Figure 3. Limited amounts of published literature on organizational cooperation and project leadership

Following Figure 3, examples of technical challenges *could be* the design, construction, operation or maintenance of oil and gas platforms or buildings. Examples of organizational cooperation issues are cooperation between people and organizations, conflict management and relationship management, to mention just a few. Project leadership has several key attributes as compared to project management related to organizational cooperation and the organizational side of projects (Cleland, 1995). These are the ability to communicate and work with *people and organizations*; the development and communication of a vision for the project stakeholders; the conceptualization and designation of the project's organizational design to align the people and the resources to facilitate the accomplishment of the vision; and winning stakeholder commitment to support the project leader's initiatives in the attainment of the vision (Cleland, 1995). "Management" has traditionally been pre-occupied with doing things right, (rules, orders, efficiency) practiced by managers, and "leadership" on doing the right things (innovation, flexibility, agreement), practiced by leaders. As a result, the roles and responsibilities for project managers and project leaders have been found to be two different things (Andersen, 2011). Winning commitment to the project vision requires the leader to find the means and processes to foster an environment in which team members will be motivated to work towards the vision. This commitment is not a destination, but an on-going journey in terms of keeping people loyal to the vision, and constantly striving for its attainment even during periods of adversity. The communication skills of the leader have been found to be extremely important in gaining and retaining this commitment (Cleland, 1995). Project leaders should possess positive values, lead from the heart, set the highest levels of ethics and morality, capitalize on the environment of trust, and be able to motivate people and accomplish challenging tasks (Toor and Ofori, 2008).

Project management, on the other hand, has traditionally been task-oriented (Andersen, 2011). Due to the traditional focus on *technical features* of construction projects, perceptions of construction project leaders have largely been built around *task orientation* and research has just begun to pay more attention to project leadership (Fig. 3) (Toor and Ofori, 2008).

Developing and executing strategies and managing organizational cooperation challenges are important elements of the project manager's responsibility in his/ her leadership. These elements have been studied in this thesis.

1.1.2   Industrial background for organizational cooperation issues in projects

More and more modern enterprises face strong economic pressure to increase competitiveness, to operate on a global market, and to engage in alliances of several kinds (Albani and Dietz, 2009), such as projects. Effective *cooperation* is necessary to meet the requirements and challenges of participating in such alliances (Albani and Dietz, 2009), where cooperation means working together to deliver a joint product (result) (Myers, 1991). In the early and mid-1990s, the Norwegian oil and gas industry experienced lower profitability and the industry was therefore challenged to come up with new solutions that could make the industry less vulnerable in rough times. *Project collaboration* was one of the areas the industry investigated for possible improvements (Olsen *et al*., 2005), where collaboration is defined as the process of working together (Myers, 1991). The involvement of several contractors, subcontractors and vendors and extensive coordination were required in the construction of a new oil platform or the rebuilding of an existing one (Olsen *et al*., 2005). Collaboration and interaction between companies were found to be critical for innovation for the oil and gas industry in general (Hatakenaka *et al*., 2006).

The Norwegian construction industry faced similar challenges. In Norway, the construction industry has traditionally been defined only as building companies, and the industry has changed significantly over the last two decades due to the effects of globalization and increased competition. Industry professionals knew that to compete in these times their performance had to be managed more efficiently (Qingbin, 2005). *Partnering* was introduced as a concept for improvement of the organizational cooperation in construction industry projects (CII, 1991; Latham, 1994; Bennett and Jayes, 1998; Egan, 1998) and was in fact described as ''the most significant development to date as a means of improving project performance'' (Wood and Ellis, 2005, p.317 in Bygballe *et al*, 2010). Research showed that to further improve performance, there was a need for *more* collaboration and collaborative integration across phases, disciplines and companies (Gulla, 2009; OLF 2005), as well as a need to manage the project performance more efficiently (Quinbin, 2005). This put understanding and reducing the organizational challenges that occurred in project cooperation at the heart of successful project leadership.

1.1.3   A strong need to study collaboration in *global* projects

Norway's oil production profile suggested future production declines, which led the Norwegian oil industry to look *globally* for new productive oil fields (Zittel and Schindler, 2002). Globalization already affects the building and construction industry, as foreign firms underbid for domestic construction work and purchase domestic companies—and as domestic companies subcontract work overseas. In this way, global forces can affect almost any construction firm. Very few industry sectors, in fact, will be immune to globalization (Russel, 2000). Collaboration in *global projects* will therefore become more important for both industries in the future.

The concept of global projects is relatively new. Global projects are distinct from other non-global projects in that global projects involve interactions among individuals, organizations, and agencies from diverse national backgrounds and cultural contexts (Mahalingam and Levitt, 2007). Such interactions, even on technologically routine global projects, have often led to misunderstandings, increased transaction costs, friction between project participants, and coordination and communication difficulties, to name a few (Mahalingam and Levitt, 2007).

Orr *et al*. (2011) have studied the published literature on global projects and reported that there is a significant amount of published research on organizations, project organization and multinational enterprises, but a limited amount of published literature on global projects (Fig. 4).
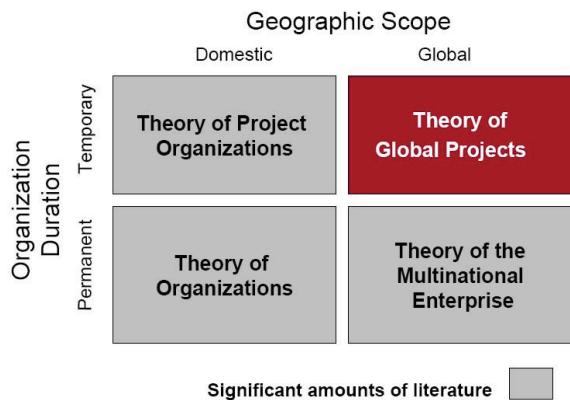
Figure 4 Limited amounts of published literature on global projects, Orr et al. (2011)

This thesis reports on empirical studies of organizational cooperation in traditional and global projects in the oil and gas and the construction industries. In this context, traditional projects are understood as the initiation, planning, organizing, and executing a normal-to-complex project in a company's home country. This thesis identifies organizational challenges and offers suggestions as to improvements (a normative research approach).

The thesis is part of NTNU's Globalization Research Programme, which is one of six strategic research areas identified by the university as especially important for the 21st century. The programme is particularly concerned with *interdisciplinary* research and cooperation between *science* and *practice*.

"Projects are built by, with and for people" Peter Morris, UCL, UK.

1.2 Paper-based thesis

This thesis is based on papers, which means that the empirical findings have been published or accepted for publication in international journals. The thesis is based on the following five papers:

Paper 1, which examined organizational cooperation in large traditional projects in the oil and gas industry.

Paper 2, which examined organizational cooperation in large traditional projects in the construction industry.

Paper 3, which considered organizational cooperation and challenges in large global projects.

Paper 4, which examined organizational aspects that might contribute to reducing the organizational challenges in large global projects.
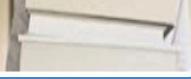
Paper 5, which compared the findings from studies of large traditional projects to the findings from the global projects research, and offers advice to the global project manager.

The nine chapters in part 1 of this thesis provide *an overview* of the literature and findings from the empirical research presented in the five papers. The purpose of this overview is to give an introduction to the topic and show how the findings are connected to the scope of the thesis.

1.3 Thesis structure

The thesis is structured as follows:

Chapter 1
• Introduction , thesis structure, research objective, research process, research scope

Chapter 2
• Literature review and research gap

Chapter 3
• Research questions (research gap)

Chapter 4
• Research methods

Chapter 5
• Participating industries in this research

Chapter 6
• Research findings (five individual papers)

Chapter 7
• Discussion and conclusions, contributions to theory and practice

Chapter 8
• Further research

Chapter 9
• Reference list

Chapter 10
• Five individual publications

Chapter 11 Appendix
• Interview guide, questionnaire and letters

1.4   Research objective

The key objective of this thesis is to *increase the understanding of organizational cooperation and organizational challenges in the execution of large projects*. The purpose is to provide new theoretical and empirical insights into organizational challenges in the context of projects, and to address the limited amounts of published literature on the in-depth understanding of the organizational challenges in projects.

The research objective has been studied from two different perspectives, the traditional projects view and the global projects view. Papers 1 and 2 approach the research objective from the traditional projects view. Papers 3 and 4 approach the research objective from the global projects view, while Paper 5 compares the findings from the aforementioned examinations of traditional and global projects.

Perspective 1:   Organizational cooperation in traditional projects (Papers 1 and 2)

Perspective 2:   Organizational cooperation in global projects (Papers 3 and 4)

Perspective 1 + 2:   Compares findings from traditional and global projects (Paper 5)

More specifically, Paper 1 investigated organizational cooperation and collaboration strategies, and the kinds of organizational challenges that can be found in large oil and gas projects. Paper 2 investigated the implementation of partnering as a collaboration strategy for better organizational cooperation in the construction industry. Papers 3 and 4 examined organizational challenges in global oil and gas projects (Paper 3) and organizational success factors (Paper 4) in global oil and gas projects. Paper 3 starts to compare the challenges from traditional and global projects and finally, Paper 5 continues to compare the findings from Papers 1 and 3, and offers advice to the global project manager.

The research questions following from these objectives will be presented in Chapter 3 (research gap).

1.5 Research process

The motivation and starting point of the research reported in this thesis was the limited amounts of published research and understanding of the organizational side of projects. In order to identify the key challenges related to organizational cooperation, three separate case studies were conducted (shown as 1,2 and 3 below), and accordingly, five research papers were published based on the case studies conducted from 2006-2011 (Fig. 5).

2006 ⇒

2011 ⇓

Case studies of organizational cooperation
in traditional projects (1 and 2)

Case studies of organizational cooperation
in global projects (3)

Paper 1	Paper 2

Paper 3

Paper 4

Paper 5

Literature review organizational cooperation + partnering in traditional projects	Final conclusions

Literature review organizational cooperation in global projects

Figure 5. Research process of the thesis

"Anybody who has been seriously engaged in scientific work of any kind realizes that over the entrance to the gates of the temple of science are written the words: 'Ye must have faith.' "
Max Planck, German scientist.

The research process started with a literature review of organizational cooperation and case studies in two large projects in the oil and gas industry. As the first author of Paper 1, I conceived the idea for the research and planned the research framework. I conducted the data analysis and wrote the first version of the paper. Co-author Professor Tian Sørhaug provided valuable input to the first version of the paper. Feedback from the reviewers of the International Journal of Business Performance Management influenced the final version of the paper. My approximate contribution to the paper was 95 %.

The research process for Paper 2 started with a literature review of organizational cooperation and partnering and case studies of four large projects in the construction industry. As the first author of Paper 2, I conceived the idea for the research and planned the research framework. I conducted the data analysis and wrote the first version of the paper. Co-author Professor Bjørn Andersen provided valuable input to the first version of the paper. Co-author Dr. Tuomas Ahola participated in re-writing the first version of the paper. Professor George Jergeas then contributed with a case study from Canada, to complement and confirm the findings from the four Norwegian projects, and I included the Canadian case study in the paper. Finally, comments from the reviewers for the International Journal of Managing Projects in Business influenced the final version of the paper. My approximate contribution to the paper was 85 %.

The research process for Paper 3 started with a literature review of challenges in global projects and a quantitative survey of global projects in the oil and gas industry, followed by qualitative studies (interviews). As the first author of Paper 3, I conceived the idea for the research; I planned the research framework, conducted the quantitative and qualitative data analysis with advice from my co-supervisor Professor Per Morten Schiefloe, and wrote the first version of the paper. After valuable feedback from my main supervisor, Professor Asbjørn Rolstadås, I re-wrote the paper. My co-supervisor, Professor Bjørn Andersen, then provided invaluable guidance at the end. Finally, the editor and three reviewers from the International Journal of Managing Projects in Business influenced the final version of the paper. My approximate contribution to the paper was 90 %.

The research process for Paper 4 started with a literature review of success factors in global projects and a quantitative survey of global projects in the oil and gas industry, followed by qualitative studies (the same survey and interviews as for Paper 3). As the first author of

Paper 4, I conceived the idea for the research; I planned the research framework, conducted the quantitative and qualitative data analysis with advice from my co-supervisor Professor Per Morten Schiefloe, and wrote the first version of the paper. After valuable feedback from my main supervisor, Professor Asbjørn Rolstadås, I re-wrote the paper. My co-supervisor, Professor Bjørn Andersen, then provided invaluable guidance at the end. Finally, the reviewers from the International Journal of Transition and Innovation Systems influenced the final version of the paper. My approximate contribution to the paper was 90 %.

Paper 5 is a conference paper and a comparison of findings from Papers 1 and 3. I conceived the idea for the paper, planned the paper with advice from my main supervisor, Professor Asbjørn Rolstadås, wrote the paper and presented the paper at the Nordic Academy of Management in Stockholm, Sweden. My approximate contribution to the paper was 95 %.

Case studies	Industry, number of projects studied	Paper number
1	Oil and gas industry, 2 projects (two oil platforms)	1
2	Construction industry, 5 projects (four building projects in Norway, one railway project in Canada)	2
3	Oil and gas industry, 40 global oil and gas projects in 38 different countries	3, 4
	Oil and gas industry, comparison of org challenges from paper 1 and 3	5

Table 2 Case studies

1.6 Research scope of the thesis

1.6.1 Research scope of the five papers

Figure 6 illustrates the relationships and key differences in the research scope of the five separate papers:

Organizational cooperation in traditional projects

Organizational cooperation and collaborative strategies (paper 1)

Partnering as a collaborative strategy (paper 2)

Organizational cooperation in global projects

Organizational challenges and cooperation in global projects (paper 3)

Organizational success factors (paper 4)

Comparing findings from paper 1 and 3 - organizational cooperation in traditional and global projects

(paper 5)

Figure 6 Research scope of the five papers

The research scope of this thesis is organizational cooperation in traditional and global projects. The thesis draws primarily from organizational cooperation theory, e.g. organizational strategies, collaborative strategies, relationship management and stakeholder management, which has been applied in the context of projects. Organizational cooperation theory can be considered to cover a wide range of issues and topics, and this study concentrates primarily on investigating the organizational *challenges* between different companies in projects, and a way to find strategies that will reduce organizational challenges.

The projects analysed in this thesis are large multi-firm oil and gas projects and large multi-firm construction projects. In the construction industry traditional projects have been analysed, and in the oil and gas industry both traditional and global projects have been analysed. The industry context is large engineering projects such as oil platforms and buildings.

1.6.2   Limitations

As the thesis is based on five separate papers, the analysis and results presented in this thesis are limited to the topics reported in the papers. The main theoretical perspective has been taken from organizational cooperation theory, which has been applied in the context of projects. While it is clear that other theories might be relevant, e.g. that organizational challenges will often lead to project risks, but this topic and the larger issue of risk management is considered to be outside of the scope of this thesis. Also, while organizational cooperation is often closely related to and solved by contracts, the issues related to contracts are also considered to be outside of the scope of this thesis. The sole focus of this work is the organizational and collaborative side of projects, and not contract management or risk management.

In the papers on traditional projects (Papers 1 and 2), the studies of organizational cooperation were based on views from all of the organizations that collaborated on the seven projects studied, whilst the papers on global projects (Papers 3 and 4) studied organizational cooperation from the owners' view only.

The five papers are based on findings from large oil and gas projects and large construction projects. The results might be applicable to smaller and other kinds of projects, and other industries, but further research would be required.

The relevant literature for this study is presented in the next chapter.

2. Literature review

The purpose of the literature review is to provide an overview of organizational cooperation and the challenges that project managers can expect to meet when cooperating in traditional and global projects. Based on the objective and scope of the thesis, the following topics were covered in the literature review:

Organizational studies, models and strategies *in general organizations* (2.1.)
- Organizational studies
- Models and dimensions for studying organizations
- Organizational cooperation and strategies

Organizational cooperation *in projects* (2.2.)
- Collaboration strategies and the organizational side of projects
- Collaborative challenges and stakeholder management
- Collaboration models that can be applied to reduce organizational challenges
- Success factors in projects.

Organizational cooperation *in global projects* (2.3.)
- Collaboration challenges and cultures
- Collaboration challenges and stakeholders
- Success factors in global projects

Each of the five papers covers these topics more in-dept.

2.1 Organizational studies, models and strategies

2.1.1 Organizational studies

From its beginnings, organizational studies as a discipline was narrowly defined, and looked at leadership, motivation, work design, groups and performance (Roethlisberger, 1977), but soon developed research in the field of cross-cultural communication, creativity, ethics, innovation and sustainability, to mention a few (Clegg *et a*l., 1996). The body of knowledge in organizational studies and challenges encompasses a great number of books and articles (e.g.Schein 2010; Daft, 2009; DeFillipi *et al*., 2007; Picard 2005; Al-Sebie and Irani, 2005; Jarrat and Fayed, 2001; Quereshi and Vogel, 2001; Keys 1997; Daft 1992; Hakanson 1990; Mintzberg, 1989). Organizations have been introduced as "systematically arranged frameworks relating people, things, knowledge and technologies, in a design intended to achieve specific goals" (Clegg *et al*., 2008, p.8.) and were designed to permanently solve the conflict between collective needs and individual wants. Organization theorists even put their faith in modern organizations as the universal solution to the problem of social order (Clegg *et al*., 1996). Such conflicts were referred to as organizational challenges, and included structural challenges, leadership challenges and/ or contextual challenges (e.g. Daft, 2009; Quereshi and Vogel, 2001; Harris, 1998; Daft, 1992). Organizations were made up of a complex of important dimensions, which were studied by researchers from both a perspective of internal dimensions, such as goals, structure, leadership and motivation, to external dimensions, such as relationships, network and external environment (e.g. Schein 2010; Daft, 2009, Mintzberg, 1989). Managers have long been deeply involved with organization theory every day, but many never realize it (Daft, 2009). Company managers may not have fully understood how the organization relates to the external environment, or how it should function internally and concepts from organization theory could help organizations and managers analyse and diagnose what has happened and how to change direction if needed (Daft, 2009).

Organizational theory has been found to help in the analysis of a large number of topics (Daft, 2009):

- How can organizations adapt to, or control, the external environment, such as customers or governments?

- What strategic and structural changes are needed to help the organization become effective?

- How can the organization avoid ethical lapses in management that could threaten its viability?

- How can managers cope with the problems of bureaucracy?

- What are the appropriate uses of power and politics?

- How should internal conflict be managed?

- What kind of culture is needed to enhance innovation and change?

Organizational theory has addressed these questions for decades, and organization theory concepts have been found to be applicable to all types of organizations, in all industries (Daft, 2009).

2.1.2 Models and dimensions for analysing organizations

Organizational models and organizational dimensions have been introduced and suggested for the purpose of studying and understanding organizations and organizational challenges, (e.g. Daft, 2009; Schiefloe, 2011). A number of attributes and qualities have been found to contribute to an organization's performance. For analytical purposes, Schiefloe (2011) identified five basic organizational factors:

1) Structure

2) Technology: tools and infrastructure

3) Culture

4) Interaction

5) Social relations and networks

Structure
organization chart
formal systems
roles & responsibilities
rules & regulations

Technology
tools & equipment
material infrastructure
ICT-systems

External

factors

Organizational
capabilities &
performance

Culture
language
values & attitudes
norms
competence
knowledge
habits & established "ways of
working"

Social relations & networks
friendship
informal alliances
trust
power, influence
competition, conflicts

Interaction
communication
cooperation
coordination
leadership
decision making
learning

Figure 7. The Pentagon model (Schiefloe, 2011)

This approach to looking at an organization was named the *Pentagon model* (Schiefloe, 2011) and the five factors in the model were found to be interrelated, but could also be investigated separately. External factors and environment that influence or can be influenced by the organization were introduced outside of the five internal factors (Fig. 7).

The different elements of the Pentagon model were described as follows (Schiefloe, 2011):

The factor *technology* refers to the different tools and infrastructures the organization members are dependent on or use to perform their activities.

The factor *structure* covers what is sometimes narrowly defined as "organization", i.e. defined roles, responsibilities and authority, and also includes defined procedures, regulations, working requirements and formal incentive structures.

The factor *culture* covers elements such as language, values, attitudes, norms, competence/knowledge, habits and established expectations concerning "ways of working".

The factor *interaction* covers the three basic processes that any organization must handle, subsumed under "the three C's": (1) communication, (2) cooperation, and (3) coordination, and also points to the fact that individual and collective behaviour never occur in a vacuum. People interact with, adjust to, and are influenced by others, colleagues as well as subordinates and leaders. Management practices, work processes and flows of information are included in this factor.

Social relations and networks covers the informal structure and the social capital of the organization. The keywords are trust, friendship and access to knowledge and experiences. Other elements subsumed under this heading are informal power, alliances, competition and conflicts.

The two first dimensions, technology and structure, are characterized as formal qualities, which could be decided, whereas culture, interaction and social relations/networks are classified as informal qualities, which could only be influenced (Schiefloe, 2011).

Originally, the model was developed and applied in connection with a causal analysis after the gas blow-out at Statoil's Snorre A platform in 2004 (Schiefloe and Vikland 2006), based on an earlier model by Schiefloe (2003). It has since been applied and tested in a number of organizational studies, both in the petroleum industry and in other sectors. The Pentagon approach has proved to be useful, both as an analytical tool, and as guideline for collecting data by means of interviews and surveys (Schiefloe, 2011). It has also been said that it could be used in connection with organizational development, to describe both the present (as-is) and a future (should-be) situation. The model has also been found applicable to almost any kind of organizational performance and on all levels of organizational activity, e.g. analysing and developing a team, a department or for approaching the organization as a whole (Schiefloe, 2011).

Daft's (2009) considerations of organizational cooperation and dimensions were somewhat similar, divided into structural and contextual dimensions (Daft, 2009):

Structural dimensions:

Centralization -the extent to which functions are dispersed in the organization, either in terms of integration with other functions or geographically.

Formalization - the extent of policies and procedures in the organization.

Hierarchy - the extent and configuration of levels in the structure.

Routinization - the extent that organizational processes are standardized.

Specialization - the extent to which activities are refined.

Training - the extent of activities to equip organization members with knowledge and skills to carry out their roles.

Contextual dimensions:

Culture - the values and beliefs shared by all.

Environment - the nature of external influences and activities in the political, technical, social and economic arenas.

Goals - unique overall priorities and desired end-states of the organization.

Size - number of people and resources and their span in the organization.

Technology - the often unique activities needed to reach organizational goals, e.g. equipment/facilities needed.

When people interact in and across organizations, challenges occur related to the factors introduced by Schiefloe (2011) and the dimensions introduced by Daft (1992). Projects could potentially have an advantage in understanding organizational theory models, factors and dimensions, described further in Chapter 2.2.

2.1.3 Organizational cooperation and strategies

Traditionally, competition or cooperation have been the two strategies that organizations could choose in a business context, where the transaction strategy has been introduced as a competitive strategy, and the relationship strategy as a cooperative strategy (e.g. Biong and Nes, 2009). The traditional business worldview has been founded on the conception of the autonomous transactional competitive firm (e.g. Ricardo, 2001), where transactions have been defined as having distinct beginnings, short durations and sharp endings of performance (Dwyer and La Gace, 1986). Strategically, cooperation has been solely based on a relationship strategy (Biong and Nes, 2009), which implied tracing previous agreements and developing long-term relationships across and outside organizations (Dwyer and La Gace, 1986; Biong and Nes, 2009). In recent years the concept "coopetition" has been introduced, which implies that companies strategically work together on parts of their business where they do not believe they have competitive advantage and where they believe they could share common costs (e.g. Brandenburger and Nalebuff, 1996). Coopetition referred to the necessity to both cooperate and compete, underlain by inter-organizational systems between organizations (Brandenburger and Nalebuff, 1996).

Managing organizational cooperation has been based on applying a relationship strategy, using the development and management of relationships (Biong and Nes, 2009). The main ideas behind relationship management have been to strategically and systematically develop, maintain and manage a two-way dialogue with different companies and stakeholders; to establish two-way incentives and mechanisms for the relationships; and to organize, control and evaluate the relationship process, as described in Fig. 8.

Relationship management
Develop, maintain and manage stakeholder relationships

STEP 1
- Define the relationship plan -
- possible results of the relationships

STEP 2
- Choose stakeholders

STEP 3
- Establish incentives and mechanism for the relationships

STEP 4
- Organize and control the relationship management plan

STEP 5
- Evaluate the results and the process

cf. Biong and Nes, 2009

Figure 8 The relationship management development process (Biong and Nes, 2009)

Proper use of the relationship management development process has required active participation from the collaborating companies, along with means and measures, action plans and a list of those who will be responsible for the follow up of action plans (Biong and Nes, 2009).

Organizational cooperation and strategies represent valuable knowledge and understanding for projects, as described further in the next chapter.

2.2 Organizational cooperation in projects

2.2.1 Collaboration and the organizational side of projects

Projects are defined as temporary endeavours undertaken to create a unique product, service or result (PMBOK, 2008, p.5), and have become a very common way of organizing business (Rolstadås, 2006). Projects are also of high strategic importance for the project-oriented company (Gareis, 2006) and have evolved to become the principal means for dealing with change in modern organizations (Cleland and Ireland, 2006). Some researchers would even say that the trend is "projectivization", a process that has paved the way for the study and discussions of projects (Lundin and Steinthórson, 2003).

Traditionally, projects have been regarded as ways of carrying out tasks and most of the literature and standards on project management have taken the traditional task perspective approach (Andersen, 2011). PMBOK has been regarded as *the* formal model of project management for a very great many people and enterprises, and has had a primary focus on task execution (Smyth and Morris, 2007). The essence of the task perspective and managing a project is typically that an implementation plan is made, an organization is set up, resources are budgeted according to the plan, the plan is executed and the end product is delivered (Andersen, 2011).

Several authors have explicitly recognized and defined projects as organizations (e.g. Donk and Molloy, 2008; Lundin and Söderholm, 1995), though limited in time, budget and control according to plan, and not according to annual statements as in "ordinary" organizations (Lundin and Steinthórson, 2003). Projects are by their nature collaborations between people and organizations, which means that both the published literature and standards for project management should also include managing people and organizational side of projects (Morris and Pinto, 2004). If introduced from an *organizational* perspective, the main purpose of a project would be value creation in the base organization, not product generation. The stakeholder analysis should then be extended to include studies of permanent coalitions with external partners, cooperation with stakeholders should be extended beyond the project period, improvement of stakeholders' attitudes to a permanent business opportunity and

project leadership would be visionary, motivating and stimulating, to mention a few (Andersen, 2011).

Much of the limited published research and understanding in this field is said to be due to the fact that educational institutions continue to produce project managers who lack leadership skills (Toor and Ofori, 2008). Traditional academic curricula have been found not to cover the development of individuals as leaders (Toor and Ofori, 2008) , the focus has been on management, to the exclusion of *leadership*, which has probably been the reason why project managers traditionally have not been perceived as leaders and are mostly termed as managers (Russel and Stouffer, 2003). Their day-to-day work has involved management of activities and achievement of the short-term goals of the project, such as conforming to budget, schedule, and quality, with a focus on end goals and not the means to achieve the results (Toor and Ofori, 2008). This mindset of project management made managers more production-oriented rather than relationship-oriented, so they end up managing day-to-day work rather than leading their people to achieve long-term objectives (Toor and Ofori, 2008).

2.2.2   Collaborative challenges and stakeholders

Projects have naturally consisted of a network of companies, as suppliers seldom have the competence and strength to deliver on their own and thus have extensive collaborative relationships (Reve and Jacobsen, 2001). Complexity has been found to increase in close collaborations (Bititci *et al.*, 2007), which has represented a major challenge in the management of collaborative enterprises (Fawcett and Magnan, 2002). Increasingly, more time and attention have been spent on developing inter-organizational cooperation (Krogh and Roos, 1999) and particularly managing inter-organizational cooperation with demanding *stakeholders* who control information and resources (Karlsen, 2002), where stakeholders can be defined as "persons or organizations such as customers, sponsors, the performing organization or the public, who are actively involved in the project, or whose interests may be positively or negatively affected by the performance or completion of the project." (PMBOK, 2008, p.23). Stakeholder theory has been introduced as a theory of organizational management (Phillips and Freeman, 2003) and has also been described as a collaborative strategy in business relationships (Svendsen, 1998). A typical division of stakeholders has been to

group them as either internal or external stakeholders (Aaltonen *et al.*, 2008). Internal stakeholders are defined as the stakeholders who are formally members of the project coalition and hence usually support the project (Winch, 2004) and are generally referred to as primary stakeholders (Cleland, 1998) or business actors (Cova and Salle, 2005). External stakeholders are often not formal members of the project coalition, but may affect or be affected by the project and are often referred to as non-business stakeholders (Cova and Salle, 2005).

In the last 25 years, stakeholder theory has grown from Ed Freeman's embryonic idea spelled out in his 1984 book "Strategic Management", to a set of full-blown theses that have influenced both theory and practice (Werhane in Phillips, 2011). A large number of articles and books have been written about stakeholder theory in organizations (e.g. Donaldson and Preston, 1995; Mitchell *et al.*, 1997; Friedman and Miles, 2002; Phillips and Freeman, 2003; Phillips, 2011) as well as in projects (e.g. Cleland and King, 1988; Karlsen, 2002; Newcombe, 2003; Olander and Landin, 2005; El-Gohary et al., 2006; Bourne and Walker, 2005; Bourne and Walker, 2008; Yang et al., 2009). Organizations must understand who their stakeholders are, and what the perceived stakes are (Brønn and Wiig, 2009), and building relationships and communicating with stakeholders has become more and more important for better performance and should be the responsibility of everyone within the organization (e.g. Freeman, 1984; Phillips, 2011).

Stakeholders have had varying levels of responsibility and authority when participating in a project and have been found to change over the course of the project life cycle (Bourne and Walker, 2008). Their responsibility and authority have extended from occasional contributions to full project sponsorship, included providing financial and political support. A project's success or failure has been found to be strongly influenced by both the expectations and perceptions of the stakeholders, and the capability and willingness of project managers to manage these factors and the organization's politics (Bourne and Walker, 2008). Stakeholders have been found to have an adverse impact on the project objectives, whereas project managers have spent the majority of their time communicating with team members or other project stakeholders (PMBOK, 2008). The project communications management plan was therefore introduced with the following

five stages: identify stakeholders, plan communications with stakeholders, distribute information, manage stakeholder expectations, and report performance (PMBOK, 2008).

Problems and uncertainties caused by stakeholders that contribute to project failure have been found to include poor communication, difficulty to identify the "invisible" stakeholder, unfavourable news about the project in the press and negative community reactions to the project, to name a few (e.g. Yang et al., 2009; Rowlinson and Cheung, 2008; Bourne and Walker, 2008; Loosemore, 2006; Karlsen, 2002; Poloudi and Whitley, 1997).

Nevertheless, in spite of all the stakeholder management literature available, projects in the construction industry and the oil and gas industry have had a poor record of stakeholder management and interface management between stakeholders over the last few decades (e.g. Jergeas and Ruwanpura, 2010; Yang et al., 2009; Loosemore, 2006).

2.2.3   Collaboration activities and models to reduce organizational challenges

To increase the chances of success and reduce the obstacles of organizational challenges, both collaborating activities and collaboration models have been proposed. Biong *et al*. (1996) presented the following examples of collaborating activities that could reduce organizational challenges:

- sharing information rather than keeping it within your own organization;
- joint planning;
- active solution of conflicts; and,
- sharing of profits, advantages and disadvantages.

Other collaborating activities suggested have included the synergy model, which was introduced to test a project's collaboration readiness (Bititci *et al*., 2007). The model used four perspectives, i.e. strategic, cultural, operational and commercial, and its goal

was to determine how ready organizations were for collaborating in a project and an organization's maturity towards collaboration.

Project partnering models were also introduced as a strategy to reduce organizational challenges and improve the organizational cooperation between firms in projects (e.g. Cowan *et al*., 1992; Crowley and Karim, 1995; Larson, 1997; Halman and Braks, 1999; Bayliss *et al*., 2004; Naoum, 2003; Chan *et al*., 2004; Alderman and Ivory, 2007) and were based on long-term relationships between firms and individuals involved in the partnering project (Abudayyeh, 1994; Crowley and Karim, 1995; Naoum, 2003; Alderman and Ivory, 2007). Mechanisms directed at avoiding conflicts during project implementation were included in the concept (Cowan *et al*., 1992; Naoum, 2003; Clay *et al*. 2004; Swan and Khalfan, 2007; Ross, 2009), as well as mechanisms to promote enhancement of both efficiency and innovation during the project life cycle (Cowan *et al*., 1992; Bennett and Jayes, 1998; Naoum, 2003).

2.2.4 Success factors in projects

Perhaps the best-known approach for tackling the human and organizational aspects of projects has been the use of success factors (Fortune and White, 2006). Project success has had a wide range of definitions, has been connoted differently for different people, has often been context-dependent, and can change from project to project and from stakeholder to stakeholder (Jugdev and Müller, 2005; Chan *et al*., 2002; Parfitt and Sanvido, 1993; Freeman and Beale, 1992). An often used definition has been "Project success can be defined as meeting the project technical specifications and/or project mission to be performed, and at the same time attaining high levels of satisfaction from the parent, the client, the user and the project team itself" (Baker *et al*., 1983, p. 903). Two distinctions must be drawn. Firstly, De Wit (1988) and Cooke-Davies (2002) have distinguished between *project success* (measured against the overall objectives of the project) and *project management success* (measured against the widespread and traditional measures of performance against cost, time and quality). The second distinction is the difference between *success criteria* (the measures by which success or failure of a project or business will be judged) and *success factors* (those inputs to the management system that lead directly or indirectly to the success of the project or business) (Cooke-Davies, 2002). This literature study has been limited to *success factors*.

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Much research has been undertaken to identify success factors in traditional projects (Pinto and Slevin, 1987; Morris, 1988; Pinto and Prescott, 1988; de Wit, 1988; Saarinen and Hobel, 1990; Shenhar *et al*., 1997; Dvir *et al*., 1998; Baker *et al.*, 1998; Turner, 1999; Shenhar *et al.*, 2002; Chan *et al.*, 2004; Kendra and Taplin, 2004; Dvir and Lechler, 2004; Fortune and White, 2006). The typical success factors that have been identified were time, cost and quality (de Wit, 1988; Saarinen and Hobel, 1990; Baker *et al.*, 1998; Turner 1999), clear objectives, schedule and plan (Pinto and Slevin, 1987; Morris, 1988; Pinto and Prescott, 1988; Dvir and Lechler, 2004; Fortune and White, 2006) and client satisfaction (e.g. Turner, 1999; Chan *et al.*, 2004; Pinto and Slevin, 1987). Following the definitions of success criteria and success factors, one can say that previous authors to some extent have not distinguished between the two. The management of project stakeholders, by taking into accounts their needs and requirements, has also been found to be an important success factor (Bryde and Robinson, 2005; Cleland, 1986; Diallo and Thuillier, 2005; Olander and Landin, 2005; Olander, 2007). Fortune and White (2006), who reviewed 63 articles on success factors concluded that there has been only limited agreement among authors on the factors that influence project success, and that the most cited success factors from these articles were in fact related to *managing organizational challenges* e.g. the importance of a project receiving support from senior management, good communication, and stakeholder involvement, in addition to clear objectives and a detailed plan.

A selection of some key sources and their findings are presented in Table 3.

Source	Findings
Pinto and Slevin, 1987	Project mission, top management support, schedule and plans, client consultations and acceptance, personnel, technical expertise, communication, monitoring and feedback, troubleshooting.
Morris, 1988	Schedule and cost management, controlling, directing, communicating, team building, technical and risk management, conflict and stakeholder management and life-cycle management
Pinto and Prescott, 1988	Testing of the ten success factors found by Pinto and Slevin: Project mission, top management support, schedule and plans, client consultations and acceptance, personnel, technical expertise, communication, monitoring and feedback, troubleshooting.
de Wit, 1988	Time, cost, quality, objectives of stakeholders.
Saarinen, 1990	Planning, quality control and reward systems.
Shenhar *et al*., 1997	Customer benefits, project efficiency, business success and preparing for the future.
Dvir *et al*., 1998	Different projects are affected by different sets of success factors.
Baker *et al*., 1998	Technical performance specifications met, mission performed, high level of satisfaction amongst key people in parent, project and client organizations. Time, cost, quality and stakeholder satisfaction.
Turner, 1999	Plan, time, cost, quality, client satisfaction.
Shenhar *et al.*, 2002	Success factors are dependent on contextual influences.

Chan et al, 2004	Project-related factors (e.g., type, size), project procedures, project management actions (planning, communication, feedback), external environment (e.g., client satisfaction, economic, social, physical environment).
Kendra and Taplin, 2004	Personal attributes and behaviour of the project manager.
Dvir and Lechler, 2004	The quality of planning and the ability to change.
Fortune and White, 2006	Review of 63 papers on the topic of success factors in traditional project organizations. The three most cited success factors were: 1) Support from senior management (cited in 39 of the 63 papers), 2) clear realistic objectives (cited in 31 of the 63 papers), 3) strong/detailed plan kept up to date (cited in 29 of the 63 papers).

Table 3. Main findings from different sources for success factors in traditional projects

The next section presents organizational cooperation in *global* projects.

2.3 Organizational cooperation in *global* projects

2.3.1 Definition of the term "global project"

The terms global project, international project, and virtual project have been used interchangeably, and according to Binder (2007) the number of organizations and locations involved in the implementation can be compared to determine whether the project belongs to one category or the other. In *traditional projects,* a large majority of the team members work for the same organization and in a single location. *International projects* involve team members working in many locations across country borders. *Virtual projects* are composed of team members in different organizations, dispersed geographically. *Global projects* combine the challenges of international and virtual projects, meaning that the global project manager would have to deal with cross-cultural and language differences as well as different time zones (Binder, 2007). These projects are typically carried out in institutionally demanding environments, for example in politically unstable countries, with unfamiliar laws and regulations and unfamiliar suppliers involved (Aaltonen *et al.*, 2008). Ainamo *et al.* (2010) called a project "global" when it involved key participants that represented national systems separated by great geographical distance and potentially significant cultural and institutional distances, and Orr *et al.* (2011) defined a global project as a temporary endeavour where multiple actors sought to optimize outcomes by combining resources from multiple sites, organizations, cultures, and geographies through a combination of contractual, hierarchical, and network-based modes of organization.

2.3.2 Collaboration challenges and cultures

Since global projects have been found to involve collaboration between participants from multiple countries, research has shown that they face unique challenges that are not found in traditional intra-national projects, including challenges related to differences in work practices, legal regulations, and cultural value (Mahalingam and Levitt, 2007). Interactions among individuals, organizations, and agencies from diverse national backgrounds and cultural contexts, even for technologically routine global projects, were found to often lead to misunderstandings, increased transaction costs, friction between project participants, and coordination and communication difficulties. These in turn also contributed to additional cost and time overruns that were often a significant portion of original project estimates (Orr, 2005).

Most project management research to date has developed extended theories and concepts that de-contextualize projects from their cultural surroundings (Ainamo *et al.*, 2010) which has been described as a paradox, because managing different cultures has been found very challenging in the context of global projects (e.g. Marrewijk, 2010; Ochieng and Price, 2010, Grisham and Walker, 2008). Hofstede (2005), who surveyed more than 116,000 IBM employees in 72 countries over a period of six years on cultures in global environments, found that culture was more often a source of conflict than of synergy and that cultural differences are a nuisance at best and often a disaster (Hofstede, 2005). The increasingly global nature of construction projects has highlighted the importance of multiculturalism and the new challenges it brings to project execution (Ochieng and Price, 2010). A number of authors, including Ochieng and Price (2010) and Marrewijk (2010), agreed that the situation was made considerably more complex for multicultural project teams that are widely separated geographically and that had dissimilar organizational and regional cultures. For example, the loss of face-to-face communication would lead to misunderstanding and the loss of non-verbal signals, such as eye contact and body language, and would subsequently lead to difficulty in achieving mutual trust and confidence within multicultural project teams (Ochieng and Price, 2010). This raised questions as to how project managers can go about overcoming the cultural conditions and constraints that define the project's operation, to develop more effective communication in the future. Moreover, many of those with experience working with multicultural project teams had yet to develop skills to cope with such a challenging communication environment (Ochieng and Price, 2010). International project management and business management has suffered from a lack of a codified approach to training people to work in multi-cultural environments, which is a paradox as there are no shortages of cultural training programmes in existence, and certainly no shortage of leadership and cultural theories (Grisham and Walker, 2008).

Due to these differences, people will disagree more than agree, and these differences have rarely been acknowledged and are usually misunderstood (Hofstede, 1980/2001).

Trompenaar and Hampden-Turner's research (1998) built upon Hofstede's body of work, with a focus on the impact of cultures on *management processes*. They conducted an empirical study of 30 000 valid cases in 55 countries with managers in multinational corporations and developed a set of seven dimensions (Trompenaars and Hampden-Turner, 1998):

Universalism versus pluralism

In a universalistic culture, people were found to share the belief that general rules, codes and standards were the norm, while in a pluralistic culture people would see culture in terms of human friendship.

Individualism versus communitarism

In an individualistic culture, people were found to place the individual before the community. In a communitarian culture people would place the community before the individual.

Specific versus diffuse

In a specific culture, people were found to first analyse the elements individually and then put them together, which makes the whole the sum of its parts. A diffusely oriented culture was found to start with the whole and see individual elements from the perspective of the total.

Affectivity versus neutrality

The degree to which individuals display their emotions. In an affective culture, people were found to display their emotions, in a neutral culture people were taught not to display their feelings overtly.

Inner-directed versus outer-directed

In an inner-directed culture, people would have a mechanistic view of nature; nature is complex but can be controlled with the right expertise. In an outer-directed culture, people were found to have an organic view of nature.

Achieved status versus ascribed status

The degree to which individuals had to prove themselves to gain status. In a culture with achieved status, people were found to derive their status from what they have accomplished. In a culture with ascribed status, people would derive their status from birth, age, gender or wealth.

Sequential time versus synchronic time

The degree to which individuals do things one at a time versus several things at once. In a sequential culture, people were found to structure time sequentially and do things one at a time. In a synchronic time culture, people would do several things at once.

In global projects, it has been found to be unclear to which culture one should adapt and when, for example, if the project included people from Mexico, Latvia, Germany, China and Russia, and the team would temporarily work in Switzerland, the challenge would be to which culture the global project team should adapt; as a result, working across cultures was found to be difficult (Nardon and Steers, 2008). Learning how to deal with other cultures and make sense of varied environments was found to be at the heart of successful global project management (Nardon and Steers, 2008) as well as the ability to apply different leadership behaviours and competencies (Lloyd-Walker and Walker, 2011; Toor and Ofori, 2008).

2.3.3   Collaboration challenges and leadership of cultures

Since one of the challenges in global projects was collaboration between companies from different cultures, and since the global project company could be a complex network consisting of geographically dispersed organizational units across different cultures, the *management* of a global organization has been found to be a significant challenge (Artto *et al.*, 1998). The transferability of management theories and practices across national borders and different cultures has also been found to represent a huge challenge in global projects and has become an increasingly debated topic (Alon and Higgins, 2005; Hofstede, 2001; Bigoness and Blakely, 1996; Black and Porter, 1991; Adler and Jelinek, 1986; Cox and Cooper, 1985; Laurent, 1983). Each dimension of a global project was found to add a series of global leadership challenges (Binder, 2007); for example: 1) number of different organizations, where good leaders kept their eyes and minds open to different perspectives; 2) number of different cultures, where good leaders considered the cultural dimensions to align, motivate, and inspire the global project team; 3) different languages, where good leaders found local allies that translate the project vision and constantly communicated it and reinforced it to the local teams, using local languages and expressions, and; 4) different time zones, where good global project managers planned for shared time, organized co-located team events, travelled to meet the team members during key activities, and coached key team members to function as local leaders during all project phases (Binder, 2007). Cross-cultural leadership skills, such as trust, empathy, transformation, power, and communication became necessary to reduce the challenges in global projects (Grisham and Walker, 2008).

Due to cultural differences in global projects, it was not surprising that culturally attuned and emotionally sensitive global leaders were found necessary to the success of global projects

(Alon and Higgins, 2005); these are leaders who can respond to the particular foreign environments of different countries and different interpersonal work situations. Global leaders should possess more than high IQs (Riggio *et al.*, 2002). Three different kinds of intelligence have been found at the core of global leadership: 1) Rational and logic-based verbal and quantitative intelligence with which most people are familiar and which are measured by traditional IQ tests; 2) Emotional intelligence (EI), which has risen to prominence as a determiner of success in the past 10-15 years and which can be measured by EQ tests, and; 3) Cultural intelligence (CI), which can be measured by CQ tests that are now coming to existence (Alon and Higgins, 2005), and consists of two types: Organizational CI and geographic/ethnic CI (Earley and Mosakowski, 2004).

Global managers would also have to redefine their strategies and realign their organizations to conform to new and more complex global realities. Articulation of a viable global strategy, facilitation and development of supportive processes by which globalization can be managed, and creating appropriate conditions by which the overall strategy, process, culture and structure are meaningfully aligned to achieve organizational effectiveness were found to be at the core of global project management (Kedia and Mukherji, 1999).

Researchers have just begun to pay more attention to global project leadership. Findings from empirical research in the global construction industry showed that current perception of global project leaders has largely been built around power, authority and *task orientation* due to the traditional focus of the construction industry on *technical and managerial features* of construction projects (Toor and Ofori, 2008). Globalization has necessitated a need for project managers to have and apply different leadership behaviours, competencies and styles (Toor and Ofori, 2008) and to highlight the need for a new breed of project *leaders*. Toor and Ofori (2008) proposed the concept of "authentic leadership", in which leaders possessed positive values, led from the heart, set the highest levels of ethics and morality, and went beyond their personal interests for well-being of their followers. They capitalized on the environment of trust and were able to motivate people (Toor and Ofori, 2008).

2.3.4   Collaboration challenges and stakeholders

Large engineering projects, such as oil fields and urban transport systems, have faced an increasingly turbulent environment, resulting from radical shifts in institutional frameworks,

political and economic discontinuities, and a rise in environmental and social activism (Floricel and Miller, 2001). The complexity of these projects has grown rapidly over the last decades (Miller and Lessard, 2000). Despite the fact that most developing countries generally have welcomed multinational companies, political risk has still been found to represent a huge concern for international business. This has posed major challenges for the global business community, particularly in terms of accurately assessing these risks, and multinational companies would be wise to prepare for trouble (Jakobsen, 2006). Examples of risks were government intervention in, or regulation of, business, intervention by elected officials, bureaucracy and/ or the judiciary, or fraudulent behaviour by domestic businesses which led to breaches of contract, forced contract reviews or project delays, to name just a few challenges (Jakobsen, 2006).

Global projects have been highly affected by stakeholders with differing interests and demands (Aaltonen and Kujala, 2010) and have faced numerous uncertainties related to unknown and unfamiliar environments, differing regulations, norms, and cultural beliefs. Misunderstandings and risks have been found to increase for the entrant firm (Javernick-Will and Scott, 2010; Aaltonen, 2011). Aaltonen *et al.* (2008) defined the great risks in global projects as social, political, and cultural risks from the involvement of diverse actors with different objectives, goals, and strategies. As in traditional projects, the management of stakeholde*r*s was found to be essential, and became even more important in global projects. Since global projects typically involve multiple stakeholders with different interests, it was found to be critical to understand the interests of these stakeholders and the means through which they attempted to achieve their interests and objectives (Aaltonen *et al*., 2008). The level of criticality was related to stakeholders' claims and to deepening the understanding of the strategies stakeholders used to shape their salience, and affected the project outcome (Aaltonen *et al*., 2008). The vast majority of project stakeholder related research has been devoted to understanding *how* to manage stakeholders effectively (Aaltonen and Kujala, 2010; Chinyio and Akintoye, 2008; El-Gohary *et al*., 2006; Bourne and Walker, 2005; Olander and Landin, 2005; Donaldson and Preston, 1995) and far less attention has been devoted to understanding *who* the stakeholders in global projects are. A limited understanding of the various interest groups, the drivers of their actions, and their potential to influence during the project life cycle posed a major challenge in international projects (IFC, 2007; Miller and Olleros, 2001; Winch and Bonke, 2002). Projects in different countries that brought together diverse participants in an unfamiliar environment were found to be exposed

to different "institutions" – regulations, norms, and cognitive-cultural beliefs – that could increase misunderstandings, delays and costs and international firms encountered unexpected differences that resulted from working with diverse participants in unfamiliar locations (Javernick-Will and Levitt, 2010).

With so many different stakeholders from different cultures, global projects face the challenges of adapting to the organizational culture, changing the organizational structure to accommodate virtual teams, adapting working hours to different time zones, building trust and coping with language differences (Binder, 2007). Managing conflicts over distances and providing communication and cultural training (Binder, 2007) would be an important aspect of the global leader's job in global projects. Developing relationships with stakeholders was seen as particularly important. Theories of relationship management and emotional intelligence have promoted trust as a component in general (Gustafsson *et al*., 2010; Gummeson, 2001; Goleman 1998) and for projects in particular (Gustafsson *et al*., 2010; Smyth *et al*., 2010; Druskat and Druskat, 2006; Hartman, 2000), and building trust has been seen as the "oil in the system" that helped articulate the processes and the relationships that made projects work effectively (Gustafsson *et al*., 2010).

For most global projects, research showed that the project manager could increase the chances of success by correctly managing the stakeholders' needs, expectations and influence (Binder, 2007). An example from the oil company Royal Dutch Shell showed that when the company first began drilling for oil in Nigeria, it failed to take seriously the organizational context and setting in which it was drilling and the cultural impact of its exploration in that community (Werhane in Phillips, 2010). Thus, Shell engendered mistrust amongst the local people, industry and government and understood the necessity to establish relationships amongst the locals (Werhane in Phillips, 2010). As a "lessons learnt", Exxon Mobil has tried to think systematically in its global drilling operations, working with endogenous people as partners and engaging in public work projects (Werhane in Phillips, 2010).

2.3.5   Success factors in global projects

Most literature on success factors has focused on research in global environments and for global companies, but not in global *projects*. Existing research maintains that management skills, such as global leadership and the application of knowledge, skills, tools and techniques to meet requirements are the most important success factors in a global environment (e.g., Kayworth and Leidner, 2000; DeLone *et al*., 2005; Freedman and Katz, 2007; Eberlein, 2008) as well as cultural issues (e.g., Rosen *et al*., 2000; Kayworth and Leidner, 2000; House *et al*., 2002; Manning, 2003). The personal project management skills introduced involved typical management skills, but there has also been an emphasis on skills to deal with cultural differences.

In his research on nearly 200 large global companies, Goleman (2000; 2004) found that while the qualities traditionally associated with leadership – such as intelligence, toughness, determination and vision – are required for success, they were not sufficient. Truly effective global leaders were also distinguished by a high degree of *emotional* intelligence, which included self-awareness, empathy and social skills. These qualities may sound soft and "unbusiness-like", but Goleman found direct ties between emotional intelligence and measurable business results (Goleman, 2000; 2004)

Rosen *et al.* (2000) claimed that "global literacy is the new leadership competence required for business success." By globally literate they meant seeing, thinking, acting and mobilizing in culturally mindful ways. Kedia and Mukherji (1999) suggested that global managers had a number of mindsets that ranged from the domestically oriented defender, the explorer, the controller, and the globally oriented integrator. For global managers to be effective they had to develop their global mindset, while the conditions found to enhance and sustain a global mindset were knowledge and skills. A global manager had to have knowledge of different aspects of the interdependent world (international, socio-political and economic perspective). Skills, on the other hand, were certain human and behavioural abilities that managers had that helped them to do their work more efficiently in the global context (acculturation and leaderships skills for managing diversity), and it was this unique combination of a global mindset, knowledge and skills that was found to be necessary for the success of the global manager (Kedia and Mukherji, 1999).

Binder (2007) and Anantatmula and Thomas (2010) found that for most global project work, the global project manager could increase the chances of success by correctly managing the stakeholders' needs and expectations, so communication with the stakeholders was a key factor (Binder, 2007; Anantatmula and Thomas, 2010). The level of commitment of stakeholders would determine the success or failure of certain projects that involved organizational change or that had an important social, political, economic or environmental impact. Knowing the stakeholders' expectations and requirements was found to be fundamental to defining the quality standards and requirements for the project and the products or services to be delivered (Binder 2007).

Table 4 summarizes the findings in global environments.

Source	Findings
Goleman, 1995, 2000 Nicholson, 1998 Montagliani and Giacalone, 1998 Kedia and Mukherji, 1999 Bar-On, 2000 Kayworth and Leidner, 2000 Stein and Book, 2000 Kedia *et al.*, 2001 Rosen and Digh, 2001 Riggio *et al.,* 2002 Goleman *et al.*, 2002 House *et al.*, 2002 Suutari, 2002 Earley and Ang, 2003 Manning, 2003 Alon and Higgins, 2005 DeLone *et al.*, 2005 Binder, 2007 (global projects) Freedman and Katz, 2007 Eberlein, 2008 Anantatmula and Thomas, 2010 (global projects)	Global leadership most important success factor, application of knowledge, skills, tools and techniques
Rosen *et al.*, 2000 Kayworth and Leidner, 2000 House *et al.*, 2002 Manning, 2003 Earley and Ang, 2003 Peterson, 2004 Earley and Mosakowski, 2004 Alon and Higgins, 2005 Javidan *et al.*, 2006	Cultural issues, stakeholders with different cultures

Table 4. Main findings from different sources on success in global environments

"A good head and a good heart are always a formidable combination. " Nelson Mandela

2.4 Conclusions and research gap

The published research on organizational cooperation issues in projects is relatively limited (Morris and Pinto, 2004; Winter et al., 2006; Toor and Ofori, 2008), particularly on the practical side of project management (Winter et al., 2008), and collaboration in global projects in general (Orr et al., 2011). In the literature review of both traditional and global projects, stakeholder management has been found to be challenging and one of the most important areas for success, but after more two decades with literature on stakeholder management, the question remains as to why industries still have a poor record of stakeholder and interface management (e.g. Jergeas and Ruwanpura, 2010). To a certain degree, some of the explanation can be found in the way existing project management literature has considered organizational topics. Traditional project management has defined a project as a task (Andersen, 2011) and limited findings have emerged about collaboration and relationship issues, how to build relationships, how to communicate and to solve conflicts, all of which is essential in stakeholder management and for reducing organizational challenges. Freeman (1984), considered the guru of stakeholder theory, proposed an approach that should be emphasized, which "asks the project manager to put himself/herself in the stakeholder´s place, and to try and emphasize with that stakeholder´s position, that is to try to feel what that stakeholder feels and see the world from that point of view (Freeman, 1984 (2010):133). The ability to comply with these demands involves establishing a two-way active dialogue and an understanding of the other person or organization's position, background, feelings. This would also require a situational analysis of the history and a mutual understanding of these perspectives (Hinds and Weisband, 2003).

The literature review seems to show a research shift from the task perspective, where project "management" has been the traditional focus (e.g. Andersen, 2011), to a relationship perspective, where research has just begun to pay more attention to project "leadership" (e.g. Toor and Ofori, 2008).

The limited research on organizational context and organizational cooperation can be seen as a research gap, which is addressed by Papers 1 and 2, which studied organizational cooperation in seven different projects.

Additionally, only limited findings emerged on the topic of global projects, challenges and success in global projects (Orr *et al*., 2011), which was the research gap addressed in Papers 3 and 4. Also, the vast majority of project stakeholder related research has been devoted to understanding *how* to manage stakeholders effectively (Aaltonen and Kujala, 2010; Bourne and Walker, 2005; Chinyio and Akintoye, 2008; Donaldson and Preston, 1995; El-Gohary *et al*., 2006; Olander and Landin, 2005) and far less attention has been devoted to understanding *who* the stakeholders in global projects are, which were emphasized in Papers 3 and 4. Paper 5 then studied the difference between organizational challenges in traditional and global projects and gave advice to global project managers.

In the following pages, the research questions and the rationale for each of the research questions are presented, followed by a presentation of the relevant research methods for answering these questions.

"Research is more questions than answers. Politics on the other hand, is more answers than questions." Professor Jacob Fokkema, Delft University, Netherlands.

3. Research questions (research gap)

3.1 The five papers address the following research questions:

Paper	Research questions
Aarseth, W. and Sørhaug, H.C. (2009) Improving business performance in multi-company projects. *International Journal of business performance management*, Vol. 11, issue 4, pp. 364-382.	RQ 1 What are the organizational challenges in oil and gas projects and the most important conditions that influence collaboration?
Aarseth, W., Andersen B., Ahola T., Jergeas, G. (2012) Practical difficulties encountered in attempting to implement partnering. Accepted for publication in *International Journal of Managing Projects in Business*, Vol. 5, issue 2/ 3.	RQ 2 What are the organizational challenges in partnering projects and how can these challenges be addressed in future projects?
Aarseth, W., Rolstadås, A., Andersen, B. (2011) Managing organizational challenges in global projects. Accepted for publication in *International Journal of Managing Projects in Business*, Vol.5, issue 4.	RQ 3 What are the organizational challenges posed by global oil and gas projects?
Aarseth, W., Rolstadås, A. and Andersen B. (2011) Key factors for Management of Global Projects. Published in *International Journal of Transitions and Innovation Systems*, Vol.1, issue 4, pp.326-345.	RQ 4 What are the important areas for global oil and gas project success?
Aarseth, W (2011). Global project leadership: Managing organizational challenges through RQ. Published and presented at the *Nordic Academy of Management*, 22-24 August 2011.	RQ 5 What are the organizational challenges in global oil and gas projects compared to those in traditional projects and how can the global project manager address these challenges?

Table 5 Research questions

3.2 Rationales for each of the research questions

3.2.1 Rationale for Research Question 1

RQ1 What are the organizational challenges in oil and gas projects and the most important conditions that influence collaboration? (Paper 1)

The issues facing both researchers and practitioners in project management now seem to be well *beyond the hard systems perspective* (Winter *et al*., 2006). One of the main research directions for project management in the future has been found to be the interaction between people, practices, stakeholder relationships, politics and power, and to help practitioners actually deal with this complexity in the midst of practice (Winter *et al.*, 2006). Morris and Pinto concluded that same need existed, e.g. organizational issues, people and relationship management (Morris and Pinto, 2004). In this paper, the research question has therefore been the organizational challenges posed by oil projects, and the most important conditions that influence collaboration.

3.2.2 Rationale for Research Question 2

RQ 2 What are the organizational challenges in partnering projects and how can these challenges be addressed in future projects? (Paper 2)

Partnering has been introduced as a concept to improve organizational cooperation in construction industry projects (CII, 1991; Latham, 1994; Bennett and Jayes, 1998; Egan, 1998) and has been described as ''the most significant development to date as a means of improving project performance'' (Wood and Ellis, 2005, p.317 in Bygballe *et al*, 2010). An evaluation of the implementation of the partnering model approach was therefore significant for this study, which examined the organizational challenges in partnering projects, if the partnering approach actually reduced the organizational challenges in projects, and proposed improvements to the partnering model.

3.2.3 Rationale for Research Question 3

RQ 3 What are the organizational challenges posed by global oil and gas projects? (Paper 3)

Only limited findings have emerged that address the topic of global projects (Orr *et al*., 2011) and most of the authors have conducted literature studies, bibliometric studies, or have examined a few global projects, whereas no research has been found that studied a larger

number of global projects or questioned a larger sample of project managers in terms of what they experience as organizational challenges in global projects. The published literature contains limited in-depth and practical understanding of the organizational challenges posed by global projects. This paper therefore complements the research that has been done on global projects to date and the research question was to identify the organizational challenges posed by global projects.

3.2.4   Rationale for Research Question 4

RQ 4 What are the important areas for global oil and gas project success (Paper 4)

As mentioned in RQ3, only limited findings address the topic of global projects (Orr *et al*., 2011) and even fewer can be found that address the areas that are important in determining the success of global projects. The purpose of this paper was therefore to study what seems to influence the success rate of global projects. While the literature contains a great deal of research on success factors in traditional projects, there is only limited published information on success factors for global projects.

3.2.5   Rationale for Research Question 5

RQ 5 What are the organizational challenges in global oil and gas projects compared to those in traditional projects and how can the global project manager address these challenges? (Paper 5)

Existing research shows that business trends are moving towards more global alliances and collaborations in the future (Bititci *et al*., 2007; House *et al*., 2004) - such as global projects. The globalization of industrial organizations has presented numerous organizational and leadership challenges (House *et al*., 2004) and Paper 5 was written to explore these issues and how they differ from those in traditional projects as a way to offer advice to the global project manager.

Chapter 4 presents and discusses the research methods relevant for answering these five research questions.

4. Research Methods

This chapter describes the research methods and sampling strategies that were used to answer the research questions described in the last chapter. Each individual paper discusses research methods and data more thoroughly. To better understand the research methods in organizational studies and the methods used in this thesis, the methods section will start with a general introduction to organizational studies and typical approaches (4.1.), the relevant research methods in organizational studies (4.2. and 4.3.), the typical sampling strategy for organizational studies (4.4.) and reliability, validity and generalization in organizational studies in general (4.5.)

The general research method section on organizational studies will then be followed by:

- the research methods for this study (4.6.)

- an overview of the research methods for each of the papers (4.6.1.)

- the criteria for selecting the case companies and the industries (4.6.2.)

- discussion of the research methods and sampling strategies in the traditional projects studies (4.6.3.)

- reliability validity and generalization in the traditional projects study (4.6.4.)

- discussion of the research methods and sampling strategies in the global projects study (4.6.5.) and

- reliability, validity and generalization in the global projects study (4.6.6.)

4.1   Research methods in organizational studies

Organizational studies as a discipline encompasses the study of organizations from multiple viewpoints, methods and levels of analysis. One of the main goals of organizational theorists is to revitalize organizational theory and develop a better conceptualization of organizational life (Simms *et al*, 1994). An organizational theorist has also often been concerned with helping managers and administrators (Reed, 1985). In the last decade or so, organizational research has broadened its scope, and has been extraordinarily inventive with regard to data collection methods (Buchanan and Bryman, 2009). The system of influences on the choice of organizational research methods has developed into an unbounded research field that embraces an expanding number of topics, normative and interpretative views on the research topic and methodological inventiveness and analysis methods (Buchanan and Bryman, 2009). The choice of methods is also influenced by organizational properties such as sites and locations of the companies participating in the studies, historical properties such as experience base and traditions, political properties such as stakeholder demands, ethical properties such as codes of practice, evidential properties such as research participants and personal properties such as preferences, competencies and relationships of the organizational theorists participating in the studies (Buchanan and Bryman, 2009). It is thus important to understand more fully the basis of research method choices (Buchanan and Bryman, 2009). In view of the new methodological inventiveness in mind, many writers on methodological issues in this field still find it helpful to distinguish between two main research strategies: quantitative and qualitative research (e.g. Alvesson and Sköldberg, 2009; Bryman, 2008). Quantitative research can be construed as a research strategy that emphasizes quantification in the collection and analysis of data, while qualitative research can be construed as a research strategy that usually emphasizes words rather than quantification in the collection and analysis of data (Ely *et al*., 1997; Bryman, 2008). The research methods associated with both quantitative and qualitative research have their own strengths and weaknesses and therefore many academics have argued that the two can and should be combined in an overall research project to draw on the strengths of both, an approach that is referred to as *mixed methods research* or triangulation. Triangulation has been referred to as the view that quantitative and qualitative research might be combined (Yin, 2009; Bryman, 2008) and the essential rationale behind triangulation has been that, if you use a number of different methods or sources of information to tackle a question, the resulting answer is more likely to be accurate and you often get a richer and fuller story (Yin, 2009; Richardson, 1996). Often, one of the two

research methods has been applied to help explain or confirm findings generated by the other (Bryman, 2008).

In this thesis mixed methods (quantitative and qualitative methods) have been used for these same reasons, as explained in more detail in section 4.6.

4.2 Qualitative research methods

Qualitative research has been concerned with words rather than with numbers (Ely *et al*., 1997; Bryman, 2008). Three additional features have been emphasized as particularly noteworthy:

1) Qualitative research takes an inductive view of the relationship between theory and research, meaning the former has often been generated out of the latter.
2) Qualitative research has an epistemological position described as interpretivist, meaning that understanding comes from an examination of the interpretation of the world by its participants.
3) Qualitative research takes an ontological position, described as constructionist, meaning that the outcomes are based on the interactions between individuals.

The following are the main methods associated with qualitative research (Bryman, 2008):
- Ethnography/ participant observation – the researcher immerses herself in a group for an extended period of time, observing behaviour, listening to what is said in conversations.
- Qualitative interviewing – two different types; unstructured and semi-structured interviews. Semi-structured interviews call for an interview guide.
- Focus groups – a form of group interview with several participants, where the emphasis is put on a fairly tightly defined topic. Interviewees are often selected because they are known to have been involved in a particular situation.
- Language-based approaches, such as conversation analysis.
- The collection and qualitative analysis of texts and documents.

- Action research, broadly defined as an approach in which the action researcher and members of a social setting collaborate on the diagnosis of the problem and in the development of a solution based on the diagnosis. This approach can take a variety of forms, from the action researcher being hired by a client to work on a diagnosis to and solve a problem, to working with a group of individuals who are identified as needing to develop the capacity for independent action.

The main steps of qualitative research have traditionally been (Bryman, 2008):

1) Identification of the general research question.
2) Selection of relevant sites and subjects (who and where).
3) Collection of relevant data.
4) Interpretation of data.
5) Conceptual and theoretical work.
6) Writing up findings and conclusions.

Analyses of qualitative data can take the grounded theory approach (Glaser and Strauss, 1967) or case study research approach (Yin, 1984). In the grounded theory approach, data collection, analysis and new theory stand in close relationship to one another (Strauss and Corbin, 1998), where the generation of theory has come from data (Alvesson and Sköldberg, 2009). The key tools in grounded theory have been described as the coding of data, where data are broken down, examined, compared and categorized (Bryman, 2008). The case study approach has been suggested as suitable for investigating a contemporary phenomenon within its real life context (Yin, 2003). Yin (2003) has been a particularly strong advocate of the case study approach, which has traditionally been highly relevant in the result of individual papers research processes. The case study has been introduced as a research strategy that has focused on understanding the dynamics present within single settings (Yin, 1984; Eisenhardt, 1989; Yin, 2009). Case studies can involve either single or multiple cases, typically combine data collection methods such as interviews, questionnaires and observations, with evidence that may be qualitative (words), quantitative (numbers) or both (Yin, 1984; Eisenhardt, 1989). The same single-case study may even include more than one unit of analysis (Yin, 2009). For instance, even though a case study might be about a single organization, the analysis might

include outcomes from interviews in several departments, and possibly even some quantitative analysis based on the same departments (Yin, 2009).

Eisenhardt (1989) developed a case study research process and strategy for building theories from case studies based on literature studies of 40 case study researchers, which contained the following steps:

- Definition of the research question: an initial definition of the research question was found to be important in building theory from case studies.
- Selection of cases.
- Crafting instruments, where qualitative and quantitative methods have often been combined for the purpose of stronger substantiation of constructs.
- Entering the field: Data collection and analysis.
- Analysing data: Within-case analysis.
- Shaping evidence for each construct and search the evidence for why.
- Enfolding literature: Comparison with conflicting and similar literature.
- Reaching closure.

The choice to use the case study method depends in large on the research questions (Yin, 2009). The more that the research questions seek to explain some present circumstance and the more that the questions require an extensive and in-depth description of some social phenomenon, the more that the case study method will be relevant (Yin, 2009).

The case study method has been used in this study for these same reasons, as explained in more detail in section 4.6.

4.3   Quantitative research methods

The process of quantitative research has often been described as (Bryman, 2008):

1) Theory
2) Hypothesis * or research concerns/questions
3) Research design
4) Device measures of concepts
5) Select research sites
6) Select respondents
7) Collect data
8) Process data
9) Analyse data
10) Findings/ conclusions
11) Write up findings/ conclusions

*Although it has been common for a hypothesis to be deduced from theory and tested, a great deal of quantitative research has not entailed the specification of a hypothesis, and instead theory has acted loosely as a set of *concerns* in relation to which the researcher has collected data (Bryman, 2008)

The typical quantitative techniques that have been applied in quantitative research are (Bryman, 2008):

- Questionnaire/ survey.
- Observation schedule – devising a schedule for the recording of observations.
- Coding frame – a transcript of respondents' replies, identifies the types of answers associated with each question and their respective codes.

The most important decisions regarding the analysis of quantitative data have been concerned with which model to use (common factor analysis vs. principal components analysis), the number of factors to retain, and the rotation method to be employed (Preacher and Maccallum, 2003). The benefits of good decisions, based on sound statistical technique, solid theory, and good judgement include substantively meaningful and easily interpretable results that have valid implications for theory or application. The consequences of poor choices, on

the other hand, have included obtaining invalid or distorted results that may confuse the researcher or mislead readers.

Decision 1 Factor analysis versus principal component analysis

Principal Component Analysis and Exploratory Factor Analysis have both been introduced as variable reduction techniques and have sometimes been mistaken as the same statistical method (Field, 2005). While they do have many similarities, they also have differences. However, if the number of variables is high and the communalities are high, the results are likely to be the same (Field, 2005). Researchers have been advised to clarify the goals of their study to determine whether factor analysis or principal component analysis will be more appropriate for their work (Preacher and Maccallum, 2003). Principal Component Analysis has been used when the sample size is large, and should be employed if the researcher has a specific interest in data reduction, reducing the numbers of variables and explaining the same amount of variance with fewer variables (principal components) (Preacher and Maccallum, 2003).

Decision 2 The number of factors to retain

Various authors have commented on the importance of deciding how many factors or components to retain in the use of factor analysis or principal component analysis (e.g., Fabrigar et al., 1999; Hayton et al., 2004; Preacher and Maccallum, 2003), and as there does not appear to be a single agreed-upon method amongst researchers, both substantive and statistical issues should be considered when deciding on the number of factors (Ledesma and Valero-Mora, 2007).

Decision 3 The rotation method to be employed

The next decision emphasized by authors is the rotation method. The goal of rotation has been to simplify and clarify the data structure. There are two main choices, orthogonal methods or oblique methods. In the social sciences, some correlation among factors is generally expected, since behaviour is rarely partitioned into neatly packaged units that function independently of one another. In this case, direct oblique rotation is said to render a more theoretically accurate solution (Costello and Osborne, 2005).

Mixed methods were used in this study (both quantitative and qualitative methods). Because the sample size and the number of variables in the quantitative survey were large, explaining the same amount of variance with fewer variables was preferred. A principal component analysis was therefore used, as explained in more detail in section 4.6.

4.4 Sampling strategy

Since it is rarely practical or efficient to study whole populations, choosing a study sample has been described as an important step in the research process. Depending on the research method, there is a choice of two different strategies, quantitative sampling and/or qualitative sampling (Marshall, 1996).

4.4.1 Quantitative sampling

The aim of quantitative sampling is to draw a representative sample from the population, so that the results of studying the sample can then be generalized back to the population (Marshall, 1996). The size of the sample is determined by the optimum number necessary to enable valid inferences to be made about the population. The larger the sample size, the smaller the chance of a random sampling error (Marshall, 1996).

4.4.2 Qualitative sampling

Samples for qualitative investigations have tended to be small, because qualitative researchers having recognized that some informants are "richer" than others and that these people are more likely to provide insights and understanding to the researcher. Quantitative researchers have often failed to understand the usefulness of studying small samples (Marshall, 1996). This has been related to the misapprehension that generalizability is the ultimate goal of all good research, which is said to be the principal reason for otherwise sound published qualitative studies to contain inappropriate sampling techniques (Marshall, 1996). An appropriate sample size for a qualitative study is said to be one that adequately answers the research question. In practice, the number of required subjects usually becomes obvious as the study progresses. Clearly this requires a flexible research design and an iterative, cyclical approach to sampling, data collection, analysis and interpretation (Marshall, 1996).

Three broad approaches to selecting a sample for a qualitative study have been introduced (Marshall, 1996):

- *Convenience sample,* which involves the selection of the most accessible subjects. This is said to be the least costly to the researcher, in terms of time, effort and money, but may result in poor quality data and lacks intellectual credibility.

- *Judgement sample,* also known as purposeful sample, which has traditionally been the most common sampling technique. The researcher actively selects the most productive sample to answer the research question. This approach is thought to be the more intellectual strategy and where the researcher has studied a broad range of subjects (maximum variation sample), outliers (deviant sample), subjects who have specific experiences (critical case sample) or subjects with special expertise (key informant sample).

- *Theoretical sample,* which is explained as building interpretative theories from the emerging data and selecting a new sample to examine and elaborate on this theory.

The sampling strategies for the qualitative and quantitative research in this study are explained in more detail in section 4.6.

4.5 Reliability, validity and generalization

4.5.1 Reliability

Reliability is described as the consistency of a measure of a concept. In quantitative research three factors are usually involved (Bryman, 2008): 1) Stability, which can be measured by correlation tests. If the correlation is low, the measures have appeared to be unstable; 2) Internal reliability, which can be measured with a Cronbach's alpha test. A computed alpha coefficient will vary between 1 (perfect internal reliability) and 0 (no internal reliability). Usually a Cronbach's alpha over 0.70 is assumed to be a satisfactory and reliable result; 3) Inter-observer consistency, when there is a great deal of subjective judgement, such as when only one observer is involved and there is a possibility that there is a lack of consistency (Bryman, 2008). In qualitative studies, reliability has been captured by the notion that the theories should "work", "fit" and be recognizable and of relevance to those studied (Richardson, 1996).

4.5.2 Validity

Validity in quantitative research is described as the issue of whether a measure of a concept really measures that concept (Bryman, 2008). In qualitative research, theorists often appeal to the criterion of "respondent validation"; in other words, researchers' interpretations should be recognizable when presented to the study participants (Richardson, 1996).

4.5.3 Generalization

Generalization has usually been concerned with the ability to say that the findings can be generalized beyond the confines of the particular context in which the research was conducted (Bryman, 2008).

The reliability, validity and generalization of this study are explained in section 4.6.

"Expect problems and eat them for breakfast. " Alfred A. Montapert, American author.

4.6 Research methods in this study and discussion

4.6.1 The methods for each paper

This section presents an overview of the methods from each of Papers 1 – 5, followed by the criteria and strategy for selecting the case companies and industries, a more detailed discussion on the research methods applied and the reliability, validity and generalization in each of the papers.

Paper number and companies	Traditional projects	Global projects
Paper 1 Case study from the oil and gas industry. Case companies: Statoil, Hydro, Aker Kvaerner, Bjoerge Solberg & Andersen, GE Nuovo Pignone, Fire Protection Engineering, Dresser-Rand, ABB Industry, Norstella, OLF, TBL Offshore, KOP Eureka Pump Systems, Fabricom and Vetco Aibel. Two projects studied	Extensive literature review. Mixed research methods: 1) Qualitative research method with 45 semi-structured interviews representing the value chain: oil company, contractor, suppliers, and sub-suppliers. 2) Qualitative research (focus group) with representatives from different companies to find solutions. 3) Action research to implement findings. 4) Analysis method: case study approach.	
Paper 2 Case study from the construction industry. Case companies: Statsbygg, Skanska, ØKAW Architects, Multiconsult, Ørnulf Wiig Installation, Oras, Nosyko, the user. Canadian railway company. Five projects studied.	Extensive literature review. Mixed research method: 1) Qualitative research method with 53 semi-structured interviews, representing the entire value chain. 2) Observation in 19 meetings 3) Analysis method: case study approach.	

Paper 3		Extensive literature review.
Case study in the oil and gas industry. Case companies Statoil and Hydro (which merged into Statoil during the research period).		Mixed research methods. 1) Quantitative method first: Survey sent to 550 project team members in 39 countries, response from 246 project team members in 38 countries. 2) Qualitative research method to confirm findings and to obtain the full story through 30 semi-structured interviews. 3) Analysis method: case study approach.
Paper 4		Extensive literature review.
Case study in the oil and gas industry. Case companies Statoil and Hydro (which merged into Statoil during the research period).		Mixed research method: 1) Quantitative research first: Survey sent to 550 project team members in 39 countries, response from 246 project team members in 38 countries. 2) Qualitative research method to confirm findings and to obtain the full story by conducting 30 semi-structured interviews. 3) Analysis method: case study approach.
Paper 5	Compared and analysed the organizational challenges found in traditional projects (Paper 1) and global projects (Paper 3).	Analysed the advice provided in interviews to global leadership.
Case study in the oil and gas industry. Case companies from Papers 1 and 3.		Analysis method: case study approach.

Table 6 Research methods in Papers 1 – 5.

The next section will first present the criteria for selecting the case companies and industries in this study, followed by an in-depth explanation of the research methods from table 6.

4.6.2 Selection of case companies and industries

Selecting case companies and case industries was part of the early phase of the research. The criteria were the following:

- The case companies and the industry had to be large enough to have resources available for the empirical studies.
- The case companies had to have experience in the execution of large projects.
- The case companies should preferably have had projects both in Norway and in a global environment.
- The case companies had to have an articulated interest in the scope of the thesis.

In Norway, the oil and gas industry was an obvious choice. The oil and gas industry is large and has resources available (particularly people, but also an office and the necessary equipment) to support the doctoral work. In the oil and gas industry in Norway, Statoil and Hydro had for decades been the two oil giants, and they had years of experience in the execution of several large projects in a global environment, which were the reasons for choosing them as case companies. During this doctoral work, the two oil giants merged into one company, Statoil.

The construction industry also executed large projects and was experimenting with the implementation of a collaboration model to reduce the organizational challenges (partnering), which was intriguing in the context of the scope of this thesis. This industry also had resources available for the studies, but also key personnel who were particularly interested in the topic. The largest construction company in Norway is Statsbygg, and along with their partners, they have run several large projects that employed the partnering collaboration model, which were the reasons for choosing them as a case company. In the partnering studies, a Canadian case company was selected in addition to the Norwegian case studies. The main reason was to confirm that the findings from Norway were applicable in other countries as well.

In addition, much of the literature on global projects was from oil and gas and construction industries, which made the choice of these two industries particularly interesting.

4.6.3   Research methods and discussion in the traditional projects studies, Papers 1 and 2
A mixed qualitative research approach (interviews, focus group work and observations) was chosen for the traditional project studies. The main idea behind this choice was to produce a total picture of the challenges from the different actors in the oil and gas industry (Paper 1) and the building and construction industry (Paper 2).

Semi-structured interviews were used in Paper 1 to obtain an in-depth understanding of the organizational challenges, and focus groups were used to gain a practical perspective and find solutions to the challenges uncovered. Action research was applied in the oil and gas study to develop improvements and bring about changes, but it soon became clear that this would be a difficult goal to achieve. The oil and gas industry is large and fragmented, where changes must be made over several years, and through involvement at all stages. The findings are now being implemented and are presented annually in the Project Management Advanced programme for project managers with over 10 years of project experience in Statoil, which has been characterized as a small step towards involvement and future changes.

For Paper 2, semi-structured interviews provided an in-depth understanding of the challenges, and observations of 19 meetings gave an understanding of the practical handling of the challenges.

The sampling strategy for the research on traditional projects was to find sizes that adequately answered the research question. The choice of size became obvious as the study progressed. Key informants were selected, e.g. people with many years of experience in the topic.

In both papers, the use of a qualitative research approach means the findings are subjective. Though several researchers contributed, the findings are based on the interpretations of the researchers and what we found significant and important. Since these research projects lasted over several years, personal relationships between the researchers and the industry

represented in the reference groups and in the focus groups might have influenced the results in one way or the other.

Finally, it is important to note that the findings are specific to the oil and gas and construction industries, and making generalizations across other industries and companies would require further research.

4.6.4   Reliability, validity and generalization in traditional projects, Papers 1 and 2
Several of the main qualitative methods were used in the study of traditional projects, i.e. qualitative interviewing (semi-structured interviews), focus groups, observations and collection and qualitative analysis of texts and documents as well as action research (because solutions were important). A mixed research approach was selected for the purposes of this part of the thesis research to obtain as accurate data as possible and to get the full story, as emphasized by Yin (2009) and Bryman (2008). There is no single right way to collect and analyse qualitative data (Coffey and Atkinson, 1996), instead, the focus should be on finding productive ways to organize and inspect the material collected to capture the complexities of the world that the research seeks to explain (Coffey and Atkinson, 1996). Both of the traditional project research efforts (presented in Papers 1 and 2) discussed the different methods and relied on the evaluation of a reference group composed of several professors and researchers as well as experienced project managers. Since we had access to very experienced interviewees and a great amount of texts and documents, and since the experienced project managers were willing to participate in focus groups, we concluded that a mixed qualitative research method was the correct choice. In both research projects, the findings were presented regularly to the reference groups to confirm them before moving further in our analysis of the data. The findings were then confirmed, recognizable and of relevance to those studied, as emphasized by Richardson (1996).

4.6.5   Research methods and discussion in the global projects studies, Papers 3 and 4
Mixed research methods (quantitative and qualitative research methods) were also used in the global projects studies. In Papers 3 and 4, a quantitative research method was applied first, with a survey sent to 100 project managers and 450 project workers who had experience with

global projects. A qualitative study (30 semi-structured interviews) was subsequently employed to gain a more in-depth understanding of the survey findings.

These two methods have both strengths and weaknesses. The strengths are that the survey had a large number of respondents, 246 in total, and the responses could be used as a basis for interviews. The findings from the survey were confirmed in the 30 interviews. Also, findings were presented to 100 project managers in the case company, who gave the findings an average rating of 5 (on a scale from 1 to 6) based on if the findings were relevant to their project work, as emphasized as important for the reliability of the study (Richardson, 1996). Generally, if participants agree with the researcher's findings, then greater confidence can be attached to them (Richardson, 1996). The Cronbach's alpha in the survey was over 0.70 for all findings except one, which was confirmed in the 30 interviews. Also, many of the interviewees had 20-30 years' work experience in numerous global projects all over the world, which was a solid foundation for the interview results.

The sampling strategy in the quantitative study was to gain a representative population from the project managers and the project team members that had experience with global projects, based on Marshall's sampling recommendations (1996). Previous research in the company suggested that the response rate would be about 50%, so it was decided to send the survey to the complete list of employees who worked in a global environment (550 respondents). This eliminated any need for sampling decisions within this population and was expected to produce a data set of acceptable size. The qualitative sampling strategy was the judgement sample from key informants. It was important to include experienced project managers with expertise from different global projects in different countries, and a sample size of 30 was chosen after the study progressed and the research question was adequately answered.

4.6.6   Reliability, validity and generalization in global projects, Papers 3 and 4

The global projects study started with a survey (quantitative research), to gain a better understanding of the challenges posed by global organizational cooperation. The survey gave us the broad information necessary to move further and get the full story. Qualitative interviews (semi-structured interviews) were then used to gain a more in-depth understanding of the challenges, but also to confirm the findings from the survey (triangulation). This was a fruitful experience, because it helped confirm the survey results, provided a comprehensive

"picture", and also explained the full story behind the challenges with information from the interviewees.

From the beginning, two major global companies were selected as the case companies (Statoil and Hydro), given that they had comprehensive oil activities in 39 countries, representing most parts of the world. After the study started, the two companies merged into Statoil. As a global oil company, Statoil is similar to many other companies in the same sector, and probably also quite similar to other companies operating large global projects. However, though the studies started in two major case companies, the validity of the final results from the studies is strictly speaking limited to this one company. It is possible to speculate that the findings will also apply to other similar companies, but until we or someone else expands the study we cannot draw this conclusion, and this is of course the main limitation of a one-company case study.

Additionally, the results presented might only apply to one single industry (oil and gas). Although the study findings have been double-checked in discussions and presentations in other industries, they must also be tested in the context of other industries.

Given that the interviews were based on personal experience, the results rely on each person's interpretations.

The next chapter presents the industries that participated in this research (Chapter 5), followed by the findings from the empirical research (Chapter 6).

"If you can dream it, you can do it. " Walt Disney

5. Participating industries in this research

5.1 Case companies in the traditional projects research

The traditional projects study examined the oil and gas industry (5.1.1. Paper 1) and the construction industry (5.1.2. Paper 2).

5.1.1 Oil and gas industry - Paper 1

Fourteen companies participated in the research project to identify organizational challenges in traditional oil and gas projects. The case companies were the two major oil operators in Norway: Statoil, with (at that time) 26,000 employees in 33 countries and Hydro, with (at that time) 25,000 employees in nearly 40 countries. Today the two companies have merged into Statoil (owner), which due to a demerger of the company's benzene stations now has 20,000 employees in 39 countries worldwide. Other participants were Aker Kvaerner (a contractor), a global oil services company that provides engineering services to the oil and gas industry, and the suppliers Bjoerge Solberg & Andersen, GE Nuovo Pignone, Fire Protection Engineering, Dresser-Rand, ABB Industry, KOP Eureka Pump Systems, Fabricom and Vetco Aibel as well as the organizations Norstella, OLF and TBL Offshore

The case projects were the Kristin and Grane oil platforms, both located on the Norwegian continental shelf.

5.1.2 The construction industry in Norway and Canada – Paper 2

The cases included four large construction projects in Norway and one in Canada. The case companies in the Norwegian construction industry were Statsbygg, Skanska, ØKAW Architects, Multiconsult, Ørnulf Wiig Installation, Oras, Nosyko and the users of the buildings. Statsbygg is the Norwegian government's key advisor in construction and property affairs, commissions buildings, and manages and develops properties. On behalf of the Norwegian government, Statsbygg owns 2,300 buildings distributed among 610 property complexes at home and abroad. The buildings range from the Government quarter in Oslo, the Supreme Court, Courts of Appeal and District Courts, customs houses, museums, opera houses and prisons, to name just a few. Skanska (the contractor) is an international project development and construction company that

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develops offices, homes and infrastructure projects, for the owner, Statsbygg. ØKAW Architects is an architectural company, and the other case companies are suppliers and sub-suppliers. The cases in Norway involved nine companies collaborating in the four projects, representing the owner, the contractor, the user, suppliers and sub-suppliers. In these, the owner had made the strategic decision to apply a partnering approach (Fjeldstad, 2004). The primary motivation for applying project partnering was to avoid the traditional costly organizational conflicts that typically characterize construction projects. The Norwegian construction industry had been criticized for severe conflicts in terms of goals among the actors involved (Arge, 2000). As a result of this critique, a clear industry-wide interest in project partnering has been evident over the last decade. However, prior to this study, it was unclear how, in practice, partnering was applied in the projects, whether the models reduced the organizational challenges and conflicts and whether the partnering models presented in the literature could actually be used in the partnering projects.

The case project in Canada was an infrastructure project (construction of a railway line) and the case companies were the owner, the contractor, the user and suppliers. A partnering approach was initiated for the project, due to the fact that the conflict level was high and the productivity level and trend in Canadian construction projects was low compared to other sectors.

5.2 Case companies in the global projects research–Papers 3, 4 and 5

The global projects research in Papers 3 and 4 was centred on Statoil and Hydro at first, as described for Paper 1 above, which now have merged into Statoil. Statoil has comprehensive oil activities in 39 countries with more than 20,000 employees worldwide. The types of global projects run by the two companies were:

a) Projects related to business development
b) Projects related to exploration
c) Development projects
d) Projects related to preparation for development projects or operations
e) Projects on site, often part of a larger project in Norway or in another country, where the main project was often a development project or a modification project
f) Other projects, such as IT projects, market projects.

In Paper 5, the findings from Paper 1 (traditional projects) were discussed in light of findings from Paper 3 (global projects) to develop a framework for managing organizational challenges in global projects and to provide leadership advice for global situations. The paper was based on studies of findings from these two papers, and a summary of suggestions from interviewees was provided to the global project manager.

"If you are going through hell, keep going." Winston Churchill

6. Research findings (five individual papers)

This chapter presents a summary of the findings from each paper, followed by discussion and conclusion in chapter 7.

6.1 Findings from Paper 1

The traditional business worldview strongly emphasizes competitive power and only a few key papers can be found that examine the flip side of the coin (e.g. Brandenburger and Nalebuff, 1996), which is cooperative power (Aarseth and Sørhaug, 2009). The findings from the empirical research were that mistakes and miscalculations often appear in the interfaces between and within the fourteen companies that collaborated in the research project. In practically all companies, responsibilities and roles were unclear at the interfaces, and there was missing information. These interface problems seemed to occur as both *inter*-organizational challenges, between organizations, and *intra*-organizational challenges, within organizations (Aarseth and Sørhaug, 2009).

Examples of the organizational challenges found in inter-organizational interfaces include:

- 🞦 Between project team and operation team (which were two different companies)
  - o The operation team would have a huge advantage if it got involved with the project team at an early stage, but this seldom happened.
  - o The operation team needed information from the project team, which was lacking.
- 🞦 Between operator and contractor
  - o The operator is dependent on information from the contractor and suppliers, but the contractor provided too little information.
- 🞦 Between operator, subcontractors and suppliers.
  - o Contracts were interpreted differently by different groups, which led to conflicts.
- 🞦 Between contractor and suppliers
  - o Suppliers had important knowledge but were unfortunately seldom asked.
- 🞦 Between different suppliers
  - o The different suppliers tried to handle the contract more or less alone instead of using knowledge and experience from other suppliers.

o   Suppliers lacked information from other suppliers.

Examples of organizational challenges found in intra-organizational interfaces:

- Between internal departments and units in the companies
    o   The communication process seemed poor between departments in most of the nine companies.
- Between different process owners within operators.
    o   The process owners gave different, not corresponding, information to contractor and suppliers.

These challenges were related to the traditional business worldview, which emphasizes competition, and companies competed in the projects instead of collaborating and sharing information. These challenges call for practical solutions in projects in the future. Since we did not find an applicable collaborative model in the literature, we developed a collaborative tool model (Aarseth and Sørhaug, 2009) to reduce the organizational challenges found in the research project and to implement the concept of "cooperative power" in future projects. The collaborative tool model can be found in Fig. 9.

A) Conditions influencing the culture of cooperation	B) What needs to be discussed and done upfront	Operator	Contractor	Supplier x, y, z	C) Consequences for the value chain and the companies
Mutual uniform information strategy for the entire collaboration	Establish an information strategy specifying what information is necessary. The strategy process should start by mapping the stakeholders: **i.** Who: The enterprises have different stakeholders in the value chain, with different needs for information. Map the stakeholders. **ii.** When: When is the information needed? It is important that all enterprises have the correct information at the correct time. **iii.** What: What kind of information is important? What information is important for the operator? What is important for the contractor? What information is important for the suppliers? Reach consensus. **iv.** Where: Map where the information demands come from. Develop an information hierarchy. **v.** Make sure that all stakeholders/enterprises have the same information on the same topic. **vi.** Make sure the information is correct and transparent. There must be a mutual understanding amongst the enterprises in the collaboration.				
Understanding of collaborating partners' strategies	Map the following: Collaborating partners' goals and success criteria Risks (sharing of risks) Drivers of costs				
Handling of contracts and frame agreements	The power of contracts is clearly underestimated. Discuss contractual forms and content of the contracts thoroughly upfront.				

Communication practices	Map the following: **i.** What are we going communicate? To whom, when and where?				
Good relationship development and practices	Define the purpose of the collaboration and the performance requested. Establish incentives and mechanisms for better cooperation, such as frequent collaboration meetings. Agree on what kind of mechanisms will influence the collaboration positively; agree on meetings up front, before conflicts arise. Make sure someone is in charge of organizing and managing the collaboration process, the cooperating mechanisms and frequent evaluation of the process.				

Figure 9. The collaborative tool model

The model follows the principles that actors should share information rather than keeping it within their own organization, and that there should be joint planning amongst partners, along with active solutions of conflicts and the sharing of profits, advantages and disadvantages as emphasized by Biong *et al*. (1996). The model takes a practical perspective on accumulated theory and is believed to contribute to reducing the organizational challenges found in the difficult interfaces. The model was introduced to 100 project managers in Statoil to determine if the model would reduce organizational challenges. The managers confirmed that the model would reduce such challenges.

As the collaborative tool model is *a dialogue method* to be used in new projects, the sections "operator", "contractor", "suppliers x, y, z" and the section C must be filled out in a joint meeting at the beginning of new projects. The discussion partners must reflect on each topic and the consequences for the operator (and then fill in information under "operator"), consequences for the contractor (and then fill in information under "contractor"), consequences for the suppliers (and then fill in information under "suppliers") and consequence for the value chain and all the companies (and then fill in information under section C).

It was suggested that the collaborative tool model be used in future projects as a two-day discussion session at a very early stage of any new multi-company projects. Future

frame agreements and contracts should include the collaboration tool model as a requirement. Contracts and frame agreements could include a sentence that says: "project participants are challenged to take other companies' views into account, to try to understand cooperative power and to view the project as the competitive unit rather than its own firm by acknowledging and using the collaborative tool model actively in new multi-company projects".

It was recommended that a neutral process manager be hired to be responsible for running the process.

In relation to Fig. 1 (organizational challenges in projects), the findings from Paper 1 are internal organizational challenges, e.g. interface challenges related to internal actors in projects.

6.2 Findings from Paper 2

Partnering models are collaborative models that can be implemented to reduce organizational challenges, and based on empirical evidence from case studies in Norway and Canada we found that organizational challenges still occurred even when attempting to implement partnering. These challenges included a lack of shared understanding of key partnering concepts, missing initial effort to establish shared ground rules, communication difficulties in inter-organizational relationships and unclear (perceived) roles and responsibilities (Aarseth *et al.*, 2012). A great number of construction studies in the published partnering literature have identified conceptual partnering models. However, studies that describe partnering models to take these practical difficulties into account have not been found, so we developed a practical model that outlines the phases of a typical partnering effort (Fig. 10) (Aarseth *et al*., 2012).
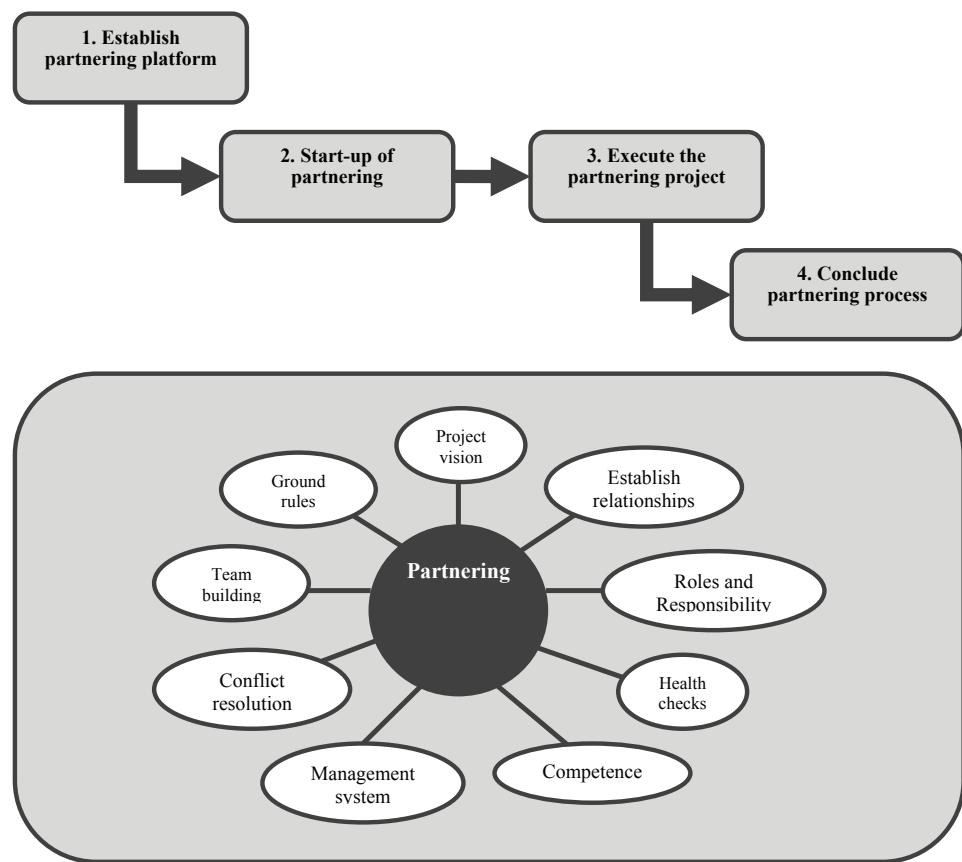
Figure 10. The practical partnering model -- the partnering flower

The practical partnering model (Fig. 10) is believed to reduce the organizational challenges found in the partnering research project, but further testing is required. The model is a simple practical model, and while it may appear both logical and a bit trivial, since existing partnering models are not practical enough and do not include the organizational challenges found in partnering projects, the model clearly can serve an important function.

In relation to Fig. 1, the challenges identified in Paper 2 relate to internal organizational challenges, e.g. internal shared ground rules, understanding, internal communication difficulties, and unclear roles and responsibilities.

6.3 Findings from Paper 3

When it comes to an in-depth understanding of organizational challenges in *global* projects, only a few studies have been published compared to other project management issues. Paper 3 identified organizational challenges in global projects (Aarseth *et al*., 2012). Two hundred and forty-six project managers and team members with project experience from 38 countries responded to the questionnaire sent out for this study. The results identified the main organizational challenges as managing the external stakeholders which interfere in the global project, e.g. managing the local authorities, negotiations regarding the local content demand from the local government and managing the local supplier industry (Fig. 11) (Aarseth *et al*., 2012).
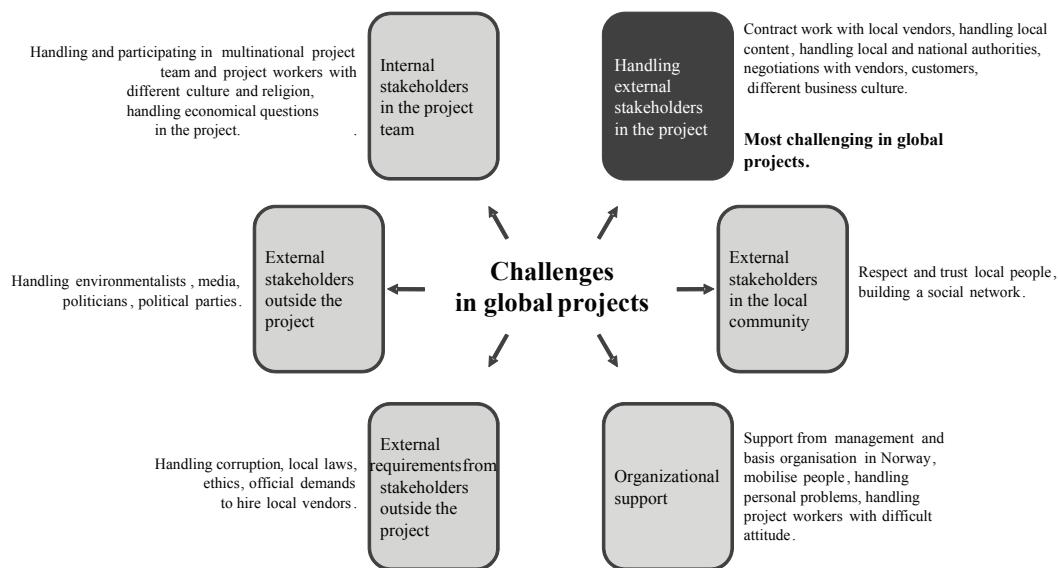
Figure 11. The Global Challenge Model (GCM model)

Compared to Binder´s (2007) four major challenges in global projects (1) number of different organizations 2) different cultures, 3) different languages, and; 4) different time zones), one can say that the organizational challenge from external stakeholders adds a fifth major challenge.

One of the main conclusions from this study was that *a relationship management approach* to addressing these challenges in global projects is required. This was compared to the findings for traditional projects, which emphasized an interface management approach. The different approaches are presented in a new figure, based on the organizational challenges identified in both traditional and global projects studies (Fig. 12).

Complexity High: Complex multi-company projects

Interface and internal stakeholder approach, e.g. the project team, the client and the suppliers.	Relationship management approach Build relationship and trust early with the external stakeholders e.g. the domestic government, the domestic authorities and the domestic industry.
Task oriented approach.	Sustain relationship with the domestic government and authorities.

Traditional project in home country

Global project

Complexity Low: Few actors, known environment

Figure 12. Traditional project approaches versus global project approaches to managing organizational challenges.

"Complexity" in Figure 12 is strictly speaking related to organizational complexity.

A new definition of global projects was then introduced: *"A Global Project is a temporary collaboration between organizations across nations and cultures with the intention to jointly deliver a unique product or service in a complex external context requiring relationship management"*. Compared to Ainamo *et al´*s and Orr *et al´*s definition, the new definition of global projects focuses on the project collaboration and key findings from the study, i.e. the

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importance of collaborating with and understanding the external environment, confirmed by Aaltonen (2011), Javernick-Will and Scott (2010), Aaltonen *et al*. (2008) and Floricel and Miller (2001), and which is absent in prior definitions.

In terms of Fig. 1, the challenges identified in this paper are external contextual organizational challenges, e.g. external stakeholders and cultural challenges.

6.4 Findings from Paper 4

Organizational challenges can be reduced by understanding what factors contribute to success. The most important areas identified in Paper 4 are presented in Fig. 13 (Aarseth et al., 2011).

For the case company, the global project success model illustrates areas of global project management that should be handled skilfully to increase the likelihood of success in its global projects. The main areas are the same as in the Global Challenge Model presented in Fig. 11, and are based on the same survey, but while Fig. 11 presents the main organizational challenges in global projects, Fig. 13 depicts the main areas found to contribute to global project success.
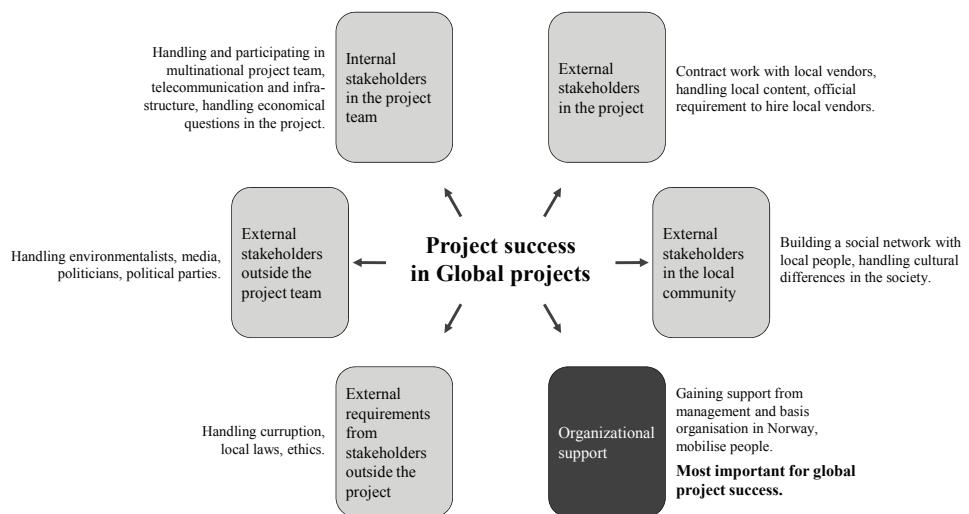
Figure 13. The Global Project Success model (GSM model) An illustration of the main areas and more detailed global project management practices found to contribute to global project success in the case company

Respondents pointed to "organizational support" as the area most important for project success, statistically significant at a 95% confidence interval, followed by "handling external requirements from outside the project", "handling external stakeholders in the project" and "handling internal stakeholders in the project team".

The most important areas for success in global projects were organizational support and inter-organizational collaborations (external stakeholder relationships).

The analysis of the information provided by the 30 interviewees confirmed that organizational support is most important for success in global projects. The interviewees also emphasized the importance of inter-organizational relationships in the complex external global context, which in the survey result did not come out as most important. Through the interviews, we were able to obtain more in-depth insights into these two success areas, as outlined in the following.

Organizational support

This area of global project management pertains to how the global organization can support its projects and project staff to enable their best performance in global projects. A shared position among the interviewees suggests the need for better-qualified and more proactive project support. The support could benefit from taking the nature of a global project support office that would be staffed with personnel that understood and had experience with global projects, e.g., what it means to work in a global project, what kind of support is necessary, the kinds of cultural challenges encountered, how to deal with the local government, etc. Given the geographical reach of the organization's projects, such a support home office should be staffed and available 24 hours a day.

When the interviewees looked back at when the case company initiated its global engagement, they agreed that a support office as described above would be highly useful for investors and entrant companies in new global projects. Instead of "stumbling into" global activities, entrant companies should seek to find the best way of organizing their global projects, with the right standards and project model. For the management and base organization, this requires strategic discussions and questions: Do we have the right standards and the right model in place to be able to execute global projects? Is there a better way to design global projects that would be different from traditional projects? These warranted the development of a strategic approach, including a strategy for global projects, with global best practices, and to learn from other companies and cultures.

Inter-organizational relationships (external stakeholder relationships)

This second area of global project management is another that was emphasized by interviewees as important for success. They said that establishing fruitful external stakeholder

relationships required approaches such as careful preparation and finding out more about the industry in the foreign country, understanding the local people, determining which groups or individuals have different types of power in the country, how the government and authorities work, and so on. In sum, they emphasized the need for having an inter-organizational relationship strategy for the various important stakeholders that will invariably be encountered in global projects. To establish such relationships requires spending time with stakeholders to understand their motivation, power and style of business, and developing relationships. These findings are in line with Binder´s (2007) and Anantatmula and Thomas´s (2010) findings that for most global project work the global project manager can increase the chances of success by correctly managing the stakeholders´ needs and requirements. In this respect the home support office can also play an important role, in preparing the project staff to be able to handle the complex demands posed by such projects and their environments, e.g., corruption, ethics and local law.

Implementing an organizational structure to ensure success in global projects

The proposed good global project management practices obtained from the interviewees broadly fall into two categories: practices that can readily be employed by individuals or project teams without any home organization support; and practices that require a global project strategy that is conducive to success, and/or a knowledgeable home organization support unit. Naturally, the latter category is more complicated to implement, but the interviewees agreed that these would have the highest positive impact on project success. Figure 14 schematically depicts how strategy, a central support department and locally focused support teams can help with an organization's portfolio of global projects.
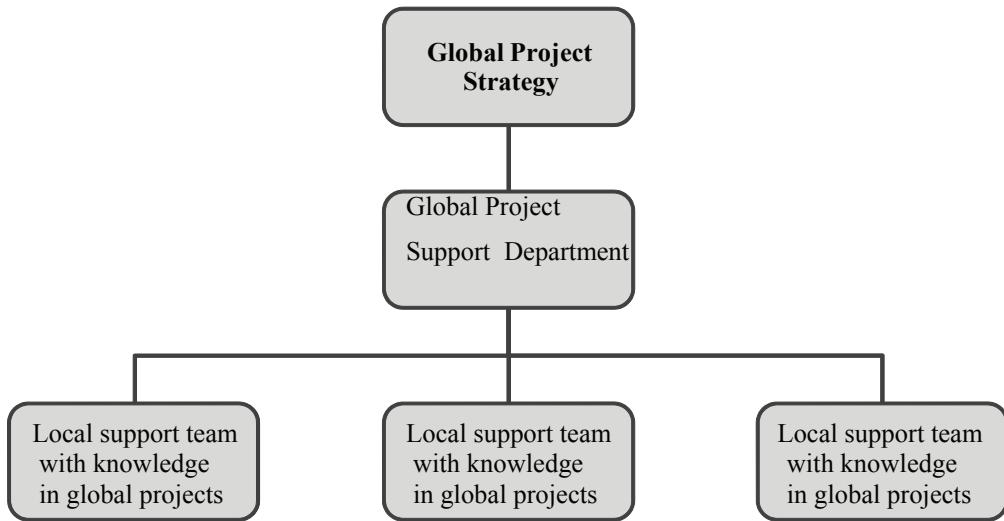
Figure 14. The Global Project Strategy model (GPS model) A proposed organizational model for supporting global projects

The structure of Fig. 14 can be interpreted either as advice for an organization that is entering the world of global project management or as measures that an organization active in global projects can take to better support their efforts. According to the interviewees, management should develop a strategy for global projects, and ensure that a central global project support department is established to facilitate implementation of this strategy. This department should build solid knowledge about the countries where the organization is involved in projects, the local working conditions, the local people, etc. Furthermore, depending on the size of the global project portfolio and the geographical distribution of the projects, it could consider linking this central department to a number of regional/local support teams specializing in certain geographical areas.

Related to Fig. 1, the challenges mentioned are mostly related to external contextual organizational challenges, e.g. external stakeholders, but also to a certain degree internal organizational challenges, e.g. organizational support from the initiating organization and an organizational structure.

6.5   Findings from Paper 5

Paper 5 explored the organizational challenges found from global projects in Paper 3 in comparison to the organizational challenges found in traditional projects in Paper 1, along with advice on how global project managers in global companies can address the challenges (Aarseth, 2011). Much insight was gained in interviews as to how the global project manager could have avoided or reduced organizational challenges, which was used to outline a framework for managing organizational challenges in global projects. The relationship approach found in Paper 3 was discussed further, and implementation and development of relationship skills were suggested (RQ). The framework suggested spans three main dimensions: the development of a global project strategy with a relationship management plan, the development of a global human resource management plan including development of RQ skills for people working in global projects, and the definition of the global systems necessary to support global projects and personnel (Fig. 15). This framework goes beyond the organizational model shown in Fig.14 by illustrating the necessary processes and main topics that need to be addressed by each process (Aarseth, 2011).
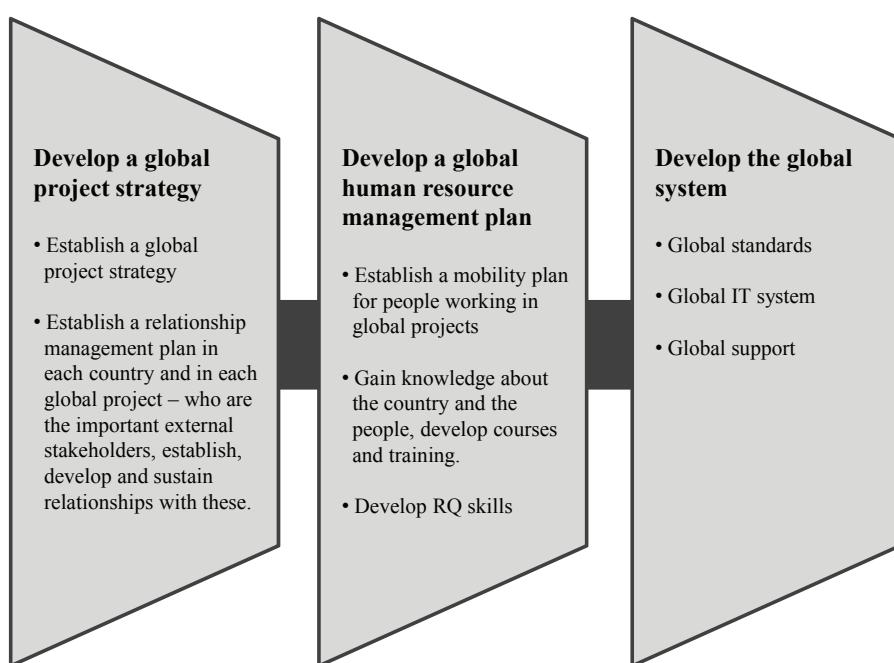
Figure 15. Framework for managing organizational challenges in global projects (global leadership)

This framework should reduce organizational challenges and provide support for the global project team, but would benefit from additional research.

"It's not that I'm so smart, it's just that I stay with problems longer." Albert Einstein

7. Discussion and conclusions

7.1 Contribution to theory

The key objective of this thesis was to *increase the understanding of organizational cooperation and organizational challenges in the execution of large projects*. The purpose was to provide new theoretical and empirical insights into organizational challenges in the context of projects, and to address the limited amounts of published literature on the in-depth understanding of the organizational challenges in projects. Findings from the five papers were presented in Chapter 6, summed up as the following:

	Organizational challenges in traditional projects	Organizational challenges in global projects	Techniques for addressing organizational challenges
Paper 1	Interface challenges: Inter- organizational and intra-organizational challenges, e.g. lack of information, poor communication processes, lack of involvement in the interfaces between and within organizations.		Apply the new concept "cooperative power". Apply the collaborative tool model.
Paper 2	A lack of shared understanding of key partnering concepts, missing initial effort to establish shared ground rules, communication difficulties in inter-organizational relationships and unclear (perceived) roles and responsibilities.		Apply the partnering flower model.
Paper 3		Managing external stakeholders: the local government in the country, local content demand, local authorities, local industry, and lack of support from the base organization	Understanding the Global Challenge Model. Apply a relationship management approach to reduce the organizational challenges and implement the suggested global framework.
Paper 4		Lack of support from the base organization (strategy and support to reduce the organizational challenges, but also managing external stakeholders: the local government in the country, local content demand, local authorities, local industry).	Understand the Global Project Strategy and the Global Success Model.
Paper 5	Interface challenges, understanding the concept cooperative power	Global leadership and RQ to reduce the organizational challenges in global projects	Global leadership, RQ and a global leadership framework.

Organizational challenges from Papers 1-5	Implement an interface management approach as suggested in the collaborative tool model, understanding the concepts "cooperative power" and "partnering".	Implement a relationship management approach.	Requires holistic understanding and two-way dialogue

Table 7. Findings from empirical research presented in the papers

Overall, these findings show that organizational cooperation challenges in projects belong to one, or both of the following categories:

1) Internal organizational challenges, e.g. interface challenges, routines, procedures, roles and responsibilities (findings from the traditional project studies, Papers 1 and 2)

2) External contextual organizational challenges, e.g. external environment challenges, external stakeholder challenges, cultural challenges, leadership of cultures (findings in the global project studies, Papers 3 and 4)
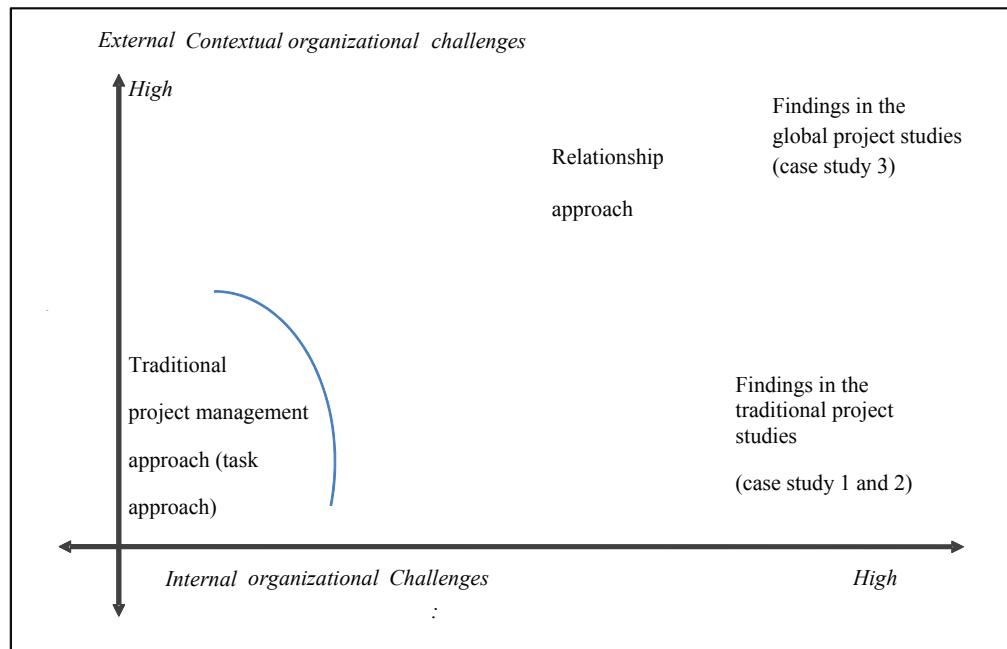
Figure 16. Organizational cooperation challenges in projects, with case studies shown

The task approach from traditional project management would be sufficient to solve the organizational challenges project managers meet when assigned to the project when internal and external organizational challenges are low and almost non-existent. As pointed out in the model, when external contextual organizational challenges are high (as found in the global projects studies), or when the internal organizational challenges are high (as found in the traditional multi-company projects studies), the traditional task oriented approach will be *insufficient* and other approaches and collaboration models as suggested in this thesis will be required.

The development of strategies to increase mutual understanding and address leadership issues

From case studies findings emerged that organizations working together in projects seemed to be more interested in their own view than in understanding what kind of influence the projects had on other organizations and the external surroundings. The traditional business worldview strongly emphasizes competitive power, but as seen from the findings from the five papers, this emphasis presents both a paradox and a challenge, because working on projects requires more cooperation than competition. The organizational challenges posed by cooperation represent dialogue challenges such as:

- What can we do to maintain this relationship? What are we willing to do?
- How are we going to communicate so that the other companies involved in the project understand us?
- How can we create a win-win situation for all companies in the project, not only success for our company?
- How can my company contribute to conflict resolution?
- How can we share advantages and disadvantages with the other companies in the project?
- How can we understand the external surroundings, the view of the government and authorities in the countries, the local supplier industry and how can we contribute to a better collaboration environment with these external stakeholders?

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These questions can represent an opportunity – or a challenge – depending upon how people and companies choose to answer them. Attitude is very much part of the solution: the *willingness* to keep project partners and external stakeholders informed, and communicate the necessary information to the right people. As Mead (1972) put it: Each actor has to consider the situations of the other actors. Putting oneself in another's situation involves more than just looking at an object from different angles and being able to change perspectives. It also implies the *recognition and respect of the interests and rights of other actors* in their situations. In this situation, a project execution strategy would also have to include managing investments in relations – both organizational and personal relations. These kinds of investments are proposed to reduce the organizational challenges identified in this thesis, and might include investments in establishing a unified understanding of and between the organizations, or of the organizational external context, or for the same perceptions and mind-set around the collaboration, and in a shift from one's own goals, one's own interests and one's own rights to a willingness and attitude that allows cooperation. What is needed is both an ability to create a win-win situation and recognition and respect for actors who are closely linked to you and your own organization, and actors who are further away and outside of the project.

Clearly these are strategy issues, and demand the development of strategies for mutual understanding, internally in the organization's core (e.g. human resource management and the communication department towards the projects), between companies as well as holistically towards the external stakeholders and in view of the organizational context of which the project is a part. These challenges also will shape leadership roles and responsibilities, as it becomes the project manager's responsibility to set the tone of the project. The need to interact with stakeholders with different interests and values and from both inside and outside the organization requires leaders who are interpersonally and relationally competent. Pless and Maak (2005) suggested that leaders need relational intelligence to cope emotionally with the leadership challenges at hand, an intelligence that involves the ability to be aware of and understand one's own and other's emotions, values, interests and demands, to critically reflect on them and to use this information to guide one's actions and behavior with respect to people (Pless and Maak, 2005), as further explained in the papers.

A great deal of emphasis has been placed on stakeholder management over the years, but despite all these efforts, the challenges faced by stakeholders were still found to be significant. In both traditional and global projects, there seemed to be a limited understanding of the other organizations and of the external surroundings (holistic view). Such an understanding can be constructed by understanding and implementing the Pentagon model as proposed by Schiefloe (2011). The five internal dimensions in the model (structure, infrastructure, culture, interaction and relationships) and the external surroundings dimension can be applied to establish a mutual shared organizational understanding and perception of the internal and external realities posed by projects. Since interpretations of reality are subjective and might contradict those of other organizations in the project (Schiefloe, 2011), having a shared view of these dimensions will address these challenges.

The models suggested in Papers 1-5 might also be applied to create a *holistic view* of the organization and project in question, and to reduce the organizational challenges. As Hinds and Weisband (2003) put it "to have a *shared understanding of the surroundings* will enable people to predict the behaviours of the other project team members, reduce errors, misunderstandings and mistakes, and reduce frustration and conflicts such as organizational challenges. A one-way information stakeholder strategy as suggested in traditional project management literature is then not sufficient to avoid stakeholder challenges, because these challenges require two-way relationship dialogues and a shared understanding of the challenges. Organizational cooperation emphasizes a mutual understanding of the surroundings at a higher level to reach a win-win situation, e.g. a mutual holistic view and understanding, an understanding of the interfaces between the actors, and of the others' goals and challenges. Projects are dependent on the people, organizations and cultures surrounding the project, not only on the internal processes to deliver the task. A collaborative relationship approach towards the surrounding forces, e.g. the authorities, government and political systems, instead of a competitive approach, is proposed to help reduce the conflicts and organizational challenges that have been identified in the case projects. Additionally, the challenging stakeholders that were identified as a part of the global project research had not even been mentioned as *potential* stakeholders in PMBOK 2008. This represents new and valuable information for project managers.

Clearly, in traditional projects in the company's home country, the organizational challenges can be addressed by a traditional project management approach (task-oriented). In more complex projects in the home country, interface management is required. In global projects, a relationship approach is necessary, as shown in Fig.12 and 16. In global projects the project manager must be relationship-oriented and build trust to a much larger extent than in simpler projects, for example building close relationships with the local government, local industry, and local authorities in the country. This is very much in line with the results from the GLOBE research program (Global Leadership and Organizational Behavior Effectiveness) documented in House *et al.* (2004) and Chhokar *et al.* (2007), where a main conclusion was that leader effectiveness is contextual, i.e., embedded in the societal and organizational norms, values, and beliefs of the people being led. Findings from the global project research suggest that people with RQ (relationship intelligence) should be hired followed by implementing a relationship development process, e.g. the relationship development process developed by Biong and Nes (2009) (see Fig. 8). This is in line with findings from Pless and Maak (2005) that leaders need relational intelligence, defined as a combination of emotional and ethical intelligence that involves the ability to be aware of and understand own and others emotions, values, interests and demands, to discriminate among them, to critically reflect on them and to use this information to guide ones action and behavior with respect to people (Pless and Maak, 2005). The definition of Pless and Maak (2005) has been extended even further in this thesis to implement the external business context, where Relationship Intelligence (RQ) has been defined as "the ability to understand the importance of external stakeholder relationships and the external context in global projects, as well as develop and sustain relationships with these important external stakeholders, e.g. domestic government, political parties, people with power in the country, people working in the domestic authorities and the domestic industry". The concept of RQ is then the ability to understand that before entering a new country and a new global project, a relationship strategy must be developed and followed, to find out which people has the power in the country, who is in important positions in the domestic government and authorities, which industry leader(s) is most powerful and has influence in the country and region, which suppliers has the right competence and knowledge, followed by establishing, developing and sustaining relationships with these people and companies as soon as you enter the country and the new global project.

Organizational challenges are clearly underestimated

The findings and discussion in the papers emphasize the importance of the conclusions from Winter *et al*. (2006) and Morris and Pinto (2004) that issues facing both researchers and practitioners are now well beyond the hard systems perspective (Winter el al., 2006) and that there is a growing need for project managers who can look beyond the internal processes of their projects to the organizational side of projects and the contexts in which projects must be managed (Morris and Pinto, 2004). The organizational challenges identified in the five papers are clearly underestimated and have not been sufficiently addressed in the published literature on project management. Project executions rarely fail due to technical problems, but very often fail due to organizational challenges and conflicts. The existing project management literature focuses on internal systems, planning, organizing and control, and if the body of knowledge on project management is only concerned with technical and task-oriented issues, these challenges will not be solved. Conclusions from the five papers that comprise this thesis suggest that organizational and relationship issues be given much more attention in future project management research and literature, which is in line with findings from Morris and Pinto (2004).

7.2 Contribution to practice

All of the new models outlined in this thesis are applicable to projects. The nature of this thesis is a normative practical one, where reducing organizational challenges has been emphasized. The oil and gas industry and the construction industry should be able to apply the findings from this research by implementing the models in their projects, which should reduce the organizational challenges in future projects.

The success of projects is dependent on the management of the organizational side of the projects as well as a focus on tasks. As the findings demonstrate, the collaborative side of project management is challenging, which highlights the importance of understanding the organizational challenges and being able to be proactive in managing these challenges. However, until recently project managers have not paid enough attention to these challenges.

The practical managerial recommendations from this thesis are therefore as follows.

For companies running large traditional multi-company projects

1) Increase the understanding in your organization and amongst project managers about the organizational and collaborative side of projects, particularly interface management. Be clear on roles and responsibilities, sharing of information and communication practices.

2) Apply the collaborative tool model in contracts and at an early phase of the projects.

3) In partnering projects, apply the partnering flower model.

4) Establish internal project management courses to learn more about cooperation issues. An understanding of cooperative power can reduce organizational challenges.

For companies running large global projects

1) Implement a global project management support organization.

2) Establish and implement a global strategy, following the global framework suggested.

3) Hire people with RQ (relationship intelligence) or develop the relationship skills of the project team

4) Establish a relationship strategy and two-way dialogue towards the external stakeholders, e.g. the domestic government and authorities.

5) Establish internal global project management courses to learn more about the complexity of running projects in different countries

Ultimately, organizational challenges will still occur, which might stop or delay a project if the organization does not adopt a proactive approach towards managing these challenges.

"Change is the law of life. And those who look only to the past or present are certain to miss the future." John F. Kennedy

7.3   Attainment of research objectives

The key objective was to increase the understanding of organizational cooperation and organizational challenges in the execution of large projects. The findings from this thesis were presented in Fig. 1, Table 7 and in Fig. 16, where different organizational challenges project managers can expect to meet when assigned to large projects were presented. An overall understanding of organizational challenges has through these findings and the literature review been increased, which were the main objectives of the research. The limitations are that these findings might only be applicable to the oil and gas and the building and construction industries, although discussions and presentations have been made to other industries, which clearly recognized these organizational challenges from their own projects. It would be a great honour if another researcher would employ the information presented in Fig. 1, table 7 and Fig.16 as well as the models suggested in this thesis to other industries to further test these findings. The research field related to the organizational side of projects is still in its infancy, and it would be a significant next step if other researchers in the future build on the findings from this thesis and continue the research in this area.

7.4   Last personal words

After completing this thesis, my own sense is that some of these findings and models appear to be so logical that it is possible to wonder why no one else has found this already and more importantly, why the organizations and the industries involved haven't already understood this. Once I had completed my research and answered the questions raised, I must admit that I wondered why it took so long to reach such obvious conclusions. It sounds so simple. Yet, the truth is that organizational topics are clearly very challenging in projects and future project managers and projects actually need my findings and the models from this research to collaborate better.

Coming to that conclusion, I can be proud to say that my personal goals with this thesis have been reached. My research definitely represents valuable new knowledge and understanding for the oil and gas industry and the construction industry, and will contribute to better working environments, less conflicts and more collaborative projects in the future, which is perhaps the most important and a very satisfying result of my doctoral work.

8. Further research

This study provides an enhanced understanding of the organizational side of projects. However, since research on organizational cooperation in projects is in its early stages, further research is still required to provide more empirical evidence on this important topic and this thesis has set the stage for several topics for future studies of organizational cooperation in projects.

Paper 1 addressed the collaborative side of large traditional projects, introducing a collaborative tool model to implement the new concept "cooperative power". However, the question is how generic a model developed for the oil and gas industry really is, and further studies using similar models developed for other industries and in other settings are necessary to answer this question. The next step would be to test the collaborative tool model in other settings to determine how relevant the tool would be for other industries.

Paper 2 addressed the practical challenges of implementing the partnering concept in the construction industry by proposing a practical partnering flower model that outlined the phases of a typical partnering effort and issues to be aware of during each phase. This model, according to the discussions with our informants, should be directly applicable to partnering projects in the construction industry but should be applied in and tested in other projects and countries, allowing for further refinement of the model.

Paper 3 highlighted the challenges of working in global projects and introduced an in-depth elaboration of the main organizational challenges and the relationship management approach needed to reduce these challenges. In terms of further research, because only general organizational challenges across countries and types of projects were found, it would be useful to try to correlate these challenges with project type or specific project conditions (e.g., time pressure, cost pressure, technological complexity, stakeholder complexity, project size, etc.). The paper recommends that there should be further efforts that build on this first attempt at identifying "solutions" to deal with the challenges described in the paper.

Paper 4 focused on the success factors in global projects in terms of what seems to influence the success rate of global projects. The areas identified by the data as most important for global project success were presented in two proposed models for global project management.

The paper also reports insights from practitioners regarding success factors for global project management that will enable a more effective transfer of knowledge between entrant companies and host countries. Clearly, further research is required on knowledge transfer and particularly related to the role of the host countries governments. A logical continuation of this study would be to address a topic that has come up in many of the interviews, which entails the difficulties of handling a demand from the host authorities to employ local industry as suppliers for the project even though these suppliers may have limited expertise or ability to perform to standards. Another issue would be to 'flip' the vantage point of the researcher and look at global projects from the view of the host countries' governments and local supplier industries as a way to understand how global projects contribute to the economy and how countries can best nurture the development of competitive local suppliers.

Paper 5 examined the differences between the organizational challenges posed by large traditional projects and global projects and whilst traditional projects are challenged by organizational interfaces, specifically, the interfaces between different companies and departments such as the operator and contractor, the contractor and suppliers, in global projects it is extremely challenging to manage the external stakeholders, such as the domestic government, the supplier industry and the local authorities. This understanding of global projects challenges was used to outline a framework, which should be tested in other global projects. Further research would also include studying the intelligence required in global projects, RQ, suggested in the paper.

Apart from the findings from the Canadian case study in paper 2, all of findings from this thesis are based on interviews and questionnaires sent to Norwegians only. Further research would include determining if these findings are applicable in other cultures. The findings might also be applicable in industries other than the oil and gas and the construction industries, but this need to be studied further.

Since the papers on global projects studied organizational cooperation from the owner´s view only, further research recommendations include organizational cooperation based on the views from all of the organizations that collaborate in global projects.

The five papers are based on findings from large projects such as oil platforms and buildings. The results might be applicable to smaller and other kinds of projects, but further research would be required.

Further research recommendations would also include sustainability in global projects. Sustainability is an important challenge related to the consequences of the emerging field of global project management. Relevant questions for this study would be how we can develop and execute global projects without compromising the life and prosperity of future generations. Studies on the application of sustainability principles to global project management have emerged only recently and require further research.

A final recommendation would be to build further on this first attempt at identifying "solutions" to deal with the organizational challenges described in this thesis. This could be done by implementing and testing the models and the relationship development process as well as the Pentagon model in real world project situations.

"I don't care whether you're driving a hybrid or an SUV. If you're headed for a cliff, you have to change direction." Barack Obama

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PART 2

INDIVIDUAL PAPERS

10. Papers 1 – 5

Publ. nr	Paper
1	Aarseth, W. and Sørhaug, H.C. (2009) Improving business performance in multi-company projects. Published in *International Journal of Business Performance Management*. Vol. 11, issue 4, pp. 364-382.
2	Aarseth, W., Andersen, B., Ahola, T., Jergeas, G. (2012) Practical difficulties encountered in attempting to implement partnering. Accepted for publication in *International Journal of Managing Projects in Business*, Vol. 5, issue 2/3.
3	Aarseth, W., Rolstadås, A., Andersen, B. (2012) Managing organizational challenges in global projects. Accepted for publication in *International Journal of Managing Projects in Business*, Vol.5, issue 4.
4	Aarseth, W., Rolstadås, A. and Andersen B. (2011) Key factors for Management of Global Projects. Published in *International Journal of Transitions and Innovation Systems*, Vol.1, issue 4, pp.326-345.
5	Aarseth, W (2011). Global project leadership: Managing organizational challenges through RQ. Published at *the Nordic Academy of Management*. 22-24 August 2011.

PAPER 1

Aarseth, W. and Sørhaug, H.C. (Tian) (2009) Improving business performance in multi-company projects. *International Journal of Business Performance Management*. Vol. 11, issue 4, pp. 364-382.

Improving business performance in multi-company projects through "cooperative power"; Presentation of a collaborative tool model

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Abstract

Increasing global competition drives most industries to search for competitive advantages and continuous process improvement. Through a three-year research project we found that the competitive advantage of multi-company projects lies in the ability to make a shift from the competitiveness and performance of the autonomous firm to the competitiveness and performance of the value chain of firms. Nearly all important indicators and measurements of profit and efficiency were linked to the performance of the firm and the traditional business worldview strongly emphasizes competitive power. There is little mention of the flip side of the coin, which is *cooperative* power.

The purpose of this paper is to improve business performance in projects by understanding the concept "cooperative power" and what conditions influence projects organizational problems. As we found no literature on how to practically implement cooperative power, we developed a practical model which companies can use in projects in the future to improve performance. The empirical results are based on an extensive literature study, interviews, project presentations and focus group work in 14 companies.

1. Introduction

Collaborative strategies have been attracting increasing attention as a means to address organizational and political problems (Astley, 1984) (Harrigan, 1985), (Bresser and Harl, 1986) (Carney, 1987) (Bresser, 1988), (Kanter, 1990) (Hardy and Phillips, 1998) but it seems that no research has found a *practical solution to the problems, a model or tool* which can be implemented in projects. It has been stated that relations that cross borders between companies easily lead to conflicts (Vaaland, 2004) and from interviews we found that misunderstandings, mistakes and miscalculations appear in interfaces across company borders. The difficult part is to do something about it! As we found no literature that would help us practically with avoiding these interface problems in projects in the future, we found it necessary to develop a collaborating tool model. Companies can use the model as *a discussion model* in the beginning of new projects and strategic alliances to reduce problems, misunderstandings and conflicts in difficult interfaces.

The paper is organized as follows: We first present the participating companies in the three-year research project. In section 2 we present the literature review, the research question and goal, and section 3 presents the method and research approach. Section 4 gives you the findings from the empirical research. In section 5 we analyze the findings from literature and empirical research, and in section 6 we develop a collaborative tool model as a solution to the problems found in the empirical research. Section 7 explains the model more thoroughly. Concluding remarks with reflections on changes achieved and recommended further research are provided in the final sections (8 and 9). In the appendix part you will find suggestions as to how to implement the collaborative tool model in the future.

Participants

Fourteen organizations participated in the research project regarding organizational problems and how to solve these problems in future projects. The participants were the major oil operators in Norway: Statoil, with 26,000 employees in 33 countries and Hydro, with 25,000 employees in nearly 40 countries, which are now merged into Statoil. Other participants were Aker Kvaerner, Bjoerge Solberg & Andersen, GE Nuovo Pignone, Fire Protection Engineering, Dresser-Rand, ABB Industry, Norstella, OLF, TBL Offshore, KOP Eureka Pump Systems, Fabricom and Vetco Aibel.

The case projects were the oil platforms Kristin and Grane, both located on the Norwegian shelf. Kristin is a semi submersible gas production platform based on a very advanced technological solution for one of the most challenging and demanding Norwegian reservoirs - with high pressure and high temperature. The Grane platform is a drilling and living-quarter platform. As the production module is 11000 tons the project represented a huge challenge during the concept period.

2. Literature review

2.1. Subject areas for which the paper is relevant and limitations

The literature selected for our study was organizational theory on project management, value chains and strategy, collaboration issues and process improvement. There are two reasons for choosing this literature:

1 our research focused on two major projects in the oil and gas industry which live and learn by the project management literature in their day-to-day work.

2 The projects deliver a joint product as part of a value chain, consisting of a development phase and an operation phase.

Normally these two phases are seen as two separate phases, and as can be seen by our results some of the reason why the projects experienced collaboration problems. We therefore chose to look at literature within value chains and strategy as well as collaboration and process improvement. We acknowledge that other theories are relevant, but have limited the subject areas to those mentioned. Findings from the empirical research are very relevant to the oil and gas industry sector and might be relevant to other industries as well, but this is an area that would need further research.

Most competitive industries today work in projects. The Project Management Institute defines a project as "a temporary endeavor undertaken to create a unique product or service" (Project Management Institute, 2004). A project is characterized by being a unique business opportunity with two distinct phases, development and operations, throughout the value chain (Asbjornslett, 2002). As the definitions state, projects are temporary and unique, and includes the value chain. To gain competitive advantage in the long run, effective long-term value is necessary. Michael Porter (1985) said that a firm gains competitive advantage by performing strategically important activities more cheaply, better or more efficiently than its competitors. As suppliers seldom have the competence and strength to deliver on their own and thus have extensive collaborative relationships (Reve and Jacobsen, 2001), the projects value chain naturally consists of a network of companies. Complexity increases in close collaborations (Bititci, Martinez, Albores and Parung, 2004), which represent a major challenge in the design and

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management of collaborative enterprises, especially in defining the boundaries and intensity of specific relationships in a world where multiple relationships exist between the same companies (Fawcett and Magnan, 2002). Projects as such are typically collaborative enterprises where complexity often is a major challenge.

Project management literature views project management as a delivery process (Project Management Institute, 2004) which includes stakeholder management, performance management and value management among other areas. The latter is closely linked to value chain theory, defined as a group decision-making process expected to develop a shared understanding of a complex situation and an agreement on options to solve (Morris and Pinto, 2004). As projects are naturally part of a larger and more extensive value chain, actors *have to* depend upon each other. In a committed relationship the business partners have an enduring desire to maintain the relationship, and it exists only when the relationship is considered important (Moorman, Deshpandé and Zaltman, 1993). Morgan and Hunt (1994) emphasize that providing resources, communicating valuable information, and avoiding taking advantage of the partners are amongst the factors that influence the relationship positively and give sustainable advantages to the collaborating network. From suppliers' point of view, relationships can prove a formidable barrier to entry for competitors. The more processes are linked in collaboration between companies, the more the mutual dependencies and hence the more difficult it is for competitors to break in (Christopher, 1998). As the value chain is a form of strategic alliance (Kim, 2005), network of firms cooperate to achieve their strategic objectives (Child, 2003). Business relations are complex and each interaction "in" the business relation can be perceived as partaking in a continuous stream of activities (Porter, 1985) thus creating internal interdependencies between the actors.

The investment in relations includes institutional and organizational investments as well as investments in persons and networks of persons and in organizations and networks between organizations. These firms are dependent upon the quality of the interaction between their highly competent employees, and the management of interfaces makes the ability to deal with *ambiguities* an important qualification (Johnson, Manyika and Yee, 2005). Flexibility in the forms of resilience (Weick and Suthcliffe, 2001) and agility (Christopher, 2005) becomes important organizational capacities. Resilience is the ability of the organization to protect itself against unexpected errors by detecting them

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in an early phase, while agility is the more proactive ability to meet unexpected needs and demands from other links in the chain.

Ultimately the performance of the value-creating alliance is founded upon complex processes of *co-creation of value* requiring decentred value creation from the participating firms and projects (Prahalad and Ramaswamy, 2004).

Extended firms are often confronted with challenges in the indistinct interfaces between the companies (Vaaland, 2004); relations that cross borders between companies easily lead to conflicts such as organization of work, data precision, work performance, human interaction, physical resources or manpower resources. Examples are unclear interfaces between disciplines and actors; activities performed without updating mutual information systems; weak communication between disciplines; one or more actors wanting to communicate with other actors but hindered by formal obstacles or willingness to circumvent (Vaaland and Haakansson, 2003). Managing these sources of conflicts and being upfront in developing and handling collaboration partners are important in projects and value chains and transaction theory emphasizes the importance of relation-specific investment between business actors to reduce the possibility of conflicts (Williamson, 1985). The extent of such investments decides how strong the business relationship is and solutions reflect how important actors find their project partners. One solution to reduce conflicts and misunderstanding is to sign contracts which create a promise between actors that gives certain rights and duties (Kaufman and Stern, 1988). Relational contracts are most common in the oil and gas industry, and these types of contracts are based on norms of behavior and trust (Haugland, 2003).

To develop and maintain trust, employees in organizations would have to make personal bonds and commitment with other organizations, with these four norms as central in developing trust (MacNeil, 1980):
  1) Solidarity
  2) Mutual gains (win-win)
  3) Flexibility and
  4) Conflict solution

All the four norms are connected with what the companies do – and are willing to do - *beyond the defined job* - to develop and maintain a long-term relationship.

Several studies have analyzed the performance of separate companies versus collaboration as a network, and the common conclusion is that the vast majority measure and manage their own company's performance, which can be inappropriate for the enterprise network as a whole (Waggoner, Neely and Kennerly, 1999), (Lambert and Pohlen, 2001), (Simatupang and Sridharan, 2002). Organizations that fail to understand this will continue to operate in different directions, thus not being able to become a single whole (Barratt, 2004). To manage and coordinate in a holistic frame, organizations need to communicate and handle the entire collaboration and stakeholders with an action-oriented strategy. Organizations must understand who their stakeholders are, and what the perceived stakes are (Bronn and Wiig, 2005), and there is an increasing awareness that making sure everything "works fine" will not be good enough for successful businesses in the future (Lorange, 2002). Building relationships and communicating with stakeholders is becoming more and more important for better performance and is now the responsibility of everyone within the organization (Freeman, 1984). Biong, Lostad & Wathne (1996) present the following examples of collaborating activities:

- sharing information rather than keeping it within your own organization
- joint planning
- active solutions of conflicts and
- sharing of profit, advantages and disadvantages.

To establish and develop an inter-organizational relationship, companies also need to have a "mutual orientation" (Ford, Haakansson and Johanson, 1986). To increase the chances of success for future collaborative enterprises, the synergy model could be used as a collaboration readiness assessment (Bititci et al, 2007). The model consists of four perspectives, i.e. strategic, cultural, operational and commercial, and its intention is to find out how ready the organizations are for collaborating and look at the organizations maturity towards collaboration.

The literature presented shows that there is theory on organizational problems,

collaborating activities and how organizations can find out how ready they are for collaborating, but with no practical tools that would accumulate a solution to the problems we found and as a working method in projects. There is a lack in the literature that we chose to look at more closely, which represents the research question and goal.

2.2. Research question and goal

The 14 companies in the research project all worked with building the platforms Kristin and Grane. Initially they wanted the researchers to study sharing of information and documents in the two projects. In interviews the participants were asked to openly tell about their experience related to the projects and sharing documents with the other companies.

We soon found that both projects experienced collaboration problems and organizational difficulties. Therefore the research question evolved into collaboration issues.

The literature review didn't give us any practical tool to solve organizational problems in projects, which led to the solution we present in this paper: We developed a collaborative tool model, which is a discussion model to be used in new projects.

> " Co-operation seems easy when you say the word. Experience shows otherwise".
>   Manager, Contractor company

To develop this model, we first found what influences collaboration positively and negatively. We wanted to find what conditions influences the culture of the collaboration the most, and the goal was to help finding solutions to collaboration problems. Literature says nothing about what conditions influence the collaboration, how or what the results for the value chain and collaboration would be. We therefore asked the participants to answer the questions: From your company's point of view:

- What influences collaboration in the value chain positively?
- What influences collaboration negatively?

Research question:

What are the most important conditions that influence the collaboration?

- Especially regarding behavior in difficult interfaces?

We found five main areas (conditions) that influence the project collaboration, and these five conditions are presented in the collaboration tool model in figure 1.

3. Method and research approach

The research project started off with the literature review presented in the last section and a kick off with all the different companies in the research project present. The literature review turned out to be a very fruitful endeavor, but is a knowledge base that must be drawn upon with caution. Much of the literature in this field seems to be embedded in the experiences of advanced mass production and retail businesses. The car industry appears to represent the state of the art and the oil and gas production processes and market conditions are rather different. As mentioned we found a lack of research and literature as research says a lot about problem areas in multi-company projects and collaborations but doesn't give any tools or tell us how to practically solve them.

During the kick off, the companies discussed and presented the Kristin platform and the Grane platform from their point of view: the project success criteria and problem areas in the projects value chain seen from different perspectives (operators, contractor and suppliers).

After this introduction to the case projects, the researchers interviewed 45 employees representing nine different companies and positions. The 45 employees were all project workers for Grane and Kristin, representing different views and perspectives. Some of the project workers worked on the projects in the start-up of the project, others worked in the operation phase of the projects. They all represented different positions, from top manager to operation personnel, which were important to the researchers. We wanted to have a picture of how the collaboration process looked from different angles. Then the interviews were analyzed, to find similarities and patterns.

Findings were then distributed for comments by the participants and discussed further in focus group work among the employees to analyze problem areas and develop practical improvements. The results from this focus group work led to the development of a practical collaborative tool model as a solution to the problem areas and for improvements in future projects.

The purpose of choosing these methods was to produce a "total" picture by covering the projects value chain from *different* positions and perspectives. The focus group had a practical perspective. Consisting of experts from different disciplines and different types of actors, the group was asked to explore, reject or develop the emerging research questions that they deemed most relevant.

From the beginning, a typical action research approach was followed. The aim was for researchers to be actively involved, identify shortcomings and develop improvements, for the purpose of improving the performance of the collaboration and processes (Fawcett and Magnan, 2002). It was also an objective that the learning process continued in the industry after the researchers had left the field, which is in line with general action research recommendations (Winter, 1989). Action research has become an often applied research method that has been used in a variety of problems in different organizations and in diverse cultural settings (Elden and Chisholm, 1993).

As the research project evolved, it became clear that bringing about changes would be a difficult aim to achieve. The oil and gas industry is a large and fragmented industry, where changes must be made over several years, and through involvement at all stages. Although there were difficulties in the implementation phase, the involvement of both employees and researchers were exceptional as researchers and practitioners cooperated in finding solutions.

As an important part of the research project was to involve employees, and to reduce the possibility of personal interpretations of the data collected, the researchers checked all data through meetings and discussions with employees. Results were also sent to the industry representatives for their comments. The focus group was established also to discuss the reliability of the data. In addition, focus group was used to broaden and deepen the understanding of the findings.

4. Findings from empirical research

The findings from the empirical research were that mistakes and miscalculations often appear in the interfaces *between and within the 14 companies*. In practically all companies, responsibility and work processes seem unclear in the interfaces, and risks related to quality, cost and time often appeared. The interface problems seemed to occur as both *inter*-organizational challenges, between organizations, and *intra*-organizational challenges, within organizations.

Challenges found in inter-organizational interfaces

- Between project team and operation team.
    - o The operation team would have a huge advantage if involved with the project team at an early stage, but it seldom happened.
    - o The operation team needed information from the project team which were lacking.
- Between operator and contractor.
    - o Operator is dependent upon information from the contractor and suppliers, but the contractor gave too little information.
- Between operator, subcontractors and suppliers.
    - o Contracts were interpreted differently, which lead to conflicts
- Between contractor and suppliers.
    - o Suppliers had important knowledge but were unfortunately seldom asked
- Between different suppliers.
    - o The different suppliers tried to handle the contract more or less alone instead of using knowledge and experience from other suppliers.
    - o Suppliers lacked information from other suppliers.

Challenges found in intra-organizational interfaces

- Between internal departments and units in the companies.
    - o The communication process seemed poor between departments in most of the nine companies.
- Between different process owners within operators.
    - o Process owners gave different, not corresponding, information to contractor and suppliers.

More general: people in the projects claimed that there were very often misunderstandings when they collaborated with other departments, units and organizations than their own. When discovering that no really important and "existential" indicators were linked to the performance of the chain and no Key Performance Indicators (KPIs) were able to function as serious drivers of the behavior of firms relating to the value chain as a whole, we found the results from the interviews understandable but even more disturbing.

Were all the companies and departments only interested in their own point of view?

Who would look after the collaboration, the project as a whole, what the value chain of firms needed to build the platforms?

Our main finding is a general need for change in business worldview both in theory and practice.

> "We have a tendency to forget the whole picture, only wanting to see our own point of view".
>
> Manager, Oil Company.

To understand more about this change in business worldview, we discussed findings in the context of the literature.

5. Analyse

5.1. A need for a change in business worldview

The traditional business worldview is founded on the conception of the autonomous firm. The autonomous firm sets up a delimited and fixed concept of economic interest in which it becomes the basic unit of survival, success, profit and efficiency. The firm is the carrier of interests, and competes with other firms. In practice and ideologically, this traditional business worldview strongly emphasizes competitive power. There is little mention of the flip side of the coin, which is <u>*cooperative*</u> power. As we have seen in the research project this is becoming a paradox – and a challenge - as working in projects mean collaboration more than competition. By using the synergy model presented by Bititci et al (2007) the organizations in the two projects could find out their readiness towards collaborating, and would have knowledge about their own organizations capability to collaborate. The more practical tool as to see the collaborating partners' views and not only ones own organization, a tool that could be applied in the beginning of all new projects and that implements the ideas of "cooperative power", is missing. There is a lack of literature and research about how to solve this paradox: How do we implement the knowledge of cooperative power in new projects in the future? The tool that includes the interest in and respect for the other actors and takes care of the performance of the value chain and not only the performance of our own company, is lacking, and implies a major change in strategic knowledge. As projects are naturally part of a larger and more extensive value chain, actors *have to* depend upon each other. Empirical research pointed in the other direction: there is a conception of each actor as an autonomous unit, which is one of the main reasons why there are so many difficulties and problems in the interfaces between companies and departments. Thinking, living and working according to "cooperative power" would represent a change in attitude and would give the solution to the many mistakes and problems in the interfaces. The boundaries which need to be charted are between *competition* and *collaboration* and between transactions (exchange solely based upon interests) and interactions (relations). What are the *competitive units:* the project´s value chain or the firms?

Ricardo (2001) believed in free competition between firms, which would give incentives for self improvement, but free competition will not give incentives for improvement in a project value chain consisting of 14 companies. If the projects chain

is the decisive competitive unit the answer to the question will certainly underline the fact that collaboration is a precondition for competition. In principle, a firm participating in a value chain does not compete against other firms in the market. It competes through a network of firms against other networks of firms in the market. It is fairly easy to see that this constitutes a major change in the business worldview, reflecting new necessities, possibilities and problems of cooperation, for example:

- What can we do to maintain this relationship? What are we willing to do?
- What kind of resources would be necessary, from all companies involved?
- What kind of information do the others need from us? What kind of information do we need from the other companies?
- How are we going to communicate to be understood by the other companies in the project?
- How can we gain win-win for all companies in the project, not only success for our company?
- How can my company contribute to conflict resolution?
- Are we willing to share risks with the other companies?
- How can we share advantages and disadvantages with the other companies in the project?

All these reflections can represent a possibility – a necessity - or a problem – depending upon how people and companies choose to solve these questions. And attitude is very much part of the solution: the willingness to build strong relationships, inform the partners in the projects and communicate the necessary information to the right people.

Understanding *cooperative* power requires distinguishing between transactions and relationships. A transaction typically has "a distinct beginning, short duration and sharp ending by performance" while a relationship "traces to previous agreements and is longer in duration, are reflecting and ongoing processes" (Dwyer and LaGace, 1986). As cooperative power means thinking collaboration in the long run, companies need to shift between a transaction mindset to a relationship mindset.

Value chains do not only presuppose the crossing of boundaries between internal functions and departments in firms. They presuppose the crossing of boundaries

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between firms. Both were mentioned in interviews as problematic and challenging which probably comes from the fact that the modern business firm has basically been a vertical organization with distinct boundaries between departments and hierarchical levels and the relative shift from firms to project value chains as units of production implies a pervasive horizontalization of vertical modes of organization both inside and between firms (Christopher, 2005). In organizational and structural terms, we are talking about a relative movement from hierarchy to network and *from the autonomous firm to the extended firm*. In the perspective of economical sociology, we could say that a new configuration and combination between interests and relations are emerging (Swedberg, 2003).

In the traditional business worldview, interactions inside firms are predominantly organized by hierarchy, different more or less defined forms of reciprocity and shared values. In the competitive struggle between firms, employees of the same firm have common interests. Interactions between firms, however, are predominantly organized by the perception of interests, supply and demand, negotiations and contracts.

Ideally, interactions dominated by interests are transactions based upon the logics of cost-benefit and calculation. Relations are based upon more complex - and often delayed - forms of reciprocity, and thus they build and are built upon *trust*. In projects value chains, the dominance of interests is challenged by the importance of relations and interviews told us that nearly all important indicators and measurements of profit and efficiency are linked to the performance of the firm. As no really important and "existential" indicators are linked to the performance of the chain, there are no Key Performance Indicators (KPIs) which are able to function as serious drivers of the behavior of firms relating to the value chain as a whole. To evolve into an extended firm, the enterprise has to develop internal and external relations. KPIs for the value chain could be operationalized, thus allowing the articulation of the interests of the chain. As Mead (1972) put it: Each actor has to take the situations of the other actors. Putting oneself in the situation of another implies more than looking at an object from different angles and being able to change perspectives. It also implies the *recognition and respect of the interests and rights of other actors* in their situations. In this situation, project execution strategy will also have to manage investment in relations – both in organizational and personal relations.

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6. Development of a collaboration tool model for multi-company projects

These paradoxes call for practical solutions in projects in the future. Due to the fact that we didn't find any tools or models helping us with solutions, we found it necessary to develop a collaboration tool model to solve the challenges. According to the ISO definition: "a model is a representation of something else..:" (ISO/ANSI, 1994). This means that anything that represents something could be considered a model (Rolstadas and Andersen, 2000). Enterprise modeling is both a concept and a tool that is highly developed at the research level, but where industrial application still holds potential for exploitation (Rolstadas and Andersen, 2000). Fundamentally any enterprise model aims to make people understand, communicate, develop and cultivate solutions to the mentioned business problems (Christensen, Johansen, Midjo, Onarheim, Syvertsen and Totland, 1995) and there are three categories of enterprise models:

- Human sense making and communication
- Computer assisted analysis
- Model development and activation

In our research the purpose of developing a process model was partly to improve communication between actors and to enhance their understanding of each other (human sense making and communication) but most of all to cultivate solutions to business problems (Christensen, Johansen, Midjo, Onarheim, Syvertsen and Totland, 1995). Implementing new process models are necessary for competition. If an organization does not improve, you can be quite certain its competitors will. It should therefore be irrelevant to discuss whether the organization has to improve; the question is rather how much (Andersen, 1999).

In the case organizations it became clear that the projects value chain from the development phase to the end of the operations phase lacked a "control room". We could therefore say that the process tool model developed is *the control panel* (figure 1). The model follows the principles that actors should share information rather than keeping it within own organization, joint planning amongst partners, active solutions of conflicts and sharing of profit, advantages and disadvantages (Biong, Lostad and Wathne, 1996). We could say that is has a practical perspective on accumulated theory.

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Development of the model started out with three discussion topics:

- Which conditions influence the culture of cooperation the most? (A)
- How do these conditions influence the process and the culture of cooperation? What are to be discussed regarding these conditions? (B)
- What are the results and consequences for the value chain and the collaboration? (C)

The main issue related to these questions was improvement of the project performance: the more the actors can help their partners to become successful, the greater the chances they will become successful themselves.

We found that five areas influenced the culture of the cooperation. These five areas are related to conditions the companies felt were lacking and that they would want to be present in the next project:

- A mutual uniform information strategy containing requirements and needs.
- An understanding of collaborating partners goals, success criteria and drivers of cost.
- A discussion regarding handling of contracts and frame agreements.
- A strategy regarding communication practices
- A strategy relating to how to develop good relationships

These five areas were believed to be the most important areas to discuss in projects. *If the projects had a mutual information strategy, if all participants understood collaborating partners goals, if they had common communication practices, focused on developing good relationships in addition to having discussions on how contracts and frame agreements were to be handled in the collaboration, the collaboration culture were believed to have been much better.* The participants therefore strived for a method to implement these areas into new projects and developed a practical collaborative tool model based upon organized dialogue and mapping of stakeholders (figure 1)

The five conditions will be the same no matter what the project is, or who the

companies participating in the project are. As the questions B and C changes according to which companies are part of the project, we found that they need to be discussion topics in each new project and between the collaborating partners in each project. The companies need to discuss them thoroughly every time a new project starts, and with new eyes, depending on which companies is part of the project. This is explained in the next section.

All of the findings from the interviews and the focus groups indicated a need for such a *discussion method* for the collaboration. The method is therefore based on a *practical approach* to be used in projects. The type of collaborative tool suggested (figure 1) is thereby intended to combine realism with innovative dialogues. Ultimately the challenges may not be solvable problems, but may be contained through the use of techniques of systematic stakeholder mapping to develop mutual understanding and to create space for open and innovative discussions (Habermas, 1984), (Habermas, 1987), (Gustavsen, 1992) and (Eikeland, 1992).

7 Explaining the collaborative tool model

The discussion topics (A) and (B) in the collaborative tool model are the result of a mutual desire to start the process of making the shift from the autonomous firm to the project value chain of firms and project partners also suggested discussing consequences for the projects value chain, containing both the development phase and the operations phase (C).

These are the topics that need to be addressed and discussed in new multi-company projects:

> 1 Establish a mutual information strategy specifying what information is necessary.

The strategy process should start by mapping the stakeholders:

1. Who: The enterprises have different stakeholders in the value chain, with different needs for information. Map the stakeholders.
2. When: When is the information needed? It is important that all enterprises have the correct information at the correct time.
3. What: What kind of information is important? What information is important for the operator? What is important for the contractor? What information is important for the suppliers? Reach consensus.
4. Where: Map where the information demands come from. Develop an information hierarchy.
5. Make sure that all stakeholders/enterprises have the same information on the same topic.
6. Make sure the information is correct and transparent. There must be a mutual understanding amongst the enterprises in the collaboration.

There is a lack of information throughout the value chain in the oil industry. We should have more information about each company, and an information strategy across the oil industry, independent on which company you work for.

Manager, Oil Company

2 Understanding of collaboration partners goals

To understand the collaborating partners' goals is important for the collaboration climate in the value chain. The partners should discuss the following:

a) Collaborating partners' goals and success criteria
b) Risks - how are we going to share risks in this project?
c) Discuss drivers of costs and who should be responsible for which costs.

Oil companies, contractor, suppliers all have different strategies and goals, some of them not even remotely similar. To communicate and discuss these strategies and goals, are important for the co-operation climate, to understand each other.

Manager, Oil Company

3 Handling of contracts and frame agreements

The power of contracts is clearly underestimated. Collaborating partners should discuss contractual forms, content of the contracts and frame agreements thoroughly upfront.

> Contracts and frame agreements don't match with the documentation demand and is a huge source of conflict and frustration. It should be easy to do something about it, but no-one seems to care.
>
> Manager, Oil Company

4 Communication practices

The collaborating partner should discuss the following:

What are we going to communicate?

To whom , when and where?

> We aren't good at communicating why we do things. Everyone has to understand why. Exchanging information and communication at earlier stages would definitely make the work situation easier later on.
>
> Manager, Oil Company

5) Develop good relationships

Development of relationships is an important step and the collaborating partners should jointly discuss and define the following:

a) Define the purpose of the collaboration and the performance requested.

b) Establish incentives and mechanisms for better co-operation, such as frequent collaboration meetings

c) It would also be important to agree on what kind of mechanisms will influence the collaboration positively; agree on meetings up front, before conflicts arise.

d) Make sure someone is in charge of organizing and managing the collaboration process, the co-operating mechanisms and frequent evaluation of the process.

> To have discussions and meetings with suppliers regularly, and make mutual decisions along the way, has been one of the success criteria for our project. We discuss important issues before conflicts arise.
> Manager, Oil Company

All these questions must also be discussed in the perspective of the value chain (C) and the collaborating partners should discuss thoroughly the consequence for the value chain.

The implementation of the collaboration tool model is described in appendix 1.

8. Concluding remarks

In this paper we have described how we developed a collaborating tool model to practically implement the ideas of our new concept "cooperative power".

Due to collaboration problems in interfaces between companies and departments, our research question was "What are the most important conditions that influence the collaboration? – especially regarding difficult interfaces" and we found five conditions:

1) Multi-company projects should have a mutual uniform information strategy containing requirements and needs.

2) Every actor should have an understanding of collaborating partners' goals, success criteria and drivers of cost.

3) Collaborating partners should have a discussion regarding handling of contracts and frame agreements.

4) Collaborating partners should have a joint strategy regarding communication practices

5) And finally; there is a need for a strategy related to how to develop good relationships

These conditions are the five discussion areas in the collaborative tool model we have presented.

In general collaborating companies should be putting themselves in the situation of the others, show recognition and respect of the interests and rights of other actors. Each actor has to take the situations of the other actors and start thinking the performance of *the value chain*, which is the main idea of the concept "cooperative power". The concept and the collaborative tool model is believed to help improve the results in projects and collaborations, reduce conflicts and misunderstandings in interfaces between companies and departments and implement an understanding of the necessary shift from the performance of the firm to the performance of the projects value chain of firms.

This is a major change in strategic knowledge and how to act in projects and we found no practical tool in the literature that would accumulate such strategic knowledge.

Therefore the collaborative tool model and the ideas of "cooperative power" represent very important and new theory.

Knowledge about the collaboration tool model has been implemented as part of the course programme Project Management Advanced (PMA) in StatoilHydro, and the model has been presented in the last two programmes. The PMA is a tailor-made course at the master's level, and is designed for project managers and project workers with more than 10 years of experience in StatoilHydro. Participants in the programme were asked to reflect on the need for such a collaborative tool model and there was a joint understanding that the model works as a check list, for reflections and as a frame for fruitful discussions between operator, contractor and suppliers. Bringing about changes would still be a difficult aim to achieve. The oil and gas industry is a large and fragmented industry, where changes must be made over several years, and through involvement at all stages and in several companies, but starting with the giant oil operator is a small step in the right direction.

9. Continuing research

The first logical question is how generic an example of a business process model for the oil companies really is. There is no way of accurately answering this question; further studies using similar models developed for other industries and in other settings are necessary to investigate the question.

One of the clearly important needs for continuing research is to test the collaboration tool model. This will identify changes that must be made and indicate how relevant the tool is to other industries.

The value chain KPIs is also an area which needs more research. Our research has not gone deeper into the different KPIs in the different companies, or the value chain KPIs, and these are areas where more research is definitely needed.

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Figure

A) Conditions influencing the culture of cooperation	B) What needs to be discussed and done upfront	Operator	Contractor	Supplier x, y, z	C) Consequences for the value chain and the companies
Mutual uniform information strategy for the entire collaboration	Establish an information strategy specifying what information is necessary. The strategy process should start by mapping the stakeholders: i. Who: The enterprises have different stakeholders in the value chain, with different needs for information. Map the stakeholders. ii. When: When is the information needed? It is important that all enterprises have the correct information at the correct time. iii. What: What kind of information is important? What information is important for the operator? What is important for the contractor? What information is important for the suppliers? Reach consensus. iv. Where: Map where the information demands come from. Develop an information hierarchy. v. Make sure that all stakeholders/enterprises have the same information on the same topic. vi. Make sure the information is correct and transparent. There must be a mutual understanding amongst the enterprises in the collaboration.				
Understanding of collaborating partners' strategies	Map the following: Collaborating partners' goals and success criteria Risks (sharing of risks) Drivers of costs				
Handling of contracts and frame agreements	The power of contracts is clearly underestimated. Discuss contractual forms and content of the contracts thoroughly upfront.				

Communication practices	Map the following: **i.** What are we going communicate? To whom , when and where?				
Good relationship development and practices	Define the purpose of the collaboration and the performance requested. Establish incentives and mechanisms for better co-operation, such as frequent collaboration meetings. Agree on what kind of mechanisms will influence the collaboration positively; agree on meetings up front, before conflicts arise. Make sure someone is in charge of organizing and managing the collaboration process, the co-operating mechanisms and frequent evaluation of the process.				

Figure 1 The collaborative tool model

Appendix 1

Implementing the collaborative tool model

The collaborative tool model should be implemented in projects in the future and used as a dialogue method for example in a two-day discussion session at a very early phase of new multi-company projects. Future frame agreements and contracts should include the collaboration tool model as a requirement. Contracts and frame agreements could include a sentence which said that … "all project participants are challenged to taking other companies views into account, trying to understand cooperative power and viewing the project value chain as the competitive unit rather than its own firm by acknowledging and using the collaborative tool model actively in new multi-company projects".

As the collaborative tool model is *a dialogue method* to be used in new projects, the sections "operator", "contractor", "suppliers x, y, z" and the section C must be filled out in a joint meeting at the beginning of all new projects. Discussion partners must reflect on each topic and the consequences for the operator (fill in information under "operator"), consequences for the contractor (fill in information under "contractor"), consequences for the suppliers (fill in information under "suppliers") and consequence for the value chain and all the companies (and fill in information under section C).

We would recommend that a neutral process manager should be responsible for running the process.

PAPER 2

Aarseth, W., Andersen B., Ahola T., Jergeas, G. (2012) Practical difficulties encountered in attempting to implement partnering. Accepted for publication in *International Journal of Managing Projects in Business*, Vol. 5, issue 2/3.

Practical difficulties encountered in attempting to implement a partnering approach

ABSTRACT

In this paper we present practical difficulties in attempting to implement partnering. Based on empirical evidence from case studies in Norway and Canada we identified a lack of shared understanding of key partnering concepts, missing initial effort to establish shared ground rules, communication difficulties in inter-organizational relationships and unclear (perceived) roles and responsibilities. In existing partnering literature a large number of construction studies have identified conceptual partnering models. However, studies that describe partnering models to take these practical difficulties into account have not been found and we developed a practical model that outlines the phases of a typical partnering effort.

INTRODUCTION

From the 1990s and onward the construction industry faced strong critique, mainly addressed to its unsatisfactory financial performance and working culture, the latter characterized by conflict and distrust. Several researchers have documented the challenges in construction projects, thus making partnering an attractive approach for more effective collaboration (Jergeas and Hartman, 1994; Abudayyeh, 1994; Latham, 1994; Egan, 1998; Ng *et al*., 2002; Cheung *et al*., 2002; Cheung *et al*., 2003; Zaghoul and Hartman, 2003; Bayliss *et al*., 2004; Yiu *et al*., 2011). Project partnering was suggested to overcome some of the problems hindering both the efficiency of construction work and the quality of the industry's deliverables (e.g. Cowan *et al*., 1992; Abudayyeh, 1994; Egan, 1998). An insight central to project partnering is that price should not be used as the sole dominating criteria for supplier selection, but that the selection of suppliers should take into account how the different firms participating in the construction project can be expected to collaborate. Earlier research has provided support for the concept of partnering by demonstrating that a reliance on practices prioritizing price minimization does not necessarily ensure optimal value for money (Turner & Simister, 2001, Ahola *et al*., 2008).

Research has also devoted attention toward identifying success factors for partnering in projects (Larson, 1997; Chan *et al*., 2004, Lu & Yan, 2007), discussing outcomes that may result from partnering (Cowan *et al*., 1992; Abudayyeh, 1994; Larson, 1997; Bresnen & Marshall, 2000; Naoum, 2003; Humphreys *et al*., 2003; Beach *et al*., 2005) and partnering practices that have been applied in construction projects (Cowan *et al*., 1992; Larson, 1997; Hobbs and Andersen, 2001; Bresnen & Marshall, 2002; Swan & Khalfan, 2007). Furthermore, empirical research has presented models or frameworks describing how to conceptualize or implement project partnering in different project contexts (Abudayyeh, 1994; Crane *et al*. 1997; Crowley & Karim, 1995; Cheng & Li, 2001; Beach *et al*. 2005; Wong *et al*., 2008; Ross, 2009). Research has also focused on identifying or developing tools and practices that may support project partnering (Li *et al*., 2001; Bayliss *et al*., 2004; Vaaland, 2004; Swan & Khalfan, 2007) as well as tools for assessing the applicability of partnering for a specific project context (Lu & Yan, 2007, Meng, 2010).

However, despite the considerable popularity of partnering-related research, contributions that present practical partnering models that can actually be applied in the construction industry are virtually nonexistent. In addition, models presented in literature have generally been developed based on empirical evidence collected from one or two dominant firms involved in a partnering project (such as the owner or main contractor) – as opposed to involving the viewpoints of additional actors that play a slightly less central, yet important role in the partnering project (suppliers).

Case studies in Norway and Canada

This paper is based on empirical findings from case studies. The cases include four construction projects in Norway and one in Canada. The cases in Norway involved nine companies collaborating in these four projects, representing the owner, the contractor, the user, suppliers and sub-suppliers. In these, the owner had made the strategic decision to apply a partnering approach (Fjeldstad, 2004). The primary motivation for applying project partnering was to avoid the traditional costly conflicts characterizing construction projects. Similarly to the UK construction industry, the Norwegian construction industry had been criticized for the high cost of its deliverables, inadequacy of management skills, and severe conflicts in terms of goals among the involved actors (Arge, 2000). As a result of this critique, a clear industry-wide interest toward project partnering has been evident during the recent decade. In particular, the Norwegian construction companies have demonstrated a stronger focus on both the early phases of the project life cycle and conceptual development. However, prior to this study, it was unclear how, in practice, partnering was applied in the projects and whether partnering models presented in the literature could be used in the partnering projects.

The case in Canada was an infrastructure project (building a railway line) and the case companies were the owner, the contractor, the user and suppliers. A partnering approach was initiated for the project, and the companies all committed to achieving the best possible result for the project ("we will be proud of the final project"). Common project success criteria were found in an early phase of the project, and "one project – one team" and a "yes-we can" attitude were two of the success criteria defined. The productivity level and trend in Canadian construction projects are still low compared to other sectors and recommendations from research has been that the industry should be

more service-oriented and have a strong emphasis on communication. This has a significant impact on interactions between firms, increasing interdependencies and the need for a partnering approach (Manseau and Shields, 2005). Still, the partnering concept needs a continuous evaluation and development to ensure a positive outcome.

Our research question was defined as:

RQ: What are the organizational challenges in partnering projects and how can these challenges be addressed to ensure success in future projects?

Based on the answers to the research question, a further and more pragmatic objective of this paper is to introduce an empirically refined partnering model, developed based on both frameworks and models presented in literature and empirical observations in the case projects in Norway and Canada.

Limitations

Partnering has both a legal/contractual side and a management/collaboration side. This paper looks at the management and collaboration aspects of partnering only.

LITERATURE REVIEW

Project partnering

Project partnering has been described as a strategy, or even a philosophy, which implies close collaboration and goal alignment between multiple firms involved in the project (Cowan *et al*., 1992; Crowley and Karim, 1995; Larson, 1997; Halman & Braks, 1999; Bayliss *et al*., 2003; Naoum, 2003; Chan *et al*., 2004; Alderman & Ivory, 2007), long-term trust-based relationships between firms and individuals participating in the partnering project (Abudayyeh, 1994; Crowley & Karim, 1995; Naoum, 2003; Alderman & Ivory, 2007), mechanisms directed at avoiding conflicts during project implementation (Cowan *et al*., 1992; Naoum, 2003; Clay *et al*. 2004; Swan & Khalfan, 2007; Ross, 2009), and mechanisms promoting enhancement of both efficiency and innovation during the project life cycle (Cowan *et al*., 1992; Bennett & Jayes, 1998; Naoum, 2003). Cowan *et al*. (1992) introduced the first holistic model of partnering, and introduced the difference between typical project relationships and partnering:

Typical partnership	Partnering
Limited partnership	Full partnership
Win-lose	Win-win
Adversarial problem solving	Joint problem solving
Independent project teams	Joint project teams
Risk transfer	Risk share
"Develop the case"	No claims
Conflicting objectives	Mutual goals
Process improvement not worth risk	Risk sharing on improvement

In summary, the typical contractor/owner relationship is characterized by win-lose strategies and mistrust, and partnering is based on the realization that the traditional win-lose adversarial relationship between owner and contractor degenerates into a costly lose-lose situation for both parties (Cowan *et al.*, 1992). For the purpose of this paper we accept the Construction Industry Institute's (CII, 1991) much cited definition of partnering as "*a long term commitment between two or more organizations for the purposes of achieving specific business objectives by maximizing the effectiveness of each participant's resources. This*

requires changing traditional relationships to a shared culture without regard to organizational boundaries. The relationship is based on trust, dedication to common goals and an understanding of each other's individual expectation and values". Furthermore, researchers have frequently made a distinction between *project partnering* and *strategic partnering*. According to Cheng and Li (2001), the latter refers to achieving and attaining competitive advantage over the long term, while the former is more focused toward improving performance over the life cycle of a single project. In this sense, the two concepts differ mostly in respect to the time horizon the involved parties are committed to (Beach *et al*., 2005).

The number of construction project claims and confrontations where energy is used in a non-productive manner is increasing and has become a time-consuming and costly element in construction projects (Jergeas and Hartman, 1994; Abudayyeh ,1994; Latham 1994; Cheung *et al*., 2003; Zaghoul and Hartman, 2003; Bayliss *et al*., 2004; Yiu *et al*., 2011). Research studies report that the construction business is characterized by a non-cooperative culture with hostile relationships and conflicting objectives leading to reduced productivity (Abudayyeh, 1994; Cheung *et al*., 2002; Yiu *et al*., 2011). The traditional relationship between clients and contractors has long been identified as a major source of these claims, disputes, and conflicts (Latham ,1994; Egan, 1998; Al-Momani, 2000; Jannadia *et al*., 2000; Cheung *et al*., 2003) which has been used as an explanation as to why partnering as a concept is necessary.

A considerable body of knowledge in partnering literature is centred around the question of which factors can be linked to success in project partnering. It has been argued that success in project partnering is supported by trust-based relationship between participating actors (Arge, 2000; Naoum, 2003; Schaufelberger, 2004), the presence of clearly agreed goals (Bennett & Jayes, 1998; Arge, 2000; Naoum, 2003), open and functional structures for communication (Mohr & Spekman, 1994; Arge, 2000; Schaufelberger, 2004; Chan *et al*., 2004), a compatible organizational culture (Wilson *et al*., 1995), and functional performance measurement and improvement systems (Crane *et al*., 1999; Naoum, 2003; Yeung *et al*., 2007; Yeung *et al*., 2008).

Several articles have shed light on the outcomes that may result from project partnering. The use of project partnering has been linked to favourable changes in several measures that are typical in evaluating the success of a project, including satisfaction of involved

stakeholders, meeting or exceeding project schedules, overhead costs, construction costs, and quality (Cowan *et al*., 1992; Abudayyeh, 1994; Larson, 1997; Bresnen & Marshall, 2000; Naoum, 2003; Beach *et al*., 2005). Furthermore, the use of project partnering has been associated with favourable development in various less traditional, and objective, measures such as: amount of conflicts, safety, public relations, identification of new opportunities, effectiveness, and responsiveness to changing market conditions (Abudayyeh, 1994; Bennett & Jayes, 1998; Alderman & Ivory, 2007; Ross, 2009).

Considerable attention has been directed toward identifying and discussing practices that may be used to facilitate project partnering in different contexts. In particular, many authors have highlighted the central role of the formal partnering frame agreement, i.e., the document that defines the roles and responsibilities of actors participating in the project (Cowan *et al*., 1992; Larson, 1997; Hobbs and Andersen, 2001; Bresnen & Marshall, 2002; Swan & Khalfan, 2007). In addition to clarifying the roles of the actors, the partnering agreement often specifies mechanisms for sharing risk and rewards in the partnering project (Halman & Braks, 1999; Bresnen & Marshall, 2002; Bayliss *et al*., 2003). The role of a dispute resolution mechanism such as a board consisting of representatives from different participating firms has also frequently been emphasized (Cowan et al., 1992; Larson, 1997; Halman & Braks, 1999). Pre-planned partnering workshops, aimed at establishing functional communication and collaboration between parties involved in a partnering project and agreeing on issues central to its success have also been proposed as a mechanism that is important, in particular in the early phase of the partnering project (Larson, 1997; Bresnen & Marshall, 2002; Beach *et al*., 2005). In addition to formal mechanisms, several studies have highlighted the role of emergent or informal mechanisms for facilitating project partnering. Such informal mechanisms frequently emphasized in partnering literature include team building sessions, facilitated teamwork, informal networks, and integrated teams (Larson, 1997; Hobbs & Andersen, 2001; Bresnen & Marshall, 2002; Beach *et al*., 2005).

Models for project partnering

Several researchers have presented models to conceptualize project partnering as a process involving multiple actors. Some of these models have been directed primarily at an academic audience (e.g. Crowley & Karim, 1995) while others have focused primarily on the practitioners (e.g. Cowan *et al.*, 1992). In the following, prominent models for project partnering are discussed, both to highlight their features and to identify differences between them.

Cowan *et al.* (1992) were first to introduce a holistic model for project partnering, encompassing both the conceptual (pre-project) phase and the implementation phase of the project. Their linear model starts with the selection of partners, and then proceeds to bonding the project management team and project stakeholders. During the implementation phase of the project, partnering activities, including joint evaluation, escalation, continuous improvement, and persistent leadership, are purposefully applied to ensure that the partnering project maintains its course. Finally, the partnering project is concluded by identifying lessons learned and reviewing accomplishments achieved in the project. Following the introduction of the model in 1992, Larson has later empirically tested the model with a sample of 291 construction projects and linked several elements of the model to project success variables (Larson, 1997).

Abudayyeh (1994) presented a project partnering model that emphasizes the importance of conflict prevention, development of positive relationships between actors participating in the partnering project, and creating a project-wide culture of working as a single team. The model is initiated with a project contract, followed by clarifying the interest of participating actors in partnering effort. Following this activity, a considerable amount of emphasis is placed on the arrangement of a partnering workshop and creation of a partnering agreement between the parties. Only limited attention is directed toward partnering activities carried out during the implementation phase of the project.

Crowley and Karim (1995) presented a model for project partnering that focuses primarily on the temporary organization set up for the partnering project. This partnering organization leads to the creation of semi-permeable boundaries between organizations involved in the partnering project. Furthermore, the model emphasizes, in

particular, the role of the owner, designer, and contractor in the organization and the dynamic interplay between these actors during the project life cycle. Finally, the model provides insights into the development of inter-organizational relationships between actors involved in a partnering project as this development is described as a three stage process involving: maintaining arm's length distance, merging boundaries, and finally opening of external boundaries.

Cheng and Li (2001) proposed a three phased model for project partnering including the following steps: partnering formation, partnering application, and partnering completion and reactivation. In addition, their model connects the completion of the partnering project to the formation of the next one, making it applicable to both project partnering and more long-term oriented strategic partnering. Furthermore, the model does not strongly emphasize the viewpoint of a single actor (such as the owner), but considers partnering from the viewpoints of all involved actors. The authors, however, provide only limited discussion concerning the partnering practices applied in each of the three phases.

Ross (2009) presented a model focusing in particular on the organization of a partnering workshop with the actors that participate in the partnering project. The model emphasizes, for example, the importance of shared values and the selection of a competent facilitator for the workshop. On the other hand, the model is less geared toward the implementation phase of the partnering project and formal issues such as the project charter.

To summarize, several models for project partnering have been presented in literature. Similarly to the concept of project life cycle (see, e.g., PMBOK, 2008), these models proceed from one phase to the next in a rather linear fashion. In addition, there are models emphasizing, in particular, the importance of the role of the owner (Cowan *et al*., 1992; Abudayyeh, 1994; Crane *et al*., 1997; Ross, 2009), but only a few models emphasize the roles of other central project actors (e.g., Crowley & Karim, 1995), or all project actors in the partnering project (e.g., Cheng & Li, 2001). The models also differ as to whether they address the entire life cycle of the partnering project (Cowan *et al*., 1992; Abudayyeh, 1994; Crowley & Karim, 1995; Crane *et al*., 1997; Cheng & Li, 2001) or are limited to a part of it (Abudayyeh, 1994; Ross, 2009). According to the

authors of these models, they have been developed primarily based on the experiences and involvement with partnering projects and partnering literature (e.g. Crowley *et al.*, 1992). In addition, quantitative surveys have been carried out to evaluate the validity of some of the models (e.g. Larson, 1997; Cheng & Li, 2001).

RESEARCH METHODOLOGY

We have chosen a case study approach for our research into difficulties encountered in implementing a partnering approach. This is partly based on our belief that more research is warranted that follows real-life projects in detail to understand how their partnering efforts fare and which difficulties still exist, despite the knowledge contained in existing literature. Furthermore, we were asked by the projects owners of the case projects to conduct trailing research for the purpose of evaluating the effort and proposing possible improvements. Thus, an opportunity arose where we had access to several case projects from their very inception. As a result, a case study approach was the logical methodological choice.

Regarding the selection of cases, the initial sample consisted of one Norwegian project owner running four pilot projects to experiment with the partnering approach and one Canadian project owner running one partnering project. Although the number of projects in Norway was higher than from Canada, we deemed it important to secure experiences from at least two contexts/organizations. Conducting a cross-context analysis was though not feasible.

Five partnering projects were empirically observed following a qualitative case study approach (Yin, 1994). The primary aim for the empirical observation was to achieve a rich and holistic understanding of how the organizations involved in the projects carried out partnering in practice. In particular, we focused on finding answers to the following questions:

- What kind of organizational challenges had been observed by participating organizations?
- How would the participating organizations suggest these challenges should be addressed in future projects?

Under the Norwegian case organization, Statsbygg, data was collected from the following four large projects:

- The regional state archives in Bergen, engineering of addition to existing buildings, only engineering phase covered, partnering contract with engineering group
- The Oslo district court in Oslo, refurbishment of existing building, total budget 40.5 million NOK (approximately 7 million USD), partnering contract with main contractor
- The Norwegian Institute for Public Health in Oslo, engineering of building new building, only engineering phase covered, partnering contract with engineering group
- The national archives in Kringsjå, new building, total budget 188 million NOK (approximately 33 million USD), target value contract with gain/loss sharing with main contractor

The team of four researchers that collected the data carried out a total of 53 semi-structured interviews based on an interview guide and participated in 19 meetings directly related to project partnering. These meetings were plenary gatherings among the participants, but at the very beginning of the project as well as throughout the execution. The role of the researchers was to act as neutral observers during meetings, and later present and discuss conclusions with the actors involved in the partnering projects to verify the validity of obtained results. In each of the four projects, several organizations involved in the project participated in interviews, meetings and focus group work to evaluate the findings. The informants interviewed were highly experienced individuals that represented leading organizations within the Norwegian construction industry, and possessed prior experiences from project partnering. Table 1a summarizes the characteristics of the four case projects in Norway and empirical data collected to study them.

Table 1 a– Characteristics of the four case projects in Norway

Project	Regional state archives	District Court	Institute for Public Health	National Archives
Location	Bergen, Norway	Oslo, Norway	Oslo, Norway	Kringsjå, Norway
Time period	Started late 2005 – halted by owner prior to implementation phase	Started mid 2005 – delivered early 2007	Started early 2007 – halted by owner prior to implementation phase	Started in 2003 - delivered late 2005
Outcome / success of project	Unknown (project has not been completed)	Successful (according to the owner)	Unknown (project has not been completed)	Successful (according to the owner)
Phases of project life-cycle observed	Initiation, early planning.	Planning and completion phase	Initiation, planning	Completion phase
Number of interviews carried out	8	16	15	14
Partnering project actors represented by interviewees	Owner representative, project manager, assisting PM, legal advisor, main contractor,	Owner, main contractor, user, main architect, electrical contractor, 2 faucet system providers, engineering consultancy, maintenance	Owner, main contractor, project manager, user, main architect, engineering consultancy, electrical design and installation provider, faucet system provider	Owner, main contractor, main architect, engineering consultant, electrical contractor, user
Number of partnering-related meetings attended	3	4	12	0
Themes of partnering-related meetings attended	Objectives, working process, roles and responsibilities, communication climate, fundamental planning assumptions, uncertainty and risks.	Project meetings, specific partnering meetings, interaction development meetings, analysis workshops	Project meetings, specific partnering meetings, interaction development meetings, analysis workshops	-
Project documentation analyzed	Project mandate, collaboration agreement, formal contract, steering document (PM plan), tendering documents.	Project goal document, collaboration agreement, partnering contract, project plan, bidding documents, project meeting memorandums	Project goal document, collaboration agreement, partnering contract, project plan, bidding documents, project meeting memorandums	Project goal document, collaboration agreement, partnering con-tract, project plan, bidding documents, project meeting memorandums

In Canada, the case project was an infrastructure partnering project, where observations were carried out in the city of Calgary. The researcher that collected the data carried out four interviews with key members of the project management team, participated in a one-day workshop plus two ½ day up-date sessions and 10 health checks in addition to update sessions for new team members. The role of the researcher was to act as neutral observer during meetings, and later present and discuss conclusions.

1b) Characteristics of the case project in Canada

Project	Canadian infrastructure project - railway
Location	The city of Calgary, Canada
Time period	Started late 2009, testing will be late 2012.
Outcome / success of project	Unknown (project has not been completed)
Phases of project life-cycle observed	Initiation, early planning.
Number of interviews carried out	Four with key members of the project management team
Partnering project actors represented	Owner representative, project manager, assisting PM, legal advisor, main contractor,
Number of partnering-related meetings attended	Ten health checks
Number of workshops attended	One-day workshop plus two ½ day update sessions
Themes of partnering-related meetings attended	Objectives, working process, roles and responsibilities, communication climate, fundamental planning assumptions, uncertainty and risks.
Project documentation analysed	Project mandate, collaboration agreement, formal contract, steering document (PM plan), tendering documents.

The cases were researched using qualitative methods. Data collected were primarily in the form of statements, observations of meeting behaviour, and assessments of project success. The observed partnering practices and challenges related to partnering were coded to assess similarities and dissimilarities across projects. Key findings were condensed in the form of presentations delivered to project participants to verify their validity and to facilitate the generation of insights and ideas for the partnering model presented later in this paper.

RESULTS

In this chapter, the partnering challenges that were observed in the studied projects are discussed. The challenges that, according to the informants, were hindering the partnering projects from achieving the best possible performance are presented. These results are later in the paper exploited to develop a refined model for project partnering.

Observed challenges in partnering

The organizational challenges in partnering projects can be found in table 2a and 2 b. The interviewees reported of confusion related to roles, responsibility, structure and the partnering *process*. It seemed obvious that the partnering participants did not have the same perceptions or mind-set as to what partnering is, and it soon became evident that many challenges were related to a *lack of* a unified practical partnering model to be used in partnering projects. Together with the fact that none of the partners had the same definition of the term "partnering", there was a clear need for a process model to be followed in partnering projects. We have not been able to locate any such model in existing literature that could have been used to solve the challenges found in our cases.

Table 2a – Results from the four projects in the Norwegian case study

Project	Regional state archives	District Court	Institute for Public Health	National Archives
Observed partnering practices (project initiation)	• Selection of members based on collaboration ability and willingness (in addition to traditional criteria). • Early participation, relation building, common goals, open communication culture • Fun and humour in meetings • On-site inspection with all participants.	Not observed	• Early participation and involvement of all key actors in project initiation • Relationship and goal development meetings • Project goal document agreed and signed by all parties • Open sharing of information • Open discussion of difficult issues	•Early participation and involvement of all key actors in project initiation •Relationship and goal development meetings •Clear agreement on how deficit/surplus is divided between central actors, •Open sharing of information •Open discussion of difficult issues
Observed partnering practices (project implementation)	*Not observed, project not built yet*	• Partnering and problem-solving meetings	*Not observed, project not built yet*	•Partnering and problem-solving meetings •Issues dealt with by searching for constructive solutions • Continuous feedback from contractors to designers about "constructability" of their solutions

Observed partnering practices (project termination)	*Not observed, project not completed yet*	*Not observed, project not completed yet*	*Not observed, project not completed yet*	• Gain-sharing between owner and main contractor, but no gain-sharing among main contractor and sub-contractors
Observed challenges	• Lack of clarity in documents and plans (mix of concepts and words concerning partnering). • Some confusion over roles and responsibilities when altered from the traditional. • Unclear at "the edges" – who was part of the partnering and who was not (e.g. users and inspectors) • Challenges in new ways of working as a team/vocal explanation. • Some challenges in making the team-based decision making work within a traditionally bureaucratic organisation.	• Lacking role definitions within the main contractor • The engineering consultancy did not function properly • Roles and responsibilities not clear • Challenges and un-clarity concerning words (partnering).	• Lack of strong leadership from owner • Lack of a defined problem-resolution process • Meetings consumed resources and were not always carefully planned • Meetings involved up to 35 persons - leading to difficulties in decision making • Roles and responsibilities were not clear to all actors, leading to confusion. • Frequent personnel changes contributed negatively to actors' commitment	• Dependent on actors that understand partnering • Vulnerable to key people leaving the project • Many meetings are time consuming – don't see the reason for relationship building • Some "quarrelling" at the close of the project about details • Main contractor not sharing gains with sub-contractors - very negative

Table 2b – Results from the Canadian case study

Project	Canadian infrastructure project – railway
Observed partnering practices (project initiation)	• Early participation and involvement of all key actors in project initiation • Common goals and objectives established in the project charter • Common focus on the large number of stakeholders • Issue resolution process defined
Observed partnering practices (project implementation)	• Partnering and problem-solving meetings • Issues dealt with by searching for constructive solutions
Observed partnering practices (project termination)	• Not observed (project is not completed yet)
Observed challenges	• Communication • Lack of participation in problem resolution process • Lack of clear roles and responsibilities • Managing stakeholders – poor management of stakeholders (despite a common focus on stakeholders)
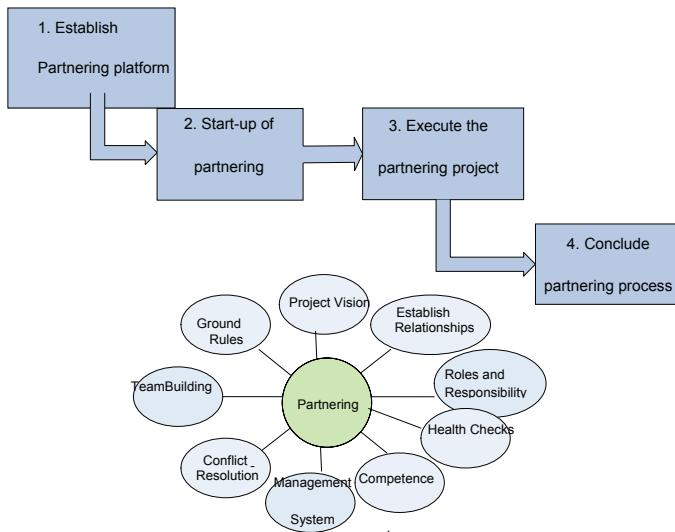
These various difficulties are in themselves interesting findings. Although the case projects were to a large extent pilot projects, where the project owner experimented with the partnering approach, they were based on thorough preparations, study of available literature, learning from UK and Danish projects, and including suppliers with partnering experience. Despite this, they all ran into numerous practical difficulties in implementing the partnering approach, indicating that the existing body of knowledge still lacks more systematic and practical advice on how to design and run partnering projects.

These findings also prompted us to attempt remedying some of this shortcoming by developing a partnering model based on the observed difficulties.

A PRACTICAL MODEL FOR PROJECT PARTNERING

Based on our findings from both partnering literature and our empirical observations, there is a need for a *concise practical model* for project partnering. In this research, an explicit practical model was not found that could have been applied to direct the partnering process. Instead, the presence of an implicit model was uncovered, i.e., mindset and a new way of thinking and running projects, but no formal processes to guide the implementation of the partnering concept in projects.

By addressing the practical difficulties observed in the case projects, we have developed a model for project partnering in the construction industry. We believe it may help avoiding some of the challenges identified in the empirical study. The partnering model places special emphasis on partnering practices that were considered lacking by the informants. Simultaneously, the model directs focus toward areas which, based on our analysis, need improvement. Figure 1 depicts the model.

Figure 1 The practical partnering model; The partnering flower

The model is divided into five main areas:

1) Establish the platform for the partnering approach; documents, contracts and appointments
2) Start-up of the partnering process (meeting)
3) Execute the project based on the partnering process (continual process)
4) Conclude the partnering project
5) Underneath these four phases of the partnering project is a "flower" of items that really apply to all the phases, but whose importance varies throughout the duration of the project

The first part of the model is to establish a good basis for the collaboration. The partnering process is based on a set of contracts, appointments, and documents which define the partnering approach and each actor's role. Documents that affect the partnering approach are involved in the competitive tendering, the contracts signed, and descriptions of the working approach of the project. In all these documents, partnering

should be defined; roles, definitions, and responsibilities. Many of the observed problems in the case projects originated from lacking definitions and lacking shared understanding of the partnering concept. Referring to the "flower" of Figure 1, most attention in this phase should be paid to ground rules, the project vision, and putting in place a management system.

The next step is setting up the partnering process and getting off to a good start. To establish a good foundation for the collaboration in the project, the first partnering meeting is very important. The most important goal of this meeting is to set the entire partnering process on the right track. Who participates in this meeting is of great importance. Key people who will later be actively involved in the project must have the opportunity to participate. Such a meeting should last for a couple of days and the participants should be present through the whole meeting. The meeting requires a skilled facilitator who also knows partnering well. Creating a dialogue between the participants and an arena for discussion is important; a partnering meeting should be a natural arena where dialogue is based on trust and openness, and where participants can raise any topic related to the project.

An important element of the partnering start up meeting is the content of the meeting. Chan et al (2006) refers to Latham's work (1994) from partnering projects in the UK. The important discussion topics are:

- Mutual goal
- The value of partnering
- Critical success factors
- The relationships with the sub-suppliers
- The partners strengths
- Obstacles for success
- Ideas on how to defeat the obstacles
- Ideas on how to get the partnering to function
- The partnering document
- Action plan
- Rules of the game

From Figure 1, the most important aspects in this phase are agreeing on the ground rules, the project vision, establishing personal and organizational relationships, defining roles and responsibilities, and team building.

After the partnering meeting, the partnering process should be established, and the project should then be executed according to the partnering principles. However, people and organizations involved will tend to revert to "the old ways"; the project must be closely monitored to make sure the partnering approach is adhered to. If participants are replaced for any reason, this will influence the entire collaboration and it is extremely important that their replacements are brought up to speed about the project and the state of the partnering effort. In some cases, this might even warrant a less extensive repeat of the start-up meeting.

It is also important to keep in mind that the partnering process is a living "entity" in continuous development, and it needs to be nurtured to function optimally. During this phase, special attention should be paid to the following elements from Figure 1:

- Establish and revise the *project vision*, goals and objectives. Scope of work, risks, important stakeholders and key success factors should be defined as part of this process
- Establish, strengthen and sustain *the relationships*. As part of this process it is important to make sure the relationships with key stakeholders are healthy
- *Roles and responsibility* must be clear, at all times in the process
- *Health checks* must be made regularly, to make sure that the partnering process and the partnering relationships are sound and according to plan
- *Competence*: the partnering project must have access to the right competence and attitudes regarding partnering
- *The management system* should take care of the partnering process and the product
- *Conflict resolution* should be discussed to make sure that conflicts will be taken care of at an early stage

The last part of the model is the closure/end of the partnering process. As the partnering project comes to an end, there are several areas that need to be handled professionally.

One area that caused many difficulties in especially one of the case projects was the sharing of savings compared with the target cost, where an unfair distribution caused several actors to claim that the partnering effort was simply a means to securing cooperative project partners, but later on not sharing the gains jointly created. A careful review of the project is also important, both to improve the next project and to maintain a good impression of partnering as a concept among the participants.

The partnering process and the partnering model is a new way of organizing, running and managing projects that demands not only a change of mind-set, but also a practical model guiding a project in setting up and running a partnering-based project. We do not claim that the model presented in Figure 1 represents a dramatic breakthrough, but we do believe it adds to the partnering body of literature further practical advice that can be utilized by practitioners.

CONCLUDING REMARKS

Through studying five case projects applying the partnering principles, we identified a number of practical difficulties faced by participating organizations; weak partnering platform from lack of shared understanding of key partnering concepts, missing initial effort to establish shared ground rules and interpersonal relationships, unclear (perceived) roles and responsibilities, no pre-defined problem-solving process in place, meetings seemingly held for the purpose of meeting, but without clear agendas and principles for representation, as well as other challenges. These are issues that any organization embarking on a partnering project should be aware of, and we believe these findings in themselves can help projects avoid some of the observed pitfalls.

To further aid future partnering projects, we have also designed a simple model that outlines the phases of a typical partnering effort and issues to be aware of within each of the phases. This model partly builds on earlier work by other authors and partly extends them by adding remedies for observed difficulties. This model, according to the discussions with our informants, should be directly applicable to partnering projects in the construction industry. The model has been presented in this paper, and we would be highly grateful if researchers and/or practitioners in other countries would apply it, test it, and report their findings to allow further refinement of the model.

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PAPER 3

Aarseth, W., Rolstadås, A., Andersen, B. (2012) Managing organizational challenges in global projects. Accepted for publication in *International Journal of Managing Projects in Business*, Vol.5, issue 4.

Managing organizational challenges in global projects

Abstract

Organizational challenges are an underestimated area in projects and when it comes to an in-depth understanding of organizational challenges in *global* projects, only a very few studies have been published compared with other project management issues. This article contributes to existing research by presenting organizational challenges in global projects and how they differ from traditional projects. The research is based on a survey sent to 550 project managers and people working in a global environment, data from 246 respondents, and 30 interviews with senior project team members. The results show that the main organizational challenges are managing the external stakeholders *in* the global project; the local government in the country, local content demand, local authorities, local industry, and lack of support from the base organization and management. One of the conclusions is that companies need *a relationship management approach* to managing these challenges in global projects.

Introduction

It has been written many times before; the world has become global. Firms can freely extract and redeploy knowledge to good effect at other locations within their global production network, and spaces of corporate learning are now fully global in scope (Gertler and Vinodrai, 2005). Globalization, defined as a process by which regional economies, societies, and cultures have become integrated through a global network of communication, transportation, and trade (Bhagwati, 2004), is a fact. The hyper-globalists even argue that we live in a borderless world in which the "national" is no longer relevant. The hyper-globalist view of the world is a myth; nevertheless its rhetoric retains a powerful influence on politicians, business leaders, and other interest groups (Dicken, 2007). With globalization come an ever-growing number of global projects; projects that involve individuals, teams, and organizations from diverse cultural contexts (CRGP, 2009).

In this paper, we define global projects as: *"A Global Project is a temporary collaboration between organizations across nations and cultures with the intention to jointly deliver a unique product or service in a complex external context requiring relationship management"*. To date, little research exists on global projects (Orr *et al.*, 2011; Ainamo *et al.*, 2010). A few key publications in this area have been published, e.g., Aaltonen (2010), Binder (2007), Grisham and Walker (2008), but compared with other project management issues, the body of literature is scarce.
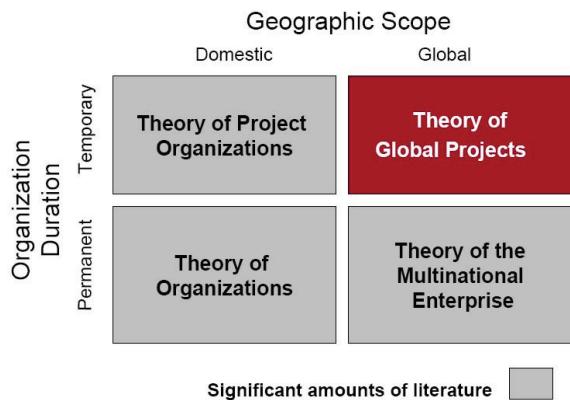
Figure 1 Lack of literature on Global projects (Orr *et al.*, 2011)

The research that has been done so far has focused on salience shaping strategies (Aaltonen and Kujala, 2010; Aaltonen and Sivonen, 2009; Aaltonen *et al.*, 2008), institutional knowledge (Javernick-Will and Levitt, 2010), costs (Orr and Scott, 2008; Baloi and Price, 2003), project business (Artto and Kujala, 2008), cultural issues (e.g. Ochieng and Price, 2010) and planning, organizing and control (Cleland and Gareis, 2006; Binder, 2007). The relevant theories will be presented in more detail in the literature part. Most of the authors have conducted literature studies, bibliometric studies, or have examined a few global projects, whereas no research has been found to have studied a larger number of global projects or questioned a larger sample of project managers and workers in terms of what they experience as organizational challenges in global projects. There is in the literature lacking an in-depth and practical understanding of the organizational challenges in global projects. This paper therefore complements the research that has been done in global projects so far and has two objectives: (1) To study organizational challenges in global projects, compared with those of traditional projects. (2) To define and analyze the main organizational challenges the project team members and project managers meet when assigned to global projects and thereby contribute to a deeper understanding of the organizational challenges in global projects.

Definition of the term global project

The terms global project, international project, and virtual project are intertwined. According to Binder (2007) you can compare the number of organizations and locations involved in the implementation to find out whether the project belongs to one category or the other. In *traditional projects* a large majority of the team members are working for the same organization and in a single location. *International projects* involve team members working in many locations across country borders. *Virtual projects* are composed of team members in different organizations, dispersed geographically. *Global projects* combine the challenges of international and virtual projects, meaning the global project manager would have to deal with cross-cultural and language differences as well as different time zones (Binder, 2007) and these projects are typically carried out in institutionally demanding environments (Aaltonen *et al.*, 2008), for example in politically unstable countries, with unfamiliar laws and regulations, with unfamiliar suppliers involved, and where the local government in many countries require that companies hire local companies (local content demand) in the project. Ainamo *et al* (2010) call a project "global" when it involves key participants that represent national systems separated by great geographical distance and potentially significant cultural and institutional distances, and Orr *et al* (2011) defines a global project as a temporary endeavour where multiple actors seek to optimize outcomes by combining resources from multiple sites, organizations, cultures, and geographies through a combination of contractual, hierarchical, and network-based modes of organization. Compared to Ainamo *et al´*s and Orr *et al´*s definition, our new definition of global projects focuses on the project collaboration and key findings from our study, i.e. the importance of collaborating with and understanding the external environment and relationship management, which is absent in prior definitions.

Since global projects involve collaboration between participants from multiple countries, they face unique challenges that do not appear in intra-national projects; challenges related to differences in work practices, legal regulations, and cultural value (Mahalingam and Levitt, 2007). Interactions among individuals, organizations, and agencies from diverse national backgrounds and cultural contexts, even for technologically routine global projects, often lead to misunderstandings, increased transaction costs, friction between project participants, and coordination and communication difficulties. These in turn also contribute to additional cost and time overruns that are often a significant portion of original project estimates (Orr, 2005). Such costs and risks are non-trivial and are unique to global projects. Also, projects in a global environment are challenging to manage on a daily basis because of the need for

situation-specific attention, on one hand, and the desire for standardization on the other (Hållgren and Söderholm, 2010).

Due to the mentioned differences between traditional project organizations and global projects, preparing for working in global projects would require a different kind of approach, planning, and knowledge than in traditional projects.

Conducting global, international, and cross-cultural business is a mundane reality for most large organizations, but today even medium and small-sized firms have probably experienced globalization (Alon and Higgins, 2005) and the organizational challenges presented in this paper are then a reality for a large number of companies.

Definition of the term organizational challenges

The body of knowledge in organization theory and challenges encompasses a large number of books and articles (Schein 2010; DeFillipi *et al*., 2007; Picard 2005; Al-Sebie and Irani, 2005; Jarrat and Fayed, 2001; Quereshi and Vogel, 2001; Keys 1997; Daft 1992; Hakanson 1990; Mintzberg, 1989) but within organizational challenges *in projects* the body of knowledge is rather scarce (Pinto 2010). Daft (1992) considers the organizational dimensions into two categories; structural and contextual:

Structural dimensions:

Centralization -the extent to which functions are dispersed in the organization, either in terms of integration with other functions or geographically

Formalization - regarding the extent of policies and procedures in the organization

Hierarchy - regarding the extent and configuration of levels in the structure

Routinization - regarding the extent that organizational processes are standardized

Specialization - regarding the extent to which activities are refined

Training - regarding the extent of activities to equip organization members with knowledge and skills to carry out their roles

Contextual Dimensions

Culture - the values and beliefs shared by all

Environment - the nature of external influences and activities in the political, technical, social and economic arenas

Goals - unique overall priorities and desired end-states of the organization

Size - number of people and resources and their span in the organization

Technology - the often unique activities needed to reach organizational goals, including nature of activities, specialization, type of equipment/facilities needed, etc.

When people interact in and across organizations, e.g. in projects, challenges occur related to the areas above, referred to in this paper as *organizational challenges*. By organizational challenges we mean challenges related to internal structures, e.g. routines, procedures and training and/or challenges related to external contextual understanding, e.g. external influences, the cultural and/or political environment.

Limitations
The literature review is limited to research found within organizational challenges in global projects and has looked particularly at organizational challenges in complex projects, as most global projects are complex.

Literature review

From the literature review, we found that managing the external contextual dimensions are challenging in global projects, e.g. managing different *cultures, the lack of a codified approach to the training of people working in multi-cultural environments,* managing *the external environment* (the political, social and economic arenas) and global leadership, i.e., leadership of the different cultures. When studying the challenges in global projects further, the organizational challenges could be categorized into three main areas: cultural challenges, global leadership challenges, and global stakeholder challenges, table 1.

Authors	Findings
Ainamo *et al.*, 2010 Marrewijk, 2010 Ochieng and Price, 2010 Grisham and Walker, 2008 Eberlein, 2008	Cultural challenges, e.g. communication, misunderstandings, different values and beliefs, lack of a codified approach to the training of people to work in multi-cultural environments.
Grisham and Walker, 2008 Binder, 2007 Artto *et al.*, 1998	Global leadership challenges, e.g. managing different cultures and project team members working in different time zones, transferability of management practices due to different cultures.
Aaltonen and Kujala, 2010 Javernick-Will and Scott, 2010 Jakobsen, 2010 Aaltonen *et al.*, 2008 Orr and Scott, 2008 Mahalingam and Levitt, 2007 Floricel and Miller, 2001 Miller and Lessard, 2000 Artto *et al.*, 1998	Global stakeholder challenges, e.g. government intervention in, or regulation of, business, intervention by the parliament, shifts in institutional frameworks, political and economic discontinuities.

Table 1 Global project organizational challenges

Cultural challenges

Most project management research to date has developed extended theories and concepts that de-contextualize projects from their cultural surroundings (Ainamo *et al.*, 2010) which is a paradox as managing different cultures is challenging when working in global projects (e.g. Marrewijk, 2010; Ochieng and Price, 2010, Grisham and Walker, 2010). Culture can be defined as "that complex whole which includes knowledge, belief, art, law, morals, customs, and any other capabilities and habits acquired by man as a member of society" (Tylor, 1871, p.1) and Hofstede (2005), which surveyed more than 116,000 IBM employees in 72 countries through a period of six years on cultures in a global environment, found that culture was more often a source of conflict than of synergy and that cultural differences are a nuisance at best and often a disaster (Hofstede, 2005). The increasingly global nature of construction projects has highlighted the importance of multiculturalism and the new challenges it brings to project execution (Ochieng and Price, 2010). A number of authors, including Ochieng and Price (2010) and Marrewijk (2010), agree that the situation is made considerably more complex for multicultural project teams that are widely separated geographically and that have dissimilar organizational and regional cultures. For example, the loss of face-to-face communication can lead to misunderstanding and the loss of non-verbal signals, such as eye contact and body language, can subsequently lead to difficulty in achieving mutual trust and confidence within multicultural project teams (Ochieng and Price, 2010). This raises questions as to how project managers can go about overcoming the cultural conditions and constraints which define its operation, in order that it can develop more effective communication in the future. Moreover, many of those with experience from working with multicultural project teams have yet to develop skills to cope with such a challenging communication environment (Ochieng and Price, 2010). International project management, and business management, has suffered from a lack of a codified approach to the training of people to work in multi-cultural environments, which is a paradox as there are no shortages of cultural training programs in existence, and certainly no shortage of leadership and cultural theories (Grisham and Walker, 2008).

Global leadership challenges

One of the challenges in global projects is collaboration between companies from different cultures and since the global project company can be a complex network consisting of geographically dispersed organizational units across different cultures, the *management* of a global organization is a significant challenge (Artto *et al*, 1998). The transferability of management theories and practices across national borders and different cultures represent a huge challenge and has become an increasingly debated topic (Binder, 2007; Alon and Higgins, 2005; Bigoness and Blakely, 1996; Black and Porter, 1991; Adler and Jelinek, 1986; Cox and Cooper, 1985; Laurent, 1983). Each dimension of global projects adds a series of global leadership challenges (Binder, 2007), for example 1) number of different organizations, where good leaders keep their eyes and minds open for different perspectives, 2) number of different cultures, where good leaders consider the cultural dimensions to align, motivate, and inspire the global project team 3) different languages, where good leaders find local allies that translate the project vision and constantly communicate it and reinforce it to the local teams, using local languages and expressions and 4) different time zones, where good global project managers plan for shared time, organize co-located team events, travel to meet the team members during key activities, and coach key team members to function as local leaders during all project phases (Binder, 2007). Cross-cultural leadership skills, such as trust, empathy, transformation, power, and communication become necessary to reduce the challenges in global projects (Grisham and Walker, 2008) and the cross-cultural leadership intelligence (XLQ) model can offer a codified structure for helping project and business managers working in multi-cultural environments to assess their cross-cultural leadership skills and improve their performance (Grisham and Walker, 2008).

Global stakeholder challenges

Large engineering projects, such as airports, urban transport systems and *oil fields* constitute one of the most important business sectors in the world and the complexity of such projects have been growing rapidly over the last decades (Miller and Lessard, 2000). These engineering projects also face an increasingly turbulent environment, characterized by turbulence resulting from radical shifts in institutional frameworks, political and economic discontinuities, and a rise in environmental and social activism (Floricel and Miller, 2001). Despite the fact that most developing countries now generally welcome multinational companies, political risk still represent a huge concern for international business. This poses major challenges for the global business community, particularly in terms of accurately assessing these risks, and multinational companies would be wise to prepare for trouble (Jakobsen, 2010). Examples of such risks are government intervention in, or regulation of, business, intervention by the parliament, bureaucracy and/ or judiciary, or fraudulent behavior by domestic businesses which leads to breach of contract, forced contract reviews or project delays to mention a few challenges (Jakobsen, 2010).

Global projects are highly affected by these stakeholders with differing interests and demands (Aaltonen and Kujala, 2010) and face numerous uncertainties related to unknown and unfamiliar environments, differing regulations, norms, and cultural beliefs. This can increase misunderstanding and risks for the entrant firm (Javernick-Will and Scott, 2010; Aaltonen, 2010). Aaltonen *et al.* (2008) define the great risks in global projects as social, political, and cultural risks from the involvement of diverse actors with different objectives, goals, and strategies. The management of *stakeholders* becomes particularly important in global projects. Stakeholders can be defined as "persons or organizations such as customers, sponsors, the performing organization or the public, who are actively involved in the project, or whose interests may be positively or negatively affected by the performance or completion of the project." (PMBOK, 2008, p.23). A typical division is to group stakeholders into internal and external stakeholders (Aaltonen *et al*., 2008). Internal stakeholders are the stakeholders who are formally members of the project coalition and hence usually support the project (Winch, 2004). They are often referred to as primary stakeholders (Cleland, 1998) or business actors (Cova and Salle, 2005). External stakeholders are not formal members of the project coalition, but may affect or be affected by the project. Such groups are often referred to as non-business stakeholders (Cova and Salle, 2005). Stakeholders have varying levels of responsibility and authority when participating in a project and these can change over the course of the project

life cycle. Their responsibility and authority may range from occasional contributions to full project sponsorship, which includes providing financial and political support. The project's success or failure is strongly influenced by both the expectations and perceptions of the stakeholders, and the capability and willingness of project managers to manage these factors and the organization´s politics (Bourne and Walker, 2008).

It is not until recently that the research on projects has expanded to the relationships between firms, by raising the issue of inter-firm projects (Artto *et al.*, 2008; Söderlund, 2004), where inter-organizational relationships are understood as any type of meaningful relationship with stakeholders (Artto *et al.*, 2008). Stakeholders can have an adverse impact on the project objectives and project managers spend the majority of their time communicating with team members or other project stakeholders (PMBOK, 2008). The project communications management plan should therefore involve five stages: identify stakeholders, plan communications with the stakeholders, distribute information, manage stakeholders' expectations, and report performance (PMBOK, 2008). Global projects typically involve multiple stakeholders with different interests and it is therefore critical to understand the interests of these stakeholders and the means through which they attempt to achieve their interests and objectives (Aaltonen *et al.*, 2008). The criticality is related to stakeholders' claims and to deepening the understanding of the strategies stakeholders use to shape their salience and affect the project outcome (Aaltonen *et al.*, 2008). The management of project stakeholders by taking into accounts their needs and requirements are an essential element of project success (Bryde and Robinson, 2005; Cleland, 1986; Diallo & Thuillier, 2005; Olander and Landin, 2005; Olander, 2007). The vast majority of project stakeholder related research has been devoted to understanding *how* to manage stakeholders effectively (Aaltonen and Kujala, 2010; Bourne and Walker, 2005; Chinyio and Akintoye, 2008; Donaldson and Preston, 1995; El-Gohary *et al.*, 2006; Olander and Landin, 2005) and far less attention has been devoted to understanding *who* the stakeholders in global projects are. A lack of understanding of the various interest groups, the drivers of their actions, and their potential to influence during the project life cycle is a major challenge in international projects (IFC, 2007; Miller and Olleros, 2001; Winch and Bonke, 2002). Projects in various countries, which bring together diverse participants in an unfamiliar environment, are exposed to different "institutions" – regulations, norms, and cognitive-cultural beliefs – that can increase misunderstandings, delays and costs (Javernick-Will and Levitt, 2010) and international firms

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encounter unexpected differences that result from working with diverse participants in unfamiliar locations.

With so many different stakeholders from different cultures, adapting the organizational culture, the organizational structure to virtual teams, and the working hours to different time zones, building trust and coping with language differences is challenging in global projects (Binder, 2007). Managing conflicts over distance and providing communication and cultural training (Binder, 2007) would be an important aspect of the global leader's job in global projects. To develop relationships with the stakeholders becomes particularly important. Theories of relationship management and emotional intelligence promote trust as a component in general (Gustafsson *et al*., 2010; Gummeson, 2001; Goleman 1998) and for projects in particular (Gustafsson *et al*., 2010; Smyth *et al*., 2010; Druskat and Druskat, 2006; Hartman, 2000), and building trust can be seen as the "oil in the system" which helps articulate the processes and the relationships that make the processes in projects work effectively (Gustafsson *et al*., 2010).

Existing literature gives a superficial overview of the challenges and strategies to be used in global projects, but very little in-depth understanding about what the challenges practically consist of, as well as *who* the challenging stakeholders are. To find out more about this complex new and highly relevant concept, a survey was developed and interviews with 30 senior global project managers were conducted.

Research Methodology

The research was centered on a case company, a global energy company with comprehensive oil activities in 39 countries, representing most parts of the world. The company is headquartered in Norway, has more than 20,000 employees worldwide, and is listed on the New York and Oslo stock exchanges.

Research method applied and sampling strategy

Choosing a study sample was an important step in this research since it is rarely practical, efficient or ethical to study whole populations (Marshall, 1996) and two different strategies can be applied: a quantitative sampling strategy and/or a qualitative sampling strategy. The choice between quantitative and qualitative research methods should be determined by the research question and the aim of the study (Marshall, 1996). The aim of the quantitative approach is often to answer the more mechanistic 'what?' questions. Qualitative studies aim to provide illumination and understanding of complex psychosocial issues and are most useful for answering humanistic 'why?' and 'how?' questions (Marshall, 1996). The research methods associated with both quantitative and qualitative research have their own strengths and weaknesses (Bryman, 2008) and therefore many writers argue that the two can *and should be* combined within an overall research project, referred to as mixed methods research or triangulation, to draw on the strengths of both. Triangulation - or greater validity - refers to this view that quantitative and qualitative research might be combined (Bryman, 2008) and the essential rationale behind triangulation is that, if you use a number of different methods or sources of information to tackle a question, the resulting answer is more likely to be accurate, you often get a richer and fuller story (Richardson, 1996) and often one of the two research methods is used to help explain or confirm findings generated by the other (Bryman, 2008). In the empirical studies presented in this paper, mixed methods (quantitative *and* qualitative methods) have been applied for the very same reasons. The aim of the study was to both answer the "<u>what</u> are the main organizational challenges in global projects" question through a quantitative study, and then to answer the "why" and "how to reduce the organizational challenges in global projects" questions through the qualitative study.

Quantitative sampling

The aim of all quantitative sampling approaches is to draw a representative sample from the population, so that the results of studying the sample can then be generalized back to the population (Marshall, 1996). The size of the sample is determined by the optimum number necessary to enable valid inferences to be made about the population. The larger the sample size, the smaller the chance of a random sampling error (Marshall, 1996). In our quantitative study, the sampling strategy was to gain a representative population from the project managers and the project team members having experience from global projects. With experience from previous research in the company with response rates of about 50%, it was decided to send the survey to the complete list of employees in a global environment (550 respondents). This eliminated any need for sampling decisions within this population and was expected to produce a data set of acceptable size.

Qualitative sampling

Samples for qualitative investigations tend to be small; due to qualitative researchers recognizing that some informants are 'richer' than others and that these people are more likely to provide insight and understanding for the researcher. Quantitative researchers often fail to understand the usefulness of studying small samples (Marshall, 1996). This is related to the misapprehension that generalizability is the ultimate goal of all good research and is the principal reason for some otherwise sound published qualitative studies containing inappropriate sampling techniques. An appropriate sample size for a qualitative study is one that adequately answers the research question (Marshall, 1996). In practice, the number of required subjects usually becomes obvious as the study progresses. Clearly this requires a flexible research design and an iterative, cyclical approach to sampling, data collection, analysis and interpretation. This contrasts with the stepwise design of quantitative studies (Marshall, 1996).

There are three broad approaches to selecting a sample for a qualitative study (Marshall, 1996):

- *Convenience sample.* This is the least rigorous technique, involving the selection of the most accessible subjects. It is the least costly to the researcher, in terms of time, effort and money, but may result in poor quality data and lacks intellectual credibility.

- *Judgment sample.* Also known as purposeful sample, this is the most common sampling technique. The researcher actively selects the most productive sample to answer the research question. This is a more intellectual strategy than the simple demographic stratification of epidemiological studies, though age, gender and social class might be important variables. It may be advantageous to study a broad range of subjects (maximum variation sample), outliers (deviant sample), subjects who have specific experiences (critical case sample) or subjects with special expertise (key informant sample).
- *Theoretical sample.* The iterative process of qualitative study design means that samples are usually theory driven to a greater or lesser extent. Theoretical sampling necessitates building interpretative theories from the emerging data and selecting a new sample to examine and elaborate on this theory.

In the empirical studies presented in this paper, the qualitative sampling strategy was the judgment sample from key informants. It was important to include experienced project managers with expertise from different global projects in different countries, and the sample size of 30 was chosen after the study progressed and the research question was adequately answered.

Case company and limitations

The case company selected was a global energy company with comprehensive oil activities in 39 countries, representing most parts of the world. As a global oil company, the case company is similar to many other companies in the same sector, and probably also quite similar to other companies operating large projects globally. However, the validity of the results from the study is strictly speaking limited to this one company. We can speculate that they will also apply to other similar companies, but until we or someone else has expanded the study we cannot draw this conclusion, and this is of course the main limitation of a one-company case study.

Data sources

As mentioned, the data sources consisted of both a quantitative survey sent to 550 potential respondents and qualitative interviews with thirty senior project managers and country managers.

The survey was conducted prior to the interviews, from March 9, 2009 until March 30, 2009, to identify the main perceived organizational challenges. The survey was sent to 550 potential respondents, 100 project managers and 450 project participants, working in global projects in 39 countries, having experience from working in 40 different global projects for the case company. The respondents were given a number of alternative organizational challenges to choose from, defined together with expert project management personnel (see research question) and also had the opportunity to write additional information, but were not given any other prior information to obtain objectivity. The number of respondents to the survey was 246, giving a response rate of 44.7%, with experience from the 38 countries shown in figure 2.

Project work experience from these countries
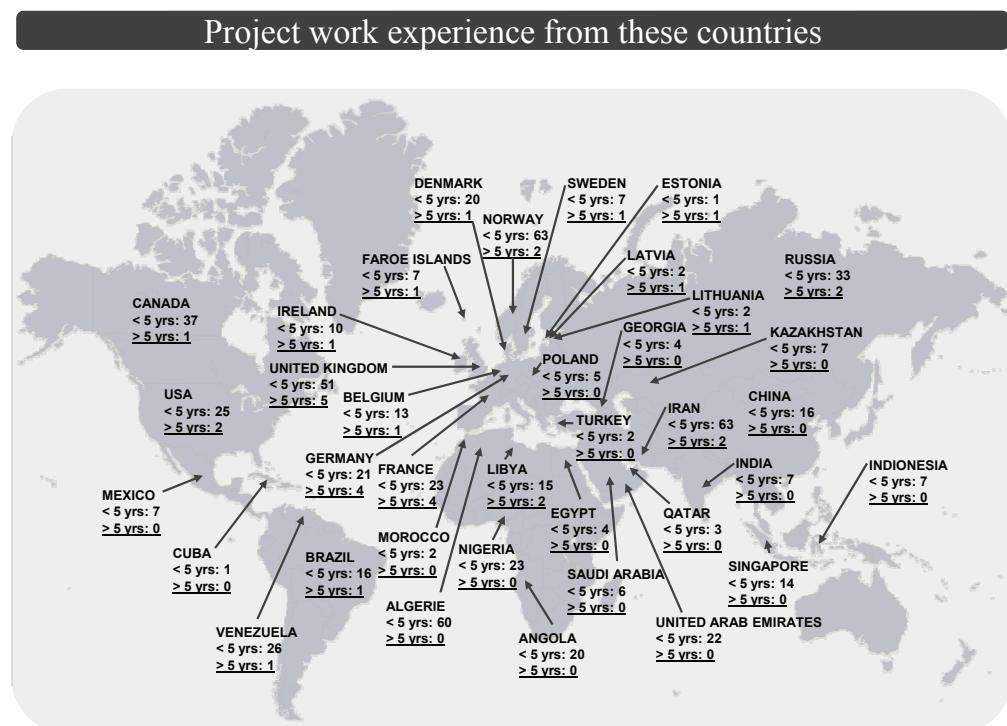
Figure 2 Survey respondents had project work experience from these countries

Several of the respondents also sent private e-mails with attachments and letters where they gave in-depth explanations of what they felt were the organizational challenges in global projects.

Thirty interviews were then conducted to confirm the findings from the survey to obtain a more in-depth explanation and understanding of the challenges found in the survey. All interviews were conducted by the first author, 24 of them face-to-face, four through video, and two interviews by telephone. The interviews lasted approximately 1.5 to 2 hours and were conducted between April 2009 and September 2011. Notes were taken during the interviews, as a basis for an interview report from each interview. The interview response reports were coded according to which challenge they pertained to, and a frequency analysis for the responses was conducted.

Expert project management personnel in the project department in the company also provided extensive secondary data relevant to the projects describing the global projects, background, and project types.

Selection of survey objects and interview objects
The recipients of the survey were selected based on a requirement that they had global project experience, from several global projects and in several countries, to allow us to generalize across projects and countries. Most of these were men, 89.6 %, which is common for expatriates in general (Selmer, 1998; Shaffer and Harrison, 2001; Kupka *et al*., 2008).

When selecting interviewees, we defined the requirement that they were senior project managers or country managers with at least 10 years of work experience in global projects, and that they had worked for several different global projects in many different countries. Many of the interviewees in fact had more than 20 years of experience from global projects.

Respondents to the survey

The 246 respondents had project experience from different types of projects, for example:

g) Projects related to business development:

- Development of new business in "unknown" countries, for example preparations for concession applications as well as to seek opportunities for buy-in
- Evaluation of the markets as well as potential local partners and local suppliers
- People working in these types of projects normally worked in other countries than where the main project was located
- Example countries: Angola, Arab Emirates, China, USA, Russia, Singapore

h) Projects related to exploration:

- For example seismic exploration or drilling
- Ships or rigs contracted with crew in an international market
- The people working in these projects often lived on the ship/rig together with the crew from different cultures
- Example countries: Nigeria, Angola, Venezuela, USA

i) Development projects:

- Development of a gas/oil field onshore or offshore where the case company was operator or was operator on behalf of (or in cooperation with) a national company
- Parts of these projects were often built in a third country
- Example countries: Canada, Algeria, Iran

j) Projects related to preparation for development projects or operations:

- In these types of projects the project and the project team were often localized where operations were planned to take place
- Tasks could also be related to removal of installations
- Example countries: Canada, China, Libya

k) Projects on site (site team):

- These projects were often part of another (large) project in Norway or in another country
- The main project was often a development project or a modification project
- The main task was to follow up on a contractor, take care of interfaces to other parts of the main project, development of new technology or a team sent to follow up on for example a rig that was contracted on a long-term contract with special quality requirements
- Example countries: Singapore, Germany, UK

l) Other projects:
- IT projects
- Market projects
- Small teams often with main work done at home office with one or two persons located on site

Survey questions and interviews

At first a set of survey questions was developed and sent for commenting to a reference group of eight experienced project people in the case company as well as three experienced professors. After four rounds of iterations, the complete survey list of questions and response alternatives were finalized.

The interviews were semi-structured. Interview objects were encouraged to talk openly and honestly about the organizational challenges their project organization had faced in global projects. These interviews started out with open-ended questions. Most of the interviewees donated more than the time scheduled and shared willingly of their experience, which in most cases comprised 20-30 years of experience in global projects. The interview objects were selected from the list of survey respondents. They were told to give their own response as to what was most challenging (the survey results were not revealed to them), and an explanation why they found this most challenging. They were asked the following questions:

- What do you find most challenging in global projects (organizational challenges)?
- Elaborate more on these challenges: explain more thoroughly what these challenges consist of and why they occur
- How can these challenges be avoided in the future?

The people interviewed gave in-depth explanations of what the organizational challenges represented, and these results are presented in this paper.

An extensive literature study was conducted starting from day one and until the interviews were finished, to make sure the latest research were at hand.

Data Analysis

The responses from the survey were analyzed using Statistical Package for Social Sciences (SPSS). A principal component analysis was undertaken to compile the results into the main areas presented later in this paper. A principal component analysis is a data reduction method similar to factor analysis (Preacher and MacCallum, 2003). Since the number of variables in the survey was so high, the principal component analysis was used to reduce this. The rotation chosen was direct oblimin rotation, since in the social sciences the expectation is generally some correlation among factors. *Behavior* is rarely partitioned into neatly packaged units that function independently of one another (Costello and Osborne, 2005), which is the reason why direct oblimin rotation was used in this case.

Research question

The survey comprised several questions, but regarding organizational challenges the research question was:

RQ What are the main organizational challenges in global projects, and how challenging are these areas in global projects?

Several areas were listed: Handling cultural differences in the local society, handling cultural differences in the business society, handling local content, negotiations with vendors, handling local authorities, participating in and leading multi-national teams, handling different religions, building a social network with local people, gaining respect and trust in the local community, managing contract work with local vendors, handling site teams' personal issues/ challenges, handling local employees in a site team, dealing with a site team or employees with "difficult" attitude, mobilizing trained personnel, handling local and national media, handling local and national authorities, handling local politicians and political parties, dealing with environmentalists, telecommunication, and infrastructure, handling economical questions, support from management and basis organization in Norway, dealing with ethical dilemmas, corruption, and complying with local laws. The respondents could also write their own alternatives. The scale was from 1 to 5, were 1 represented "not challenging" and 5 was "very challenging".

Research Method Critique

The method employed has both strengths and weaknesses. Strengths are that the survey has a large number of respondents, 246 in total, the responses were used as a basis for interviews, and the findings were confirmed in the interviews. Also, many of the interview objects had 20-30 years' work experience in numerous global projects all over the world, which gave a solid basis for the interview results. A weakness is that the model presented might fit only one single industry (oil and gas) and it must therefore be tested in other industries. Given that the interviews were based on personal experience, the results rely on each person's interpretations.

Survey Results

The result of the principal component analysis showed that the organizational challenges could be divided into six main areas, see Table 1. From these six areas, it also emerged that the stakeholders could be classified into external stakeholders *in* the project, external stakeholders *outside* the project and internal stakeholders in the project.

	Mean	Std. Deviation
Q8_F1_mean Challenges related to internal stakeholders in the project team	2.96	.74
Q8_F2_mean Challenges related to external stakeholders in the project team	3.61	.80
Q8_F3_mean Challenges related to external stakeholders outside the project	3.06	.97
Q8_F4_mean Challenges related to external requirements from outside the project	2.93	1.04
Q8_F5_mean Challenges related to organizational support	3.49	.74
Q8_F6_mean Challenges related to external stakeholders in the local community	2.91	.86

Table 1 Challenges in global projects

From Table 1, one can see that managing the external stakeholders in the project team is the most challenging (mean 3.61), followed by challenges related to the lack of organizational support (mean 3.49). When choosing alternative answers to the research question, already well-known challenges in global projects were chosen as alternatives, and the expectation was that there would not be significant variances in the results. Still, these mean values, although not reaching the end-points of the scale, are significantly greater than the mid-point, and strongly indicate that these issues are seen as highly challenging.

The reliability of the results is shown in table 2a - 2f.

Scale: F1

Reliability Statistics

Cronbach's Alpha	N of Items
,866	6

Item-Total Statistics

	Cronbach's Alpha if Item Deleted
Q8_1 Handling cultural differences in the society	,834
Q8_5 Participating in multinational teams	,826
Q8_6 Leading multinational teams	,845
Q8_7 Handling different religions	,860
Q8_14 Handling local employees in site team (with different culture)	,836
Q8_22 Handling economical questions	,857

Table 2a

Scale: F2

Reliability Statistics

Cronbach's Alpha	N of Items
,801	5

Item-Total Statistics

	Cronbach's Alpha if Item Deleted
Q8_2 Handling cultural differences in the business culture	,762
Q8_3 Handling local content	,775
Q8_4 Negotiations with vendors, customers, local authorities etc	,738
Q8_11 Contract work with local vendors	,769
Q8_18 Handling local and national authorities	,768

Table 2b

Scale: F3

Reliability Statistics

Cronbach's Alpha	N of Items
,815	3

Item-Total Statistics

	Cronbach's Alpha if Item Deleted
Q8_17 Handling local and national media	,724
Q8_19 Handling local politicians and political parties	,713
Q8_20 Dealing with environmentalists	,798

Table 2c

Scale: F4

Reliability Statistics

Cronbach's Alpha	N of Items
,836	4

Item-Total Statistics

	Cronbach's Alpha if Item Deleted
Q8_12 Official requirement to hire local vendors	,853
Q8_24 Dealing with ethical dilemmas	,782
Q8_25 Corruption	,760
Q8_26 Complying with local laws	,761

Table 2d

Scale: F5

Reliability Statistics

Cronbach's Alpha	N of Items
,371	4

Item-Total Statistics

	Cronbach's Alpha if Item Deleted
Q8_13 Handling site teams personal issues (having their family with them or employees having problems back home	,054
Q8_15 Dealing with site team or employees with "difficult" attitude	,302
Q8_16 Mobilize trained personnel (locally and globally)	,341
Q8_23 Support from management and basis organisation in Norway	,444

Table 2e

Scale: F6

Reliability Statistics

Cronbach's Alpha	N of Items
,841	3

Item-Total Statistics

	Cronbach's Alpha if Item Deleted
Q8_8 Building a social network with local people (social mingling)	,867
Q8_9 Gaining respect and respecting the local people	,687
Q8_10 Gaining trust and trusting the local people	,776

Table 2 f

As a rule of thumb, professionals require a Cronbachs Alpha of 0.70 or more to rely on the results and the higher number the more consistent the results (Loewenthal, 2001; Zeller and Carmines, 1980). The results of the factors F1, F2, F3, F4 and F6 show Cronbachs Alpha well above 0.70 (table 2a, 2b, 2c, 2d, 2f). As the results of the F5 factor (table 2e) showed a Cronbachs Alpha of 0.371, interviews were conducted to confirm the findings from the survey, which is rather common (Zeller and Carmines, 1980).

The challenging areas encompassed several variables, as presented in figure 3. A more thorough explanation of these requirements and challenges is presented in the next part of the paper.
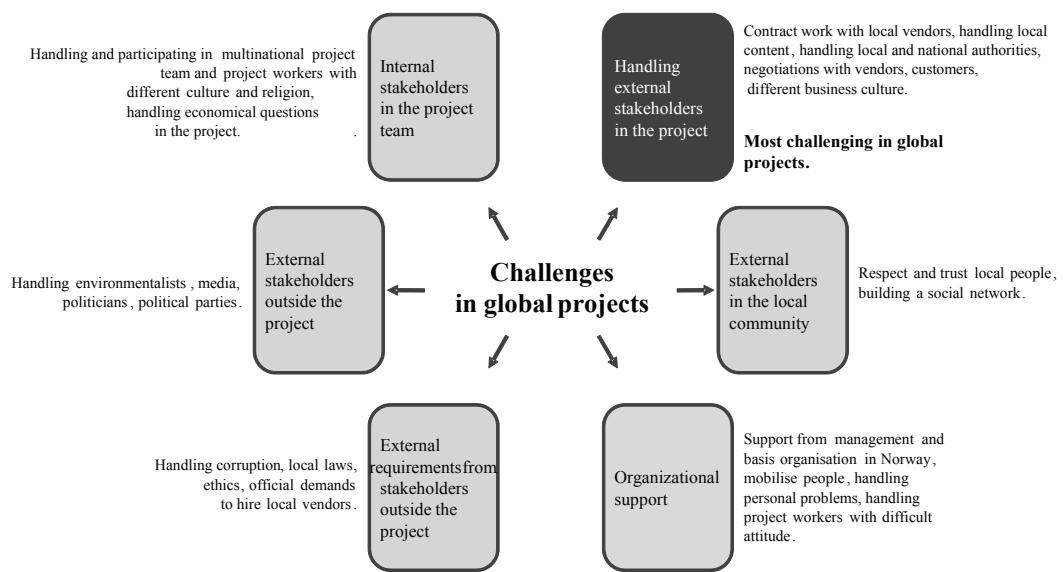
Figure 3 The Global challenge model (GCM model)

Discussion

The two main organizational challenges that scored highest in the survey were managing the external stakeholders in the project and lack of support from base organization, and the interview objects gave in-depth explanations of these challenges. Under this heading, we will discuss the two challenges, and the main purpose of the discussion is creating an understanding of the challenges faced by these project managers and participants in the global projects, but where relevant we also try to point to recommendations on how the challenges can be dealt with.

1) Managing external stakeholders *in* the project

The external stakeholder challenges found in our study are in line with Floricel and Millers and Jakobsen's findings presented earlier (Floricel and Miller, 2001; Jakobsen, 2010), and echo the message of the body of literature on stakeholders; relating to and managing the expectations of external stakeholders are difficult tasks. In global projects, especially with the background setting often imposed in large engineering projects such as oil and gas projects, these challenges are further exasperated. The networked business construction discussed by Artto *et al.* (1998) appears clearly in this context, as the case company normally enters into a joint venture with a national energy company in the country. This national energy company in turn faces a demand for "local content" from the local government. Typically the local content demand consists of a requirement to hire at least 70% of the work force in the project from domestic industry in the country, thus creating a setting where voluntary and partly imposed actors from different countries and cultures must work together to carry out the project. This is a very good example of the situation described by Aaltonen *et al*. (2008), where involving various actors pursuing different social and political goals creates social, political, and cultural risks. This composition of the project coalition, with enforced local actors, creates a number of issues:

- Selecting the suppliers: The experience from many such situations has shown that the local suppliers often do not have the competence required to undertake the assigned tasks, made worse by some of them simply not even realizing that this is the case. When making the selection, the international case company is usually presented with a list of pre-qualified, national suppliers, and the final selection of suppliers must be approved by the local government (and not including the required volume of local contributions must be extremely well justified).

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- Training the suppliers: After selecting local suppliers, the local government requires that the case company make sure that the local suppliers are qualified, for example through training or partnerships with other companies that can deliver the required competence that the local company lacks. This is of course an additional investment required simply to get the project sanctioned, and can also involve aiding local suppliers in establishing a quality system, develop contract management skills, setting up or financing local training facilities, etc.
- Avoiding the local content demand: Understandably, with the complexity of qualifying local suppliers, it seems easier to try to avoid fulfilling the local content demand.

Having passed the hurdle of composing an approved project team, the expected challenges arise when executing the project in this setting of many external stakeholders (e.g. government intervention, new rules and regulations imposed by domestic authorities, influence by the domestic businesses) that all want influence and decision power in the project and is the result of a gradual shift in the relative bargaining power of the host country and the multinational (Jakobsen, 2010; Jakobsen, 2006; Wint, 2005; Ramamurti, 2001). As described by Javernick-Will and Scott (2010) and Aaltonen (2010), the results are conflicts and misunderstandings. These often stem from different business cultures; how they think of the contract, how they think of progress, how they think of payment, etc., as well as general cultural differences. Some of the latter revolve around the differing perspectives on time, task-orientation, communication styles, negotiation and decision-making, etc. (see Kluckhohn and Strodtbeck (1961), whose work preceded that of Hofstede in describing national cultures). One of the interview objects gave a good example on the importance of communication and relationship building towards the external stakeholders:

Communication, building trust based on equality, values, listening and being humble, are important personal qualities in a global project. If you are not able to build trust and relationships you will not be able to do anything in the country, and your global project will fail completely.

In addition, it is challenging to understand the rules and regulations in the new country. Most of the interviewees mentioned preparation and knowledge as important; to understand the rules in the country, to get an overview of who are the local suppliers, the industry in the country and in the region, the government; get to know them and what are their expectations, and the procedures and systems in the country; to understand these, and find out whether or not there is alignment with your organization's standards. One of the interview objects exemplified the authority and government challenge with the following description:

Rules and regulations coming from authorities can be changed overnight and government interventions highly influence our global project all the time. Particularly if you do not know the right people and have a relationship with the authorities and government in advance, and they don't know you and trust you.

Being normative for a little while, an emerging understanding concerning the local content challenge from the domestic government seems to be that instead of trying to find a way of avoiding it, international entrants would do better by developing a strategy for managing the local content. Instead of viewing it as a burdensome requirement to preferably be shirked, a long-term approach to aiding the development of both a local supplier industry as well as governing institutions will make future projects easier to accomplish.

Our findings also show that not only are these external stakeholders business stakeholders, who directly benefit from the project, they also have the power to stop the project, which makes the external stakeholders in global projects primary stakeholders. With a few exceptions (e.g., Clarkson, 1995) primary stakeholders are usually defined as internal stakeholders and as being most important because they engage in economic transactions with the business (for example customers, employees and shareholders (e.g., Bidanda *et al.* in Cleland and Gareis,2006; Cleland, 1998; Calvert, 1995; Savage *et al*., 1991). The external stakeholders are usually defined as the *secondary* stakeholders and are often those who are affected by the project or can affect its actions, e.g., the general public, the local government, communities, activist groups, business support groups and the media (e.g., Bidanda *et al*. in Cleland and Gareis, 2006; Savage *et al*., 1991). In previous literature, the local and national government are defined as the group who require *minimal effort*, and a public relations

approach to this group will often suffice (e.g., Winch in Morris and Pinto, 2004), which highly contradicts the findings from this empirical study. Clarkson (1995) argued that primary stakeholders include the public stakeholder group, e.g., the local government, which is in line with our findings. Due to the local content demand, the external stakeholders (e.g. the domestic industry in the country, the government and authorities) make a lot of money for their company and country. If the project management in the global project does not have a good relationship with these external stakeholders and they trust the global project company and team, the project can be stopped, or heavily delayed at best.

2) Lack of Support and understanding from the base organization

The second main challenge is related to the lack of support and understanding from base organization and management. After studying the interview results, this challenge can be further divided into four sub-issues: a) knowledge and understanding, b) unclear roles and responsibilities between the base organization and the global projects c) lack of support and d) lack of a globally communicated strategy. For sub-issue a, knowledge and understanding, there seems to be lacking a global approach to projects. The case company's approaches and procedures in a global project are based on the Norwegian headquarters' way of doing things, with people working in global projects realizing that those procedures are very often not suitable internationally. This reflects a lack of understanding "at home" of how global projects must be run.

The lacking central knowledge about global projects is made worse by sub-issue b; unclear roles and responsibilities between the base organization and the global projects. One of the interviewees exemplified this by the following statement:

People from 55 different departments/staff/corporate staff in our company (the case company) were involved in our project during my 2 years there. How can this be possible?

These seems to be much confusion about who should perform progress reporting, analyzing cost deviations, HR follow-up of expatriates in global projects, etc. Adding to this is a sense of lack of support, sub-issue c, on the part of people involved in global projects. Global projects often have a higher frequency of personal problems and family conflicts than in traditional projects, introducing a greater need for HR support. Instead, there is less such

support, as the HR resources are mainly located in the central headquarter and lack an understanding of the global project challenges. All of these sub-issues are related to the last one; lack of a strategy for global projects. While the company has a clear strategy to become a global company (with the Norwegian oil and gas reserves on the decrease), a global project strategy seems sorely missing. Because of this, no guidelines exist on how to deal with local governments and suppliers, expatriation problems, etc.

This misalignment between the home organization and the global ventures, and the lack of knowledge and support from the base organization, thus leads to or increases the inherent difficulties in global projects. Through the interviews, some remedies that might aid in reducing these problems emerged, with some relevant ones being:

- Ensuring that the base organization has first-hand knowledge about global projects and how they differ from national projects. This is probably easiest achieved by rotating people between tenure at home and participation in global projects.
- Clearly delineating the responsibilities between the base organization and the global project organizations.
- Considering establishing a local resource/support office in locations where a longer-term presence is expected, with resources available to offer support and not only function as dedicated resources in projects in the country. Staff from both corporate communication and HR would be required in such a support function, including people with knowledge in global projects.
- Preparing expatriates for global project tenure in terms of issues of local culture and practicalities etc.
- Extending the globalization strategy to encompassing also a global project strategy, to ensure alignment between the base organization and top management on one hand and the projects on the other. This strategy could help resolve some of the challenges faced by the projects concerning local, external stakeholders like the domestic government, the authorities, the local businesses, as well as striking the difficult balance between home and the global project.

Discussion Traditional projects versus global projects

In our studies we found that managing the organizational challenges in traditional and global projects need different management approaches (figure 4). The professional organizations in Project Management today, such as the *Project Management Institute* (PMI) and the *International Project Management Association* (IPMA), are promoters of *the standardization* of project management (Söderlund, 2004) and professional associations all over the world are introducing ever more project management standards (Thomas and Mengel, 2008). In traditional projects in the company's home country, where the project team knows the government, the industry, the authorities' regulations and the supplier industry, the organizational challenges can be managed by a standardized task oriented approach, e.g. PMI, focusing on the task and the technical solutions. Further, in complex multi-company projects, traditional projects organizational challenges can be managed with a focus on the interfaces between and close cooperation with the internal stakeholders (described as ´cooperative power´), e.g. the project team, the client and the project suppliers (Aarseth and Sørhaug, 2009). In global projects on the other hand, with a complex external environment, unknown external stakeholders, e.g. government, authorities or the domestic businesses, a relationship management approach is necessary to manage the organizational challenges. Even in global projects with few actors, to sustain the relationship with the domestic government and the authorities is important; because they intervene in the contract, establish new rules and regulations overnight, which leads to delays or can even stop the project, see figure 4.

Interface and internal stakeholder approach, e.g. the project team, the client and the suppliers.	Relationship management approach Build relationship and trust early with the external stakeholders e.g. the domestic government, the domestic authorities and the domestic industry.
Task oriented approach.	Sustain relationship with the domestic government and authorities.

Traditional project in home country — *Global project*

Complexity Low: Few actors, known environment

Figure 4 Traditional project approaches versus global project approaches to managing organizational challenges

In inter-organizational cooperation literature, such relationship management strategies are proposed as the opposite to standardization (transactional) strategies (e.g., Biong and Nes, 2009; Kothandaraman and Wilson, 2000). Several relationship strategy models have been introduced, most of them to engage customers and suppliers in long-term relationship in traditional businesses (e.g., Biong and Nes, 2009; Kothandaraman and Wilson, 2000) but from the findings in our empirical study, we now propose implementing a relationship management strategy also in global projects. The framework of relationship strategy implementation argued by Kothandaraman and Wilson (2000) and Biong and Nes (2009) presuppose *a commitment* by key functions that support the delivery of value to the relationship, and are built on the foundations of trust. A successful implementation requires that the functional departments need to become more flexible and move to a framework of trust and commitment in their dealing with members of other parts of the organization, e.g., the projects and the project management team. It also becomes important that the managers, e.g., project managers, have a positive relationship orientation, a positive attitude toward cooperation and trust and believe that it is all right to be dependent on other actors

(Kothandaraman and Wilson, 2000; Biong and Nes, 2009). Such internal factors, but also external factors; e.g., flexibility, information exchange with the external stakeholders and solidarity, are fundamental to ensure alignment in the organization and to successfully implement a relationship management strategy (Kothandaraman and Wilson, 2000; Biong and Nes, 2009). Biong and Nes (2009) even propose a practical relationship development process, where the main ideas behind the process is to strategically and systematically develop, maintain and manage *a two-way dialogue* with the external stakeholders, establish two-way incentives and mechanisms for the relationships and organize, control and evaluate the relationship process (figure 5).

**Relationship management
Develop, maintain and manage stakeholder relationships**

STEP 1
- Define the relationship plan -
- possible results of the relationships

STEP 2
- Choose stakeholders

STEP 3
- Establish incentives and mechanism for the relationships

STEP 4
- Organize and control the relationship management plan

STEP 5
- Evaluate the results and the process

cf. Biong and Nes, 2009

Figure 5 The relationship management development process (Biong and Nes, 2009)
Proper use of the relationship management development process (Biong and Nes, 2009) requires *active* participation from the project management team, means and measures, action plans and who are responsible for the follow up of the action plans. This model is believed to reduce the organizational challenges in global projects, but needs to be researched further.

Organizational challenges are clearly underestimated

Management of projects is now the dominant model in many organizations for strategy implementation, business transformation, continuous improvement and new product development (Winter *et al*., 2006). The directions for research in project management for the future and issues facing both researchers and practitioners now seem to be well *beyond the hard systems perspective* (Winter *el al*., 2006). Winter *et al* (2006) found that one of the main research directions for project management in the future is a need to look at the interaction between people, the practices, the stakeholder relationships, politics and power, and to help practitioners actually deal with this complexity in the midst of practice (Winter *et al*, 2006). Morris and Pinto found the same need and suggested to expand PMBOK to include a number of new topics, including organizational issues, people and relations management (Morris and Pinto, 2004). They pointed to research from existing data on project overruns from 3,600 projects, where traditional project management from PMBOK turned out to be *insufficient* to ensure project success and that there will be a growing need for project managers who can look beyond the internal processes of their projects to the *organizational contexts* in which projects must be managed. Pinto emphasized how important organizational issues are by presenting this topic as the first chapters in his new book (Pinto, 2010). Still, PMBOK is focused on scope, quality, schedule, budget, time and resources and very few organizational topics appear in PMBOK 2008.

The organizational challenges found in our studies are therefore clearly underestimated areas and have not been taken enough into account in e.g. PMBOK nor project management literature. Though PMBOK has a few of the challenges mentioned, e.g. project communications management and project human resource management, organizational theory has not been taken enough into consideration in project management literature to the degree needed. Project executions rarely fail due to technical problems, but very often due to poor leadership or conflicts. Existing project management literature focuses on systems, planning, organizing, control, processes and procedures, PMBOK being a good example and very little project management literature to date can be found about managing organizational challenges, communication and relationship building, though the great importance in projects. The body of knowledge in project management is concerned with the technical and task-oriented side of project management, e.g. building an oil platform is a technical task. Both the project communications management chapter in PMBOK and the project human resource management chapter, are structured task oriented approaches to communication and human

resource management, and seem to forget that we are talking about human beings and behavior, which cannot be managed in a structured approach.

Conclusions

Global projects are inherently what we define as *high complexity projects*. The global environment is unstable, most of the stakeholders are new and unknown, the actors in the community are unknown and the legal regime, the domestic government, the industry, the companies, and the authorities in many countries are unpredictable and unstable. Managing global projects would therefore be difficult–if not impossible–using traditional project management approaches (task-oriented approaches), for example from PMI or similar project management organizations.

The main research aim of this study was to learn which aspects of global projects in multi-cultural settings are the most challenging and which issues these pose to project managers and participants in such projects. We identified six issues that came out ranking as challenging:

1. Managing external stakeholders interfering in the project, i.e., local government and authorities, domestic businesses, including so-called demands for local content etc.
2. Lacking organizational support from the base organization to the projects
3. Managing external stakeholders outside the project
4. Facing external requirements from outside the project
5. Managing internal stakeholders in the project team
6. Dealing with external stakeholders in the local community

Not surprising, in light of the massive attention literature pays to stakeholder management as part of project management, different groups of stakeholders are the main source of challenges also in global projects. But, to manage global projects and their stakeholders, it is necessary to adjust to the new external environment to a much larger extent than in traditional projects, e.g., the domestic government, the domestic authorities and the domestic businesses and use *a relationship management approach*. Global companies have to develop a global strategy, with a relationship management strategy followed by a supportive organization. The PMBOK even claims that "key stakeholders are usually easy to identify", a statement that highly contradicts what project managers in global projects experience. Experienced global project managers claim that to know your project's key stakeholders, be they the national energy company in the country, the government, the domestic industry, or the local authorities, is almost impossible, as well as to contradict the influence they have on the global project, the risk they impose and their intervention in the project. They say that it is difficult

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to even *imagine* that these parties could be relevant stakeholders, whereas the PMBOK says little about *who* these stakeholders might be. Except for one sentence, pointing to internal stakeholders (within the project) and external stakeholders mentioning the customer, other projects, the media and the public, the PMBOK gives no guidance to which stakeholders might have an interest in a global project. The challenging global stakeholders, e.g., local industry, local authorities, and the local government, have not even been mentioned in the list of *potential* stakeholders, and definitely not how they might influence the project manager and the project.

In traditional projects, the project manager can be task-oriented and in many cases start "productive work" from day 1. In global projects, the project manager must be relationship-oriented and build trust to a much larger extent than in simpler projects, for example building close relationships with the local government, local industry, and local authorities in the country. This is very much in line with the results from the GLOBE research program (Global Leadership and Organizational Behavior Effectiveness) documented in House *et al.* (2004) and Chhokar *et al.* (2007), where a main conclusion was that leader effectiveness is contextual, i.e., embedded in the societal and organizational norms, values, and beliefs of the people being led.

Based partly on the survey responses, but mainly on the interviews we conducted, we gained much insight into how global projects have either attempted to overcome the problems outlined in this paper or how, with the benefit of hindsight, they could have avoided or solved them. From this understanding, we will conclude the paper by outlining a framework for handling organizational challenges in global projects. This framework spans three main dimensions:

1) Developing a global projects strategy with a relationship management plan. Such a strategy should remedy some of the shortcomings identified by clearly outlining how to deal with the most frequently occurring, problematic stakeholders in global projects.
2) Developing a global human resource management plan. Through learning from past projects in different countries, such a plan would help ensuring that people assigned to various countries are armed with the best knowledge available in the company. This involves training, but most likely also a "global projects support team". This is in line with recommendations from Huemann *et al*. which consider the role of the project

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management office as the unit that in cooperation with the Human Resource Department is responsible for managing project management personnel (Huemann *et al*., 2004).

3) Defining global systems. This will help achieving alignment between central approaches and procedures, and tailored ones to global projects in different national settings, including the systems and technology necessary for effective processes and communication in global projects.

We have presented our findings from this study to 75 project managers in global projects in the oil and gas industry. In an evaluation of the presentations, we asked the global project managers "to which degree are these findings relevant for your job". On a scale from 1 to 6, where 1 equals "to a very small degree" and 6 equals "to a great degree" our findings were rated an *average of 5*, which implies that we have important practical findings for project managers in global projects.

In terms of further research, we have so far only identified general organizational challenges across countries and types of projects. Further knowledge would be created by trying to correlate these challenges with type of project or specific project conditions (e.g., time pressure, cost pressure, technological complexity, stakeholder complexity, project size, etc.).

We would recommend building further on our first attempt at identifying "solutions" to deal with the challenges described in the paper. Much research has been carried out to identify success factors in traditional projects, but little work has focused on success factors in global projects.

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PAPER 4

Aarseth, W., Rolstadås, A. and Andersen B. (2011) Key factors for Management of Global Projects. Published in *International Journal of Transitions and Innovation Systems*, Vol.1, issue 4, pp.326-345.

Key Factors for Management of Global Projects: A Case Study

Abstract

The purpose of this paper is to present the findings from a case study from a large energy company in terms of what seems to influence the success rate of global projects. While the literature contains much research on success factors in traditional projects, limited findings have emerged when it comes to success in global projects. The portfolios of global projects are continuously increasing in extent, and these projects contribute highly to growth and innovation in developing countries. Understanding better how to manage such projects for best results and transfer of knowledge and economic activity to host countries is therefore a relevant direction of research. The research presented in this paper is based on data from a case company, comprising of survey data from 246 global project managers and staff as well as 30 interviews with senior expatriates. The areas pointed to by the data as most important for global project success are presented in two proposed models for global project management. In total, the two highest-ranking areas were organizational global project support and stakeholder and relationship management with the host countries and their various actors.

Keywords

Global projects, relationship management, success factors, project success.

Introduction

The main purpose of this paper is to contribute with further findings in the emerging research area of global project management. Empirical data from a case study points to issues that could represent important success factors and these are quite different from known success factors in traditional project management.

In the same way general commercial and industrial activities have become increasingly globalized, with business trends for the 21st century pointing toward more widespread global alliances and collaborations (Bititci et al., 2003), projects have taken on a much stronger global focus, for example projects executed in global environments. Research referenced in the paper shows that global projects contribute highly to growth and innovation in the countries in which they are executed, particularly for the local industry in developing countries. However, global projects pose additional challenges compared to those of traditional projects and successful handling of such projects depends on a well-defined concept of global project management. This concept is rather recent, with still much room for further research, and it builds on other theoretical approaches than traditional projects.

For academia, the topic is highly relevant. Although project management is inherently multi-disciplinary, the global dimension adds further complexity and opens up extended opportunities for future research. Through the global dimension, there is a special need for combining academic insight from fields such as management, anthropology, and psychology, providing exciting research challenges. Industries facing the globalization challenges in their projects are looking to academia for research to aid their management of global projects. Considering the sheer volume of investments in global projects, the implications for practitioners are obvious; companies struggle with global projects, leading to cost overruns and delays, in turn causing delayed and/or diminished benefits from the projects. Furnishing practitioners with research-based advice on how to improve the performance of global projects could increase the return on investments in these projects. Understanding the importance of local knowledge and what ensures success in global projects is of great importance for continuing business opportunities, growth and innovation, both for investors, the project industry and also for governments and authorities in developing countries.

Global projects involve a number of challenges, and this paper addresses problems involved in the handling of both internal and external stakeholders; related to demands for local

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industrial participation and transfer of knowledge and practices, building of social networks with local actors, handling cultural differences, geographical distance issues, interventions from political, media and NGO actors, as well as legal and ethical issues.

Global projects are often designed and executed in politically complex and unstable countries (Aaltonen, *et al.*, 2008; Javernick-Will and Scott, 2010). Since a sizeable portion of global projects takes place in a setting where an entrant actor wants to build and operate a project in a country with less developed project governance structures and local industry, the issue of transfer of knowledge and innovations is a key aspect. As such, this paper on global project management should fit the scope of the International Journal of Transitions and Innovation Systems quite well.

Typically the local government instructs the entrant company to hire more than half of the work force from the local industry in the country (local content demand). Since many local companies do not have the competence required to take on the assigned tasks, the local government demands the entrant company to arrange on-the job training, practical training, education and a general transfer of the necessary competence and knowledge to the local industry through local training facilities. The local government will not allow the entrant company to start or operate any project in their country unless this *local content demand* has been fulfilled. Such knowledge transfer is necessary to ensure that the local companies have the right competence and skills for the job, which in turn contributes to new opportunities, growth and innovation for the local industry. This is in line with advice that it is important for inter-organizational parties to contribute to the learning process and take a proactive approach in disseminating knowledge that is both useful and appropriate in their business relations with emerging market subsidiaries (Adams et al., 2010).

To manage global projects more successfully, the global project concept also requires a whole new understanding of the external context, the local power relationships and cultures. The complexity of the emerging countries' composite cultural context creates a number of obstacles (as well as opportunities). These include cultural norms and values, local business practices and the nature of relations with stakeholders including customers, suppliers, shareholders and regulatory authorities (Adams et al., 2010). Existing research suggests that management gives attention to stakeholders (Aaltonen *et al.*, 2008). It is therefore essential to learn more about these stakeholders and how to best interact with them, e.g., to share ideas,

communicate effectively and identify where to collect relevant information. Emerging markets present serious risks for investors who ignore these complex legal, cultural and social contexts. Such local knowledge is an important ingredient in successful business relations as well as ensuring that key personnel develop a global mindset (Adams et al., 2010).

This paper explores the challenges of global projects, building on the following definition: *"A global project is a temporary collaboration between organizations across nations and cultures with the intention to jointly deliver a unique product or service in a complex external context requiring relationship management."(*Aarseth *et al*., 2011) The paper is structured as follows; a literature review of traditional and global project management, followed by a description of the research methodology employed and indications for future research. A presentation of the results precedes the analysis of these and the development of findings. The paper ends with a summary of the conclusions.

Literature review of success factors in traditional and global project management

The literature review was conducted based on the main steps of scoping the review, determining keywords and search strings, identifying relevant search databases, applying the search to uncover relevant literature, and extracting findings relevant from the literature to our research. In scoping the review, we decided to limit the focus to success factors; on one hand in traditional projects and on the other hand in global projects. The rationale for this scope was that the paper's main aim is to contrast success factors in traditional and global projects as well as extending the insight into how a case company can improve the success of its global projects. The search criteria were defined as "success factors", "project" and "global project". We conducted the search in the databases Scopus, Google Scholar, ISI, Bibsys (a Norwegian university library database) and the Wiley online library.

Some seemingly established facts about projects; project work is a common way of organizing business (Rolstadås, 2006), is of high strategic importance for the project-oriented company (Gareis, 2006) and has evolved to become the principal means for dealing with change in modern organizations (Cleland and Ireland, 2006). However, increasingly, companies run global projects across national borders. Such projects differ from traditional projects in many ways: In traditional projects, a large majority of the team members are working for the same organization and in a single location. This contrasts with global projects, which involve team members from different cultures, working in many locations, for many different organizations, across country borders. As a result, the global project manager must deal with cross-cultural and language differences as well as different time zones (Binder, 2007). Furthermore, global projects are typically operated in unfamiliar environments, e.g., in politically unstable countries and with unfamiliar suppliers involved. Since global projects involve collaboration between participants from multiple countries, they face unique challenges that are not faced in intra-national projects; challenges related to differences in work practices, legal regulations and cultural value (Mahalingam and Levitt, 2007). Interactions among individuals, organizations, and agencies from diverse national backgrounds and cultural contexts, even on technologically routine global projects, often lead to misunderstandings, increased transaction costs, friction between project participants, and coordination and communication difficulties. These in turn also contribute to additional costs and time overruns that are often a significant portion of original project estimates (Orr, 2005). Such costs and risks are nontrivial and are unique to global projects.

Due to such differences between traditional project organizations and global projects, ensuring success in global projects demands other preparations than in traditional projects.

Project success has a wide range of definitions, connotes differently to different people, is often context-dependent, and changes from project to project and from stakeholder to stakeholder (Jugdev and Müller, 2005; Chan *et al*., 2002; Parfitt and Sanvido, 1993; Freeman and Beale, 1992). An often used definition is "Project success can be defined as meeting the project technical specifications and/or project mission to be performed, and at the same time attaining high levels of satisfaction from the parent, the client, the user and the project team itself" (Baker *et al*., 1983, pp. 903). Two distinctions must be drawn at this stage. Firstly, De Wit (1988), Cooke-Davies (2001) and other writers distinguish between *project success* (measured against the overall objectives of the project) and *project management success* (measured against the widespread and traditional measures of performance against cost, time and quality). The second distinction is also important- it is the difference between *success criteria* (the measures by which success or failure of a project or business will be judged) and *success factors* (those inputs to the management system that lead directly or indirectly to the success of the project or business) (Cooke-Davies, 2001). Our literature study has been limited to *success factors*.

Success factors in traditional project organizations

Much research has been performed to identify success factors in traditional projects. A selection of some key sources and their findings are presented in Table 1:

Source	Findings
Pinto and Slevin, 1987	Project mission, top management support, schedule and plans, client consultations and acceptance, personnel, technical expertise, communication, monitoring and feedback, troubleshooting.
Morris, 1988	Schedule and cost management, controlling, directing, communicating, team building, technical and risk management, conflict and stakeholder management and life-cycle management
Pinto and Prescott, 1988	Testing of the ten success factors found by Pinto and Slevin: Project mission, top management support, schedule and plans, client consultations and acceptance, personnel, technical expertise, communication, monitoring and feedback, troubleshooting.
de Wit, 1988	Time, cost, quality, objectives of stakeholders.
Saarinen, 1990	Planning, quality control and reward systems.
Shenhar et al 1997	Customer benefits, project efficiency, business success and preparing for the future.
Dvir et al, 1998	Different projects are affected by different sets of success factors.
Baker et al, 1998	Technical performance specifications met, mission performed, high level of satisfaction amongst key people in parent, project and client organizations. Time, cost, quality and

	stakeholder satisfaction.
Turner, 1999	Plan, time, cost, quality, client satisfaction.
Shenhar et al, 2002	Success factors are dependent on contextual influences.
Chan et al, 2004	Project-related factors (e.g., type, size), project procedures, project management actions (planning, communication, feedback), external environment (e.g., client satisfaction, economic, social, physical environment).
Kendra and Taplin, 2004	Personal attributes and behavior of the project manager.
Dvir and Lechler, 2004	The quality of planning and the ability to change.
Fortune and White, 2006	Review of 63 publications on the topic success factors in traditional project organizations. The three most cited success factors were: 1) Support from senior management (cited in 39 of the 63 publications), 2) clear realistic objectives (cited in 31 of the 63 publications), 3) strong/detailed plan kept up to date (cited in 29 of the 63 publications).

Table 1 Main findings from different sources in terms of success factors in traditional projects

As the table shows, there are a number of recurring topics that appear in many of these authors' conclusions about what represents important success factors in traditional projects:

- Time, cost, quality, support, clear objectives, control, plan
- Client consultation and satisfaction

How do these findings compare with global projects?

Success factors in global projects

In contrast to the abundance of literature investigating success factors in traditional projects, limited research has been published pertaining to success factors in global projects (Orr et al, 2011). As depicted in Figure 1, there are significant amounts of literature for other aspects, but a theory for global projects is still lacking.
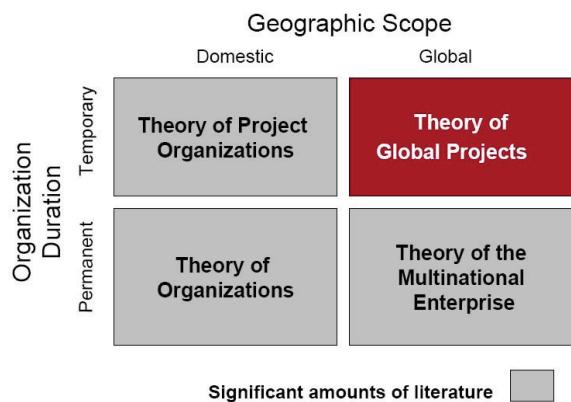
Figure 1 Lack of Theory in Global projects (Orr et al, 2011)

Most literature found has focused on research in global environments and for global companies, but not in global *projects*. Existing research claims that management skills, such as leadership, application of knowledge, skills, tools and techniques to meet requirements, are the most important success factors in a global environment (e.g., Kayworth and Leidner, 2000; DeLone *et al*., 2005; Freedman and Katz, 2007; Eberlein, 2008) as well as cultural issues (e.g., Rosen *et al*., 2000; Kayworth and Leidner, 2000; House *et al*., 2002; Manning, 2003), see table 2 for a summary.

Source	Findings
Goleman, 1995, 2000 Nicholson, 1998 Montagliani and Giacalone, 1998 Kedia and Mukherji, 1999 Bar-On, 2000 Kayworth and Leidner, 2000 Stein and Book, 2000 Kedia et al, 2001 Rosen and Digh, 2001 Riggio et al, 2002 Goleman et al, 2002 House et al, 2002 Suutari, 2002 Earley and Ang, 2003 Manning, 2003 Alon and Higgins, 2005 DeLone et al, 2005 Binder, 2007 (global projects) Freedman and Katz, 2007 Eberlein, 2008 Anantatmula and Thomas, 2010 (global projects)	Global leadership most important success factor, application of knowledge, skills, tools and techniques
Rosen et al, 2000 Kayworth and Leidner, 2000 House et al, 2002 Manning, 2003 Earley and Ang, 2003 Peterson, 2004 Earley and Mosakowski, 2004 Alon and Higgins, 2005 Javidan et al, 2006	Cultural issues, stakeholders with different cultures

Table 2 Main findings from different sources in terms of success in global environments

These personal project management skills involve typical management skills, but emphasis is also on skills to deal with cultural differences. Alon and Higgins (2005) focused on the need to develop culturally attuned and emotionally sensitive global leaders to gain global success, leaders who can respond to the particular foreign environments of different countries and different interpersonal work situations. Riggio *et al.* (2002) claimed that global leaders need to possess more than traditional high intelligence quotient, IQ. Alon and Higgins (2005) mentioned three types of intelligence; 1) rational and logic-based verbal and quantitative intelligence with which most people are familiar and which are measured by traditional IQ tests, 2) emotional intelligence (EI) which has risen to prominence as a determiner of success in the past 10-15 years and which can be measured by EQ tests, and 3) the most recent addition to the list of intelligences, cultural intelligence (CI), which can be measured by CQ tests that are only now coming to existence. The latter consists of two types; organizational CI and geographic/ethnic CI (Earley and Mosakowski, 2004).

In his research at nearly 200 large global companies, Goleman found that while the qualities traditionally associated with leadership – such as intelligence, toughness, determination and vision – are required for success, they are insufficient. Truly effective global leaders are also distinguished by a high degree of *emotional* intelligence, which includes self-awareness, empathy and social skills. These qualities may sound soft and "unbusiness-like" but Goleman found direct ties between emotional intelligence and measurable business results (Goleman, 2000; Goleman, 2004)

Rosen et al (2000) claimed that "global literacy is the new leadership competence required for business success. To be globally literate means seeing, thinking, acting and mobilizing in culturally mindful ways". Kedia and Mukherji (1999) indicated that global managers have a number of mindsets that range from the domestically-oriented defender, the explorer, the controller, and the globally-oriented integrator. For global managers to be effective, they need to develop their global mindset. The conditions that enhance and sustain a global mindset are knowledge and skills. A global manager needs to have knowledge of different aspects of the interdependent world (international, sosio-political and economic perspective). Skills, on the other hand, are certain human and behavioral abilities that managers have that help them to do their work more efficiently in the global context (acculturation and leaderships skills for managing diversity). It is this unique combination of global mindset, knowledge and skills that is necessary for the success of the global manager (Kedia and Mukherji, 1999).

Binder (2007) and Anantatmula and Thomas (2010) both found that for most global project work, the global project manager can increase the chances of success by correctly managing the stakeholders' needs and expectations, and communication with the stakeholders is a key factor (Binder, 2007; Anantatmula and Thomas, 2010). The level of commitment of stakeholders will determine the success or failure of certain projects that involve organizational change or have an important social, political, economic or environmental impact. Knowing the stakeholders' expectations and requirements is fundamental to define the quality standards and requirements for the project and the products or services to be delivered (Binder 2007).

Contrasting the findings, there is a difference between the success factors in traditional projects and in global projects. The traditional success factors are focused on internal project issues (project mission, time, cost, quality, support, plans and schedules) whilst the global success factors are more focused on the role of the global manager, global leadership and the human side of management (to manage different cultures and different stakeholders). Since the greatest difference between working in global projects and traditional projects is the collaboration between different countries and cultures, and since, except from Binder (2007) and Anantatmula and Thomas (2010), the research so far has been limited to success in global environments but not in global *projects* as such, there is a need for more research. It would be of interest to find out more about the success factors and the importance of inter-organizational collaborations, cultures and the role of the expatriates in global projects. As shown by Orr et al (2011), there is lacking research *linking temporary and global organizations*, and this has been the purpose of this paper, achieved by conducting a survey to find out more about what might influence and ensure success in global projects.

Research methodology

The research reported in this paper aimed to identify the importance of different aspects of managing global projects. Consequently, the main research question was formulated as:

> *How important are different areas of global project management for global project success?*

When saying "different areas", a number of global project management activities and tasks had been identified from global project managers and literature (e.g. Binder, 2007; Aaltonen et al, 2008):

- Handling cultural differences in the business culture
- Handling cultural differences in the local society
- Handling local content
- Negotiations with vendors
- Handling local authorities
- Participating in multinational teams
- Leading multinational teams
- Handling different religions
- Building a social network with local people
- Gaining respect and trust in the local community
- Doing contract work with local vendors
- Handling site teams personal issues/challenges
- Handling local employees in site team
- Dealing with site team or employees with "difficult" attitude
- Mobilize trained personnel
- Handling local and national media
- Handling local and national authorities
- Handling local politicians and political parties
- Dealing with environmentalists
- Telecommunication and infrastructure
- Handling economical questions
- Support from management and basis organization in the home country

- Dealing with ethical dilemmas, corruption and complying with local laws.

To answer this research question, several methods could have been used. The strongest approach would have been based on measuring objectively the contribution of each project management practice to project success. However, the cause-and-effect relationships are not sufficiently clear to allow this, and attribution of effects to specific causes would be very difficult. An action research approach could perhaps have solved some of these difficulties, by allowing controlled case projects to experiment with different project management approaches and trying to measure the effects of these. This might be a worthwhile future study, but one that will take a long time to design and conduct, and therefore beyond the realm of the study reported in this paper. We therefore settled on a more limited case study research, based on collecting assessments of different practices from a large number of respondents from a case company active in many global projects. The responses were collected through a survey and interviews.

The case company selected was an international energy company with comprehensive oil activities in 39 countries, representing most parts of the world. The company is headquartered in Norway, has more than 20,000 employees worldwide, and is listed on the New York and Oslo stock exchanges. As an international oil company, the case company is similar to many other companies in the same sector, and probably also quite similar to other companies operating large projects globally. However, the validity of the results from the study is strictly speaking limited to this one company. We can speculate that they will also apply to other similar companies, but until we or someone else has expanded the study we cannot draw this conclusion, and this is of course the main limitation of a one-company case study.

The survey was conducted using a web-based questionnaire to be filled in remotely by respondents. Based on the research question and the global project management practices listed earlier, questions were developed that asked the respondents about the importance of each practice in terms of contributing to the success of global projects. The respondents could also add additional areas of importance not covered by the pre-defined alternatives. On a scale from 1 to 5, the respondents were asked to indicate the importance of each area, were 1 represented "not important" and 5 was "very important". In developing the survey questionnaire, the draft survey was tested on a reference group of eight experienced project managers from the case company as well as three experienced professors in the field. The

questionnaire was revised based on the feedback, and the survey sent yet again to the reference group for further commenting. After four iterative rounds, the survey questions and alternatives were deemed ready.

The sample of recipients of the questionnaire comprised 550 potential respondents (100 project managers and 450 project participants) with experience from global projects in 39 different countries. An important selection criterion was experience from several global projects as well as from several countries, to be able to generalize across projects and countries. With 246 of the total sample responding to the survey, a response rate of 44.7% was achieved. These respondents altogether had experience from global projects in 38 countries.

The responses were analyzed using Statistical Package for Social Sciences (SPSS), version 15.0. A principal component analysis was undertaken to compile the results into main areas, for the purpose of reducing the number of variables. Such a principal component analysis is a data reduction method similar to factor analysis (Preacher and MacCallum, 2003). Since the number of variables in the survey was so high, the principal component analysis was used to reduce this. The rotation chosen was direct oblimin rotation, since in the social sciences the expectation is generally some correlation among factors. *Behavior* is rarely partitioned into neatly packaged units that function independently of one another (Costello and Osborne, 2005), which is the reason why direct oblimin rotation was used in this case. The variables fell naturally into six groups of similar elements, and these groups were titled based on the nature of the elements in each group.

Based on the survey results, we next carried out semi-structured interviews to deepen the insights gleamed from the survey. The sample of interviewees consisted of 30 senior project managers and country managers with experience from working in 21 different countries. The interviewees were selected from the list of survey respondents on the basis that they had an extensive experience (more than 10 years) as project managers in global projects. The interviews lasted about 1.5 hours each and 24 were carried out face-to-face, four were conducted though video conferencing and two interviews were done by telephone. To initiate the interviews, we informed the interviewees about the survey that had been conducted and which global project management practices the respondents had been ask to assess, but

without revealing any results regarding the principal component analysis findings. The interviews were structured around the following questions:

- According to your opinion: What ensures success in global projects?
- Elaborate more on this
- What are the reason(s) that this ensures success?

Notes were taken during the interviews, as a basis for an interview report from each interview. The interview response reports were coded according to which success factor they pertained to, and a frequency analysis for the responses was conducted.

Albeit that some interesting findings have emerged through this case study, they rely only on data from global projects from this one company. There are therefore several opportunities for further research. First and foremost, we would encourage research along the same lines as this study, but collecting data from more companies, from more industries, based in different home countries, etc. This will be the first test whether our findings can be generalized, or different cases require different solutions. If the proposed model could be proven to be valid for an extended range of companies, it contains practically-based recommendations for good global project management practices that could improve the chances of global project success.

Further follow-up of our study should look at practical implementation of our findings; what economic and commercial impact can be achieved, can they be used in teaching or to influence public policy?

In conducting the research, we have also made notes of other directions of research that could be worthwhile pursuing:

- A logical continuation of our study would be to address a topic that has come up in many of the interviews, even if we have not pursued this within the scope of our work. This deals with the difficulties in handling a demand from the host authorities to employ local industry as suppliers to the project while at the same time the competence and performance levels of such suppliers are limited.

- Another issue would be to "flip" the vantage point of the researcher and look at global projects from the view of the host countries' government and local supplier industry; how the global projects contribute to the economy and how they can best nurture the development of competitive local suppliers.

Results and discussion

From the principal component analysis of the survey responses, we identified six main areas that stood out in terms of frequency of being mentioned. These six areas are shown in figure 2. Each of these areas comes from the more detailed variables applied in the survey, and are shown in figure 2. Figure 2 then depicts the six main areas and the underlying variables. For the case company covered in this research, this model represents a global project success model illustrating areas of global project management that should be handled skillfully to increase the likelihood of success in its global projects.
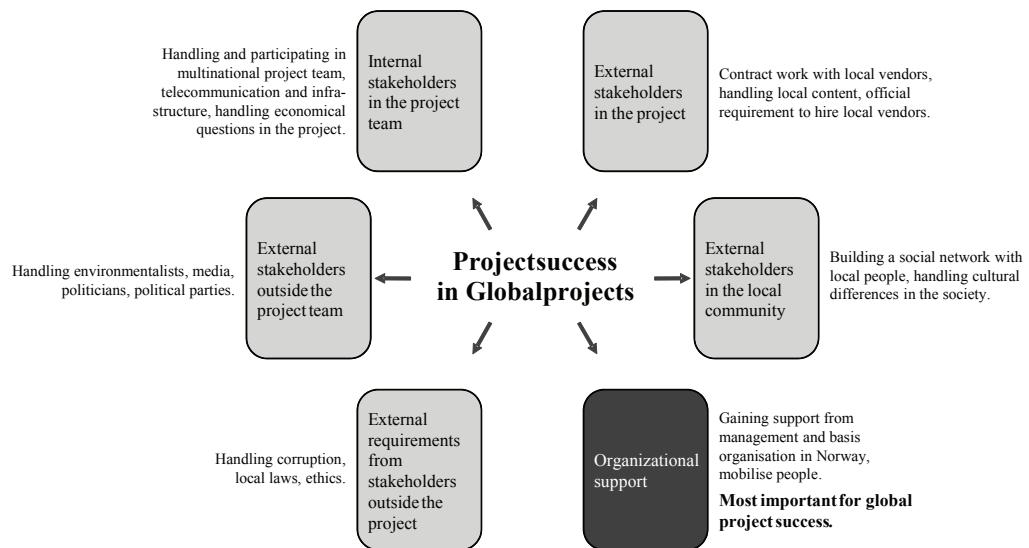

Figure 2 An illustration of the main areas and more detailed global project management practices found to contribute to global project success in the case company

The statistical characteristics of the survey responses for the global project management practice alternatives are shown in table 3.

Descriptive Statistics

	N	Mean	Std. Deviation
Q11_F1_mean Important for Project Success: Handling internal stakeholders in the project team	202	3,87	,69
Q11_F2_mean Important for Project Success: Handling external stakeholders outside the project team	150	3,67	,86
Q11_F3_mean Important for Project Success: Handling external stakeholders in the local community	207	3,67	,71
Q11_F4_mean Important for Project Success: Handling external stakeholders in the project	195	3,87	,71
Q11_F5_mean Important for Project Success: Handling external requirements from outside the project	202	3,93	1,01
Q11_F6_mean Important for Project Success: Organizational support	183	4,16	,72
Valid N (listwise)	139		

Table 3 Importance for global project success

We found that within a 95% confidence interval, the respondents pointed to "organizational support" as the area most important for project success, followed by "handling requirements from outside the project", "handling external stakeholders in the project" and "handling internal stakeholders in the project team".

The most important areas for success in global projects: Organizational support and inter-organizational collaborations (stakeholder relationships)

The analysis of the information provided by the 30 interviewees confirmed that organizational support is most important for success in global projects. The interviewees also emphasized the importance of inter-organizational relationships in the complex external global context, which in the survey result did not come out as most important. Through the interviews, we were able to obtain a more in-depth insight into these success areas, as outlined in the following.

Organizational support

This area of global project management pertains to how the global organization can support its projects and project staff to enable their best performance in global projects. A shared position among the interviewees points to better-qualified and more proactive project support.

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The support could benefit from taking on the nature of a global project support office staffed with personnel possessing knowledge about and experience from global projects, e.g., what it means to work in a global project, what kind of support is necessary, cultural challenges encountered, how to deal with the local government, etc. Given the geographical reach of the organization's projects, such a support home office should be staffed and available 24 hours a day.

Looking back at when the case company initiated its global engagement, the interviewees also agree that the knowledge recommended for a support office also would be highly useful for investors and entrant companies in new global projects. Instead of "stumbling into" global activities, entrant companies should seek to find the best way of organizing the global projects, with the right standards and project model. For the management and base organization, this requires strategic discussions and questions: Do we have the right standards and the right model in place to be able to perform global projects cost efficiently? Is there a better way to design global projects that is different from the traditional projects? These warranted strategic issues; a strategy regarding global projects is necessary, with global best practices, and it is necessary to learn from other companies and cultures.

Inter-organizational relationships (stakeholder relationships)

This second area of global project management is another one the interviewees underlined as important for success. To establish fruitful stakeholder relationships, they mentioned examples such as preparing and finding out more about the industry in the foreign country, understanding the local people, who has different types of power in the country, how do the government and authorities work, and so on. Altogether, they said this is about having an inter-organizational relationship strategy toward the various important stakeholders that will invariably be encountered in global projects. To establish such relationships requires spending time with them to understand their motivation, power and style of business, and developing relationships. Also in this respect can the home support office play an important role, in preparing the project staff toward being able to handle the complex demands posed by such projects and their environments, e.g., corruption, ethics and local laws.

Implementing an organizational structure to ensure success in global projects

The proposed good global project management practices obtained from the interviewees broadly fall into two categories; one the one hand practices that can readily be utilized by

individuals or project teams without any home organization support and on the other hand practices that require a conducive global project strategy and/or a knowledgeable home organization support unit. Naturally, the latter category is more complicated to implement, but the interviewees agree that these have the highest positive impact on project success. Figure 3 schematically depicts how strategy, central support department and locally focused support teams can aid an organization's portfolio of global projects.

```
                    ┌─────────────────────┐
                    │  Global Project     │
                    │  Strategy           │
                    └─────────┬───────────┘
                              │
                    ┌─────────┴───────────┐
                    │  Global Project     │
                    │  Support Department │
                    └─────────┬───────────┘
            ┌─────────────────┼─────────────────┐
   ┌────────┴───────┐ ┌───────┴────────┐ ┌───────┴────────┐
   │ Local support  │ │ Local support  │ │ Local support  │
   │ team with      │ │ team with      │ │ team with      │
   │ knowledge in   │ │ knowledge in   │ │ knowledge in   │
   │ global projects│ │ global projects│ │ global projects│
   └────────────────┘ └────────────────┘ └────────────────┘
```
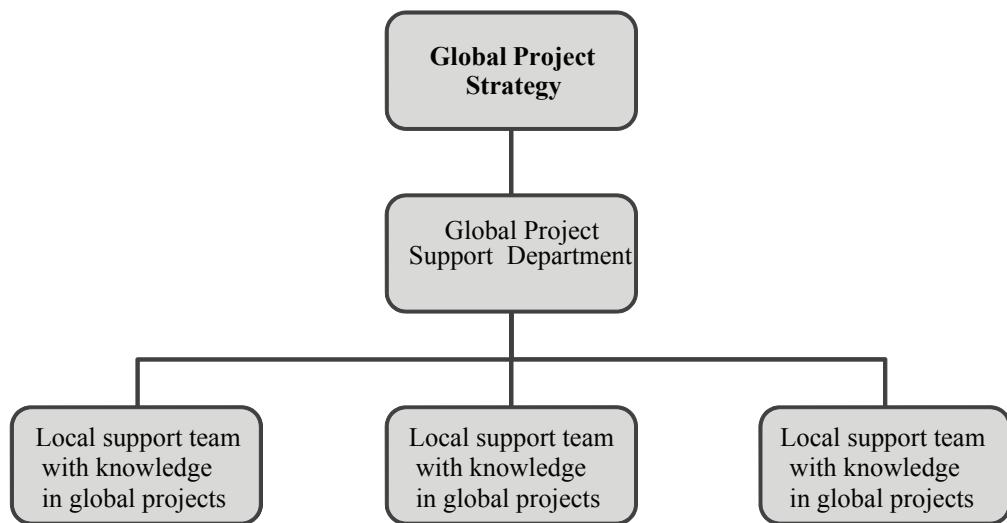
Figure 3 Proposed new model for supporting global projects

The structure of figure 3 can be interpreted either as advice for an organization entering into global projects or how an organization active in global projects can take measures to support these better. According to the interviewees, management should develop a strategy for the global projects, and ensuring that a central global project support department is established to facilitate implementation of this strategy. This department should build solid knowledge about the countries where the organization is involved in projects, the local working conditions, the local people, etc. Furthermore, depending on the size of the global project portfolio and the geographical distribution of the projects, it could consider linking this central department to a number of regional/local support teams specializing in certain geographical areas.

An example provided by one of the interviewees: The case company decides to grow in the Middle Eastern countries by entering into several global projects over the next five years. Before commencing such activities, the project strategy for this growth should be defined,

before the global project support department starts its efforts; finding out as much as possible about the relevant countries, the industry in these countries, who has the power, how are the working conditions, how do the government and the authorities function, what legal conditions prevail, living conditions for expatriates, even start looking for local employees and partners that can be hired. If the countries to be entered into are diverse, it could be considered establishing local support teams for each country, with more detailed knowledge about all these local conditions. Depending on the expected challenges the projects will face, the local support teams should be staffed to aid the projects. For example, if the political environment in the country is particularly unstable, then people with political background and insight would be invaluable, whereas in other cases, the problem is finding qualified local suppliers, requiring people with detailed industry knowledge.

Another issue addressed by many of the interviewees revolves around the working style of the expatriates assigned to global projects. This is a topic being addressed in current literature as globalization has forced expatriation on to the strategic agenda (Velde, 2010). The ability to manage global assignments effectively is critical to competing internationally (Scullion and Collings, 2006), but still, in many organizations, job knowledge and technical competence are the most important criteria when selecting employees for foreign assignments (Anderson, 2005; Sinangil and Ones, 2001). This is paradoxical, as personal attributes and cross-cultural competencies are just as important predictors of expatriate success (Templer, 2010; Huang *et al.*, 2005). When entering a new country as part of a global project, knowledge and in-depth understanding about all aspects of the host country and its organizations is vital, as is the ability to develop relationships with everything from local industry to the local government and authorities in the country. For many of the expatriates in the study, this was a new role they were not accustomed to. It meant a change in attitude and ways of working, to be *relationship oriented* and not so *task oriented*, particularly the first period of the project.

To understand this new role is highly important for success; the expats have to build inter-organizational relationships early with partners, local authorities and local suppliers. All of these to some extent often have the power and opportunity to delay or stop the project. Many of interviewees said that they were not used to handling such external stakeholders in project and should have been much more prepared for the challenge. Personal relationships would reduce conflicts and make the work in the global project much easier. Key words for success were said to be trust, communication and building relationships.

The interviewees agree that this calls for a certain kind of people; open, honest and relationship-oriented project managers. Since such types of people will have a better chance at succeeding in global projects, the global project support department should aid the organization and its projects in hiring the right kind of people for the global projects. This is clearly a human resource management issue, meaning the global project support department must work closely with the human resource management department to ensure a resource base that is strategically geared toward global projects.

Conclusion and further research

The research reported in this paper has aimed at shedding more light on how companies involved in global projects can improve their global project management practices, ultimately to improve the success of these projects and thereby also contributing to the local economy in the host countries. Our data was collected from one case company, a large energy company with over 20,000 employees and running a large portfolio of global projects worldwide. The findings from the survey and interview data point to two main areas of global project management that seems closely linked to project success; strong organizational support for the global project activity and active stakeholder and relationship management with different kinds of local actors.

When delving deeper into the issue of organizational support, the interviewees mentioned a wide range of support mechanisms required; ranging from furnishing the global project staff with knowledge and insights about conditions in specific countries to training in the handling of different cultures and relationships to more human resource management support of expatriates working in demanding environments quite different from what they have been used to in traditional projects at home. Their recommendations as to how to solve the need for such organizational support, the advice seemed to converge toward some mechanisms:

- For the company to develop a clear global project strategy to guide the activities internationally. Many interviewees reported that they often spent 10% of the time working in the global project and 90% in internal discussions with the home office about the project strategy and its execution. This, they said, was a sign of a lacking global project strategy providing direction and thus eliminating the need for such case-by-case time-consuming discussions.
- To implement a central global project organizational support department whose main tasks would be to help implement the global project strategy and support the projects, both in terms of global project management practices and human resource management for expatriates staffing these projects.
- In cases of extensive global project portfolios, consider even establishing regional or local support teams with specific and deep insight into the special conditions of a region or country.

As illustrated in figure 4, these recommendations fit naturally together and reinforce the impact of one another.

The other main area of converging recommendations was improved stakeholder and relationship management, to ensure a smoother cooperation between the host country and the entrant. For many of the interviewees, mastering the role in global projects had meant an often significant shift in behavior, from a typically task-oriented style toward a stronger relationship orientation. This is of course a matter of personal enlightenment, but also preparations that the global project support department should take an active role in preparing the global project staff for.

All in all, we believe this paper has uncovered insights from practitioners about success factors in global project management that will enable a more effective transfer of economic activity and knowledge between entrant companies and host countries. Having compiled these into two models of global project management, figures 2 and 3, we hope the paper has contributed both possible new theoretical models of global project success as well as empirical advice of use to industry.

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Paper 5

Aarseth, W (2011). Global project leadership: Managing organizational challenges through RQ. Published at *the Nordic Academy of Management*. 22-24 August 2011. (conference paper).

Global project leadership:

Managing organizational challenges through RQ

Abstract

Collaborative strategies have been attracting attention as a means to address organizational challenges (Astley 1984; Harrigan 1985; Bresser and Harl 1986; Carney 1987; Bresser 1988; Kanter 1990; Hardy and Phillips 1998; Bititci *et al*., 2004; Gadman and Cooper 2005; Tencati and Zsolnai 2009; Aarseth and Sørhaug 2009) but when it comes to organizational challenges in *global projects*, only a few studies have been found (e.g. Binder 2007, Grisham and Walker, 2008). This is a paradox as business trends moves towards more global alliances and collaborations in the future (Bititci *et al*., 2007; House *et al*., 2004) - such as global projects. Globalization of industrial organizations presents numerous organizational and leadership challenges (House *et al*., 2004) and to understand these and how they differ from those in traditional projects, the paper starts by presenting organizational challenges in collaborations in *traditional* projects found in a three-year research project. By "traditional" projects we mean projects in the company's home country. To reduce organizational challenges in traditional projects a collaborative tool model and the concept "cooperative power" were developed (Aarseth and Sørhaug, 2009). Then we look at organizational challenges in collaborations in *global* projects. The concept "Global projects" is a relatively new phenomenon which can be defined "A Global project is a temporary collaboration between organizations across nations and cultures with the intention to jointly deliver a unique product or service in a complex external context requiring relationship management" (Aarseth *et al*., 2012). Through a survey sent to 550 project team members and managers in global projects in 38 countries, organizational challenges in global projects were found (Aarseth *et al*., 2012). The new GCM model was developed followed by a framework for managing organizational challenges in global projects. The purpose of this research effort is to gain a deeper understanding of organizational challenges in projects and how the global project manager can address these challenges in future projects. Our study shows that global project managers

need to possess multiple intelligences, e.g. IQ, EQ (emotional intelligence), CQ (cultural intelligence) *and RQ (global projects relationship intelligence)* to manage organizational challenges and develop into a successful global project manager.

The research effort is based on an extensive literature review, 75 interviews, focus group work and a survey response from 246 global project team workers and managers. The case company is a large international oil giant with projects in 39 different countries.

Research questions to be answered in this paper

RQ1 What are the organizational challenges in traditional and global projects?

RQ 2 How can the global project manager address these challenges in future projects?

1 Introduction

In the early and mid-1990s the world oil price reached rock-bottom level, and the Norwegian oil and gas industry experienced lower profitability. The industry was therefore challenged to come up with new solutions that could make the industry less vulnerable in periods of low oil prices (Olsen *et al*., 2005). Project collaboration was one of the areas the industry investigated for possible improvements. Building a new oil platform or rebuilding an existing one requires the involvement of several contractors, subcontractors and vendors and extensive coordination between several actors is required (Olsen *et al*., 2005). Furthermore, for the oil and gas industry in general, collaboration and interaction between companies are critical for innovation (Hatakenaka *et al*., 2006).

In Norway the oil and gas industry has long traditions for project management. Nevertheless, research shows that to maintain the profitability and improve the performance there is a need for more collaboration and integration across phases, disciplines and companies (Aarseth and Sørhaug, 2009; Gulla, 2009). Also, the oil production profile of Norway indicates a decline in the future and the Norwegian oil industry would have to look globally for new productive oil fields (Zittel and Schindler, 2002), which implies that collaboration in *global projects* becomes more important in the future.

In this paper, organizational challenges in collaborations in *traditional* projects are presented in part 2 (Aarseth and Sørhaug, 2009) followed by organizational challenges in *global* projects (part 3) (Aarseth *et al*., 2012). In part 4, we present our suggestions to the global project manager and a framework and model to deal with the organizational challenges in global projects are presented in part 5.

2 Organizational cooperation and challenges in traditional projects

2.1 Literature review

Projects are typically temporary collaborations between companies where collaboration difficulties can increase into major organizational challenges (Aarseth and Sørhaug, 2009; Bititci *et al*., 2004; Vaaland, 2004). Providing resources, communicating information, avoid taking advantage of partners and invest in the project relationships e.g. the persons and organizations, are amongst the factors that influence project relationships positively and give sustainable advantages to the collaboration (Aarseth and Sørhaug, 2009; Johnson *et al*., 2005; Biong *et al*., 1996; Morgan and Hunt, 1994). Ultimately the performance of the project team is founded upon how well the companies collaborate and what they are willing to do – beyond the defined job – to develop the relationships (Aarseth and Sørhaug, 2009; Tencati and Zsolnai, 2009; Vaaland, 2004; Vaaland and Haakansson, 2003). Project collaborations are often confronted with challenges in the indistinct interfaces between the collaborating companies (Aarseth and Sørhaug, 2009; Vaaland, 2004), and examples are unclear interfaces between actors; activities performed without updating mutual information systems and weak communication (Aarseth and Sørhaug, 2009; Vaaland, 2004; Vaaland and Haakansson, 2003). Managing these sources of potential conflicts, being upfront in developing relationships and building trust are keys to managing organizational challenges in projects (Aarseth and Sørhaug, 2009; MacNeil, 1980).

As the vast majority measure their own company's performance (Simatupang and Sridharan, 2002; Lambert and Pohlen, 2001; Waggoner *et al*., 1999), and the traditional business worldview is founded on the conception of the autonomous firm, to have a holistic frame and consider your partners´ views are paradoxes in projects (Aarseth and Sørhaug, 2009). The firm is the carrier of interests, and both in practice and ideologically, this traditional business worldview emphasizes competitive power. There is little mention of the flip side of the coin; *cooperative power* (Aarseth and Sørhaug, 2009). Thinking, living and working according to cooperative power would represent a change in attitude and a solution to several of the organizational challenges mentioned.

2.2 Empirical results from traditional projects

Collaboration difficulties due to interface challenges occurred frequently between and within the fourteen companies that collaborated in the research project (Aarseth and Sørhaug, 2009). Inter-organizational interface challenges (challenges *between* organizations) were found between project team and operation team, between operator and contractor, between operator, subcontractor and suppliers, between contractor and suppliers and between different suppliers (Aarseth and Sørhaug, 2009). The challenges were related to lack of communication and misinterpretation of information, as well as lack of involvement in the early phase of the project. Intra-organizational interface challenges (within organizations) were also found between internal departments and units in the companies and between different process owners within operators. The main finding though was a general need for a change in business worldview both in theory and practice; the collaborating companies were mostly interested in their own point of view, their own performance, not the project collaboration as a whole. This is a huge paradox and a great challenge as working in projects means collaborating more than competition (Aarseth and Sørhaug, 2009).

To reduce the possibility of organizational challenges and increase the chances of success in projects, two complementary models can be applied; the synergy model, which is a collaboration readiness assessment (Bititci *et al*., 2007) and the collaborative tool model, which will reduce organizational challenges in traditional projects (Aarseth and Sørhaug, 2009).

In the next session, organizational challenges in *global* projects will be discussed.

3 Organizational cooperation and challenges in global projects

3.1 Literature review

The organizational challenges in *global projects* can be categorized in three areas: cultural challenges, global leadership challenges, and global stakeholder challenges (Aarseth *et al*., 2012).

Cultural challenges

Given the increasing globalization of industrial organizations and the growing interdependencies between nations, the need for a better understanding of the cultural challenges have never been greater (House et al., 2004). Managing different cultures is challenging (Eberlein, 2008; House *et al*., 2004; Hofstede, 2001), due to differences in values and beliefs people will disagree more than agree, and these differences are rarely acknowledged and often misunderstood (Hofstede, 2001). International project management has also suffered from a lack of a codified approach to the training of people to work in multi-cultural environments, which is a paradox as there are no shortages of cultural training programs in existence, and certainly no shortage of leadership and cultural theories (Grisham and Walker, 2008).

Global leadership challenges

The transferability of management theories across different cultures is challenging in global projects (Alon and Higgins, 2005; Hofstede, 2001; Bigoness and Blakely, 1996; Black and Porter, 1991; Adler and Jelinek, 1986; Cox and Cooper, 1985; Laurent, 1983). As the global project company can be a network of geographically dispersed companies across different cultures, the management of a global organization is often a great challenge (Artto *et al*, 1998). In global projects each dimension adds a series of leadership challenges (Binder, 2007), for example 1) number of different organizations, 2) number of different cultures, 3) different languages, and 4) different time zones (Binder, 2007). Cross-cultural leadership skills, such as trust, empathy and communication are necessary to reduce organizational challenges in global projects (Grisham and Walker, 2008).

Global stakeholder challenges

Global projects face numerous uncertainties related to unfamiliar environments and stakeholders, differing regulations and cultural beliefs (Javernick-Will and Scott, 2010; Aaltonen, 2011). The risks in global projects are social, political, and cultural risks from the involvement of actors with different objectives, goals, and strategies (Aaltonen *et al*. (2008). The management of *stakeholders* becomes particularly important in global projects (Aarseth and Sørhaug, 2009). PMBOK (2008) defines stakeholders as "persons or organizations such as customers, sponsors, the performing organization or the public, who are actively involved in the project, or whose interests may be positively or negatively affected by the performance or completion of the project." (PMBOK, 2008, p.23). Stakeholders can be divided in internal and external stakeholders (Aaltonen, 2008) where the internal stakeholders are the stakeholders who are formally members of the project coalition and hence usually support the project (Winch, 2004) and the external stakeholders may affect or be affected by the project (Cova and Salle, 2005). The expectations and perceptions of the stakeholders may influence the project's success or failure (Bourne and Walker, 2008).

Global projects typically involve a large number of unfamiliar external stakeholders (Aarseth *et al*., 2012) with different interests and it is therefore critical to understand the interests of these stakeholders (Aaltonen *et al*., 2008).

3.2 Empirical results from global projects

Organizational challenges found in global projects can be divided into six main areas, see Table 1, and classified into external stakeholders *in* the project, external stakeholders *outside* the project and internal stakeholders in the project (Aarseth *et al.*, 2012).

		Mean	Std. Deviation
Q8_F1_mean	Challenges related to internal stakeholders in the project team	2.96	.74
Q8_F2_mean	Challenges related to external stakeholders in the project team	3.61	.80
Q8_F3_mean	Challenges related to external stakeholders outside the project	3.06	.97
Q8_F4_mean	Challenges related to external requirements from outside the project	2.93	1.04
Q8_F5_mean	Challenges related to organizational support	3.49	.74
Q8_F6_mean	Challenges related to external stakeholders in the local community	2.91	.86

Table 1 Challenges in global projects

From Table 1, one can see that managing the external stakeholders in the project team is most challenging (mean 3.61), and then challenges related to the lack of organizational support (mean 3.49). Well-known challenges in global projects were chosen as alternatives; therefore the expectation was that there would not be significant variances in the results. Although these values do not reach the end-points of the scale, they are still significantly greater than the mid-point, and strongly indicate that managing these organizational issues are seen as highly challenging (Aarseth *et al*., 2012).

In the next session, the two main organizational challenges in global projects will be discussed.

Managing external stakeholders *in* the project

Managing external stakeholders in the projects, for example the demand for local content required by the local government, create a setting with a lot of organizational challenges (Aarseth *et al*., 2012), see figure 1:

- Negotiations regarding local content demand: The demand for local content means that companies that want to run projects in the country are required to select a certain percentage of the suppliers from the domestic supplier industry. The domestic suppliers very often do not have the competence required to undertake the assigned tasks, and the local content demand would usually tried to be avoided
- Managing the local authorities´ continuous new rules and regulations. In many countries the authorities change their rules and regulations frequently and many of these regulations are often difficult to understand, non-logical and unpredictable
- Selecting and training the local suppliers; if the case company is not able to avoid the local content demand, training facilities need to be established to make sure the domestic supplier industry has the competence required to do the job
- All these external stakeholders have a different business cultures that the case company and the project team are not accustomed to, and in many cultures the local supplier industry would not even communicate that they do not have the competence required for the job which makes the local content demand even more difficult to follow

Lack of Support and understanding from the base organization

In addition to the above mentioned challenges, many global project team members feel that they are alone managing these challenges, and lack of support and understanding from the base organization adds extra challenges:

- Support from management and base organization is necessary in global projects, for example support in the process of mobilizing people to the global project, people with the right competence
- Our study revealed that some people want to work in global projects due to personal problems and problems at home, which is challenging, and the global project manager and team need support to manage these problems

When studying further the challenge, we found that it can be divided into four sub-issues (Aarseth *et al.*, 2012)

a) Knowledge and understanding. There was a lack of knowledge about global projects in the base organization, creating a setting where the project team in global projects has to deal with the challenges on their own.

b) Unclear roles and responsibilities between the base organization and the global projects

c) Lack of support. Due to lack of knowledge, the base organization does not understand what kind of support the project teams in global projects need

d) Lack of a globally communicated strategy, which is essential for a global organization.

The GCM model

The organizational challenges in global projects are presented in the GCM model, were we show that external stakeholders in the project is most challenging in global projects (figure 1) (Aarseth *et al.*, 2012)
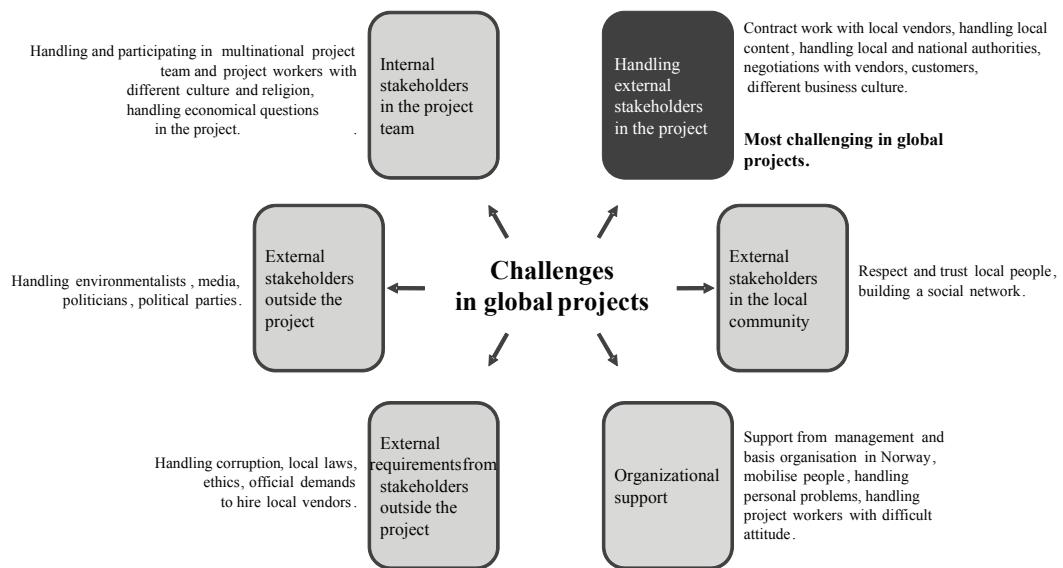

Figure 1 The Global Challenge model (GCM model)

4 How can the global project manager address these challenges in future projects?

Through interviews, some suggestions to the global project manager emerged, e.g. development of a global project strategy, with the necessary resources, support functions, courses (e.g. cultural understanding and relationship management), training facilities, mobilizing strategy for people from the base organization and a relationship strategy towards the external stakeholders e.g. the government, the authorities, the domestic industry in the country. Conclusions from interview objects also suggest that this calls for multiple intelligences of the global project manager, which is in line with Alon and Higgins (2005) findings. They introduced the development from IQ, to EQ (emotional intelligence), to CQ (cultural intelligence), and how important cultural intelligence is to work in global projects. They found that culturally attuned and emotionally sensitive global leaders need to be developed; leaders who can respond to the particular foreign environments of different countries, and introduced CQ. The Globe study (House *et al.*, 2004) of 17000 managers in 62 cultures had similar findings, i.e. they identified which global leader characteristics are contributing to effectiveness and the extent to which these are linked to cultural characteristics. Alon and Higgins (2005), House et al (2004) as well as Hofstede (2001) studied different countries and cultures, but not in a project setting. This research effort has studied global *projects* and develops the necessary intelligences even further. The empirical research concludes that RQ (relationship intelligence) is an additional intelligence to be a successful global project manager and complements the findings from Pless and Maak (2005) that concludes that to navigate successfully in global business in the 21st century, executives have to deal with a diversity challenge, a business in society challenge, a stakeholder challenge and ethical challenges (Pless and Maak, 2005). These challenges also shape the leadership role and responsibilities, which have a relational dimension. The need to interact with different stakeholders from various cultural backgrounds both inside and outside the organization, with different interests and values, requires leaders to connect and to act interpersonally and ethically competent. Pless and Maak (2005) therefore suggest that leaders need relational intelligence to cope emotionally and ethically mature with the leadership challenges at hand and defined relational intelligence as a combination of emotional and ethical intelligence that involves the ability to be aware of and understand own and others emotions, values, interests and demands, to discriminate among them, to critically reflect on them and to use this information to guide ones action and behavior with respect to people (Pless and Maak, 2005). We have extended the definition of Pless and Maak (2005) even further to implement the external business context and define Relationship Intelligence (RQ)

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necessary in global projects as "the ability to understand the importance of external stakeholder relationships and the external context in global projects, as well as develop and sustain relationships with these important external stakeholders, e.g. domestic government, political parties, people with power in the country, people working in the domestic authorities and the domestic industry". The concept of RQ is then the ability to understand that before entering a new country and a new global project, a relationship strategy must be developed and followed, to find out which people has the power in the country, who is in important positions in the domestic government and authorities, which industry leader(s) is most powerful and has influence in the country and region, which suppliers has the right competence and knowledge, followed by establishing, developing and sustaining relationships with these people and companies as soon as you enter the country and the new global project.

5 Conclusions and a framework for managing organizational challenges in global projects
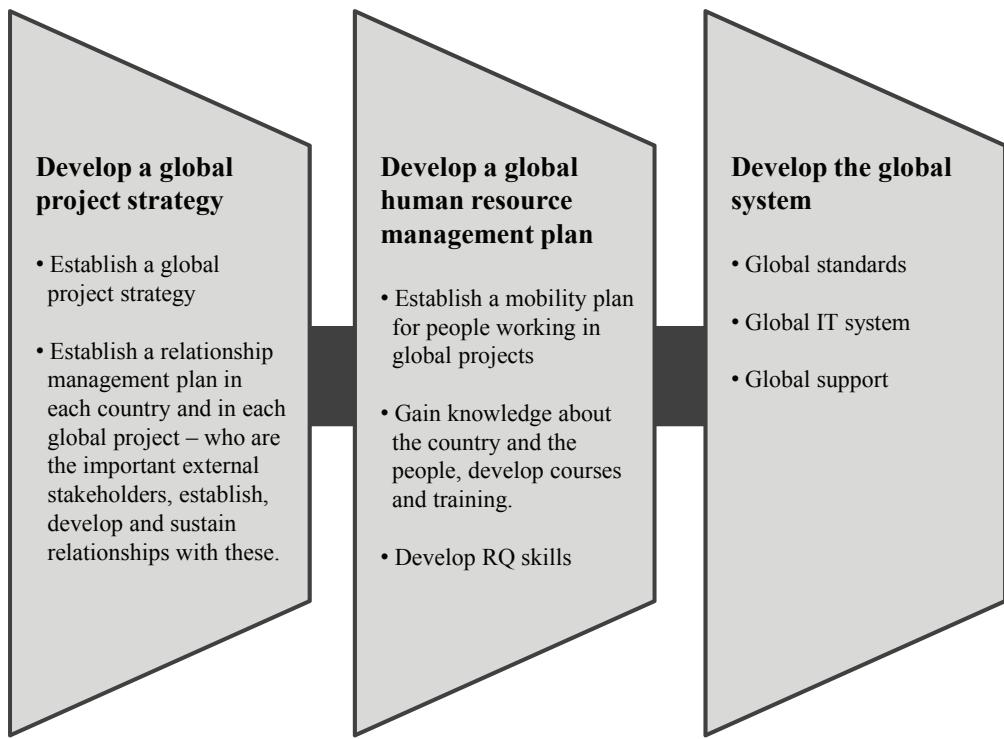
This paper outlined two research questions

RQ1 What are the organizational challenges in traditional and global projects?

RQ 2 How can the global project manager address these challenges in future projects?

RQ1: Based on our studies we found that the organizational challenges in traditional projects are interface challenges; the interfaces between different companies and departments e.g. the operator and contractor, contractor and suppliers, sub-suppliers, project team and operator team, and it is necessary with a new mindset ("cooperative power") to solve these interface issues. In global projects the external stakeholders e.g. the domestic government, the supplier industry and managing the authorities are challenging and demands for a global strategy, support and a global human resource management system.

RQ2: Based partly on the survey responses, but mainly on the interviews conducted, we gained much insight into how the global project manager could have avoided or solved the organizational challenges (Aarseth *et al*., 2011). From this understanding, we outlined a framework for managing organizational challenges in global projects. This framework spans three main dimensions (figure 2): develop a global project strategy with a relationship management plan, develop a global human resource management plan included development of RQ skills for people working in global projects and also define the global systems necessary to support the global projects and the people (figure 2).

Develop a global project strategy

- Establish a global project strategy

- Establish a relationship management plan in each country and in each global project – who are the important external stakeholders, establish, develop and sustain relationships with these.

Develop a global human resource management plan

- Establish a mobility plan for people working in global projects

- Gain knowledge about the country and the people, develop courses and training.

- Develop RQ skills

Develop the global system

- Global standards

- Global IT system

- Global support

Figure 2 Framework for managing organizational challenges in global projects

Last words

Our study has been done in a Norwegian company, with Norwegian global project managers and more research must be done to see if our findings are applicable for companies in other countries.

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11. Appendix

11.1 Questions for interviewees from traditional projects I (oil and gas industry)

Interview guide

Introduction: briefly introduce the research project to the interviewee, including that it has been funded by the Research Council of Norway, and that the participating companies have also contributed to the financing of the research project. Among the companies involved are Hydro, Statoil, Aker Kværner, Bjørge Solberg & Andersen, Dresser-Rand and Ge Nuovo Pignone. The research project will last for three years. The main goal is to study organizational challenges and collaboration, and the sharing of information and communication on the Kristin and Grane oil platforms (projects). The identities of the interviewees will be kept anonymous.

Please let us know your name and position and how long have you worked on Kristin/Grane. Describe your typical day at work and the phase in which you work.

PHASE 0 – PROJECT INITIATION

1. Before contracts are signed
   (contractor, suppliers and sub-suppliers).

Please describe your involvement with the operator company in the phase before contracts were signed. How was your company involved? Please focus on information/ communication/ collaboration.

2. Negotiations, entering into a contract
   (contractor, suppliers, sub-suppliers).

Please describe the process for establishing the contract between your company and the project. Who was involved, how many people and why was your company selected? Please focus on information/communication/ collaboration.

Does the contract say anything about information/ communication/ collaboration? If yes, what? Please describe the involvement from the contractor's side in the negotiations until the contract was signed? Were you involved in the discussions, and if yes, what could have been improved?

PHASE 1 – PROJECT PLANNING AND START-UP

3. Information, communication, documentation and collaboration

Please describe the project start-up, with a focus on organizational collaboration, information, communication. What kind of information was made available, what was the quality and nature of information exchanges and what forms of communication were employed? Please also describe your perceptions of responsibility, relationship building, and team building. What could have been improved?

4. Training and competence development

Please describe how the training was conducted at the beginning of the project as well as now. Are you given the training you need? Please focus on information-sharing, forms of communication and collaboration issues. Do you think that all project team members got or are getting the training they need?

5. Project management

Please describe the project manager's role and the project management's role, with a focus on organizational collaboration, information, communication and collaboration issues in general. Please describe their role in the start-up, in the execution phase, in managing conflicts, and where you see room for improvement.

6. Formal information, communication routines

Please describe the formal information and communication routines, and the availability of information to all project team members. Describe the support organization versus the project organization; identify possible misunderstandings, and what can be improved.

7. Responsibility

Please describe who is responsible for - 1) decisions 2) updates and changes: are roles and responsibility clearly defined?

8. Informal information, communication, collaboration, conflicts

Please describe the informal side of information and communication – meetings and emails, including the how (the medium) and the who (the recipient), as well as virtual collaborations, and how conflicts and misunderstandings were managed.

9. Work processes and information flow

Please describe the work processes and information flow.

10. Health, environment, safety, work environment

Health: Were people stressed, was there burnout, and if so, what were the consequences? Were there misunderstandings and conflicts?

11. Partnering and relationship building between actors in the value chain

Please describe your experience of the relationship between the oil company (operator), the contractor, the suppliers and the sub-suppliers. Was it characterized by collaboration and/or conflicts?

12. Contract and work processes

Contract versus trust. Conflicts?

13. Cultural differences and differences in interest

Mutual goals and motivation? Conflicts and disagreements? Challenges?

PHASE 3 – OPERATION

14.   Execution versus operation phase

(repeat topics from execution phase)

15. General improvements

Please describe what you think would improve the collaboration.

16. Challenges not mentioned

If there are any challenges/ questions not mentioned, please let us know.

11.2 Questions for interviewees from traditional projects II (construction)

Interview guide

Introduction

Interviewees were told about the research project about evaluation of partnering in projects and that their contributions will contribute to improvements in the partnering model.

Confidential.

We have a list of topics we want to know more about, but we want the interviewees to speak openly and honestly without us asking too many questions. The focus is organizational cooperation, collaboration in partnering projects and improvements.

About the interview object

Please tell us about yourself, your job in the project, your role, your company's role, and how you work with the client, the user and the other companies in the project.

PHASE 0 –PROJECT INITIATION

Please describe your involvement in the early phase, how your company was involved, and about information/ communication/ collaboration in the early phase.

Negotiations

Please describe the contract negotiations, how the contract was signed, who was involved, what was said about partnering, and what partnering means for you and your company. What could be improved?

PHASE 1 – PROJECT PLANNING AND START-UP

Start-up

Please describe the startup of the project. Focus on information/communication/ collaboration/ organizational cooperation issues in general and the partnering model. Please describe the first partnering meeting, the agenda, the discussions, the partnering process. Did you define a goal? Responsibilities? Plan for collaboration? Partnering rules? Resources? Coordination? Communication forms? Relationship building? Teambuilding?

Project management

Please describe the project manager, the project management and their role in the partnering start-up.

Cooperation

Cooperation: short-term versus long-term, value creation, risks, mutual gains, incentives, satisfaction, conflicts.

Information

Please describe how information was shared.

Collaboration with other actors/ organizations

Please describe the collaboration with other organizations.

Communication

Please describe the communication and communication practices. Were there hidden agendas, or was there a great deal of openness?

Contracts

Please describe the contracts (focus on what the contracts say about partnering, organizational cooperation, collaboration, information and communication).

PHASE 2 – PROJECT EXECUTION

Same topics as above (project planning and start-up)

In the future

Please tell us how you think the partnering model will influence the future, expectations, are you happy with the model or not, and how do you think conflicts can be solved?

11.3 Letter for the survey global projects

Global projects survey

Introduction to the survey

More and more companies compete on a global scale and project operations are becoming ever more complex. This survey we attempt to find success factors in global projects. The survey has been sent to 550 StatoilHydro employees in a large number of countries and will be used as part of a doctoral degree at the Norwegian University of Science and Technology (NTNU). The author Wenche Aarseth has a master's degree in Project Management and has worked for several years as a researcher.

Contact persons for additional questions

Vidar Birkeland, StatoilHydro, email vbi@statoilhydro.com

Wenche Aarseth, NTNU/ StatoilHydro, tel +47 975 24049, email Wenche.aarseth@ntnu.no

It takes approximately 15 minutes to answer these questions.

Survey email:

Dear StatoilHydro employee,

I am working at the Norwegian University of Science and Technology (NTNU) in Norway on a research project that is studying how to ensure success in global projects. This project is being conducted in close cooperation with StatoilHydro. Please help us by answering the survey below (see link). The survey is being sent to more than 500 StatoilHydro employees in Canada, Algeria, Venezuela, Libya, Iran, Indonesia, Russia, South Korea and many other countries.

Thank you in advance for your help!

Wenche Aarseth

Researcher

NTNU/StatoilHydro

Dear StatoilHydro colleague,

Our ambition for PRO is to:

- Retain our strong and unique position on the Norwegian continental shelf.
- Strengthen international competitiveness.
- Exploit the company's world-leading technology and ability to execute projects.
- Strong position in the gas value chain and the downstream business.
- Deliver results in accordance with a values-based performance culture.

We expect Wenche Aarseth's survey to support and enhance our work towards our ambition to strengthen our international competitiveness. Please help us improve by answering the survey questions regarding how to gain global project management success.

Thank you very much for your help!

StatoilHydro, PRO

Vidar Birkeland

Vice President

11.4 Questions survey global projects

1) <u>This questionnaire is limited to project work. How many years of experience do you have working in projects (including projects in other areas than the oil industry)?</u>

   0-2 years   3-5 years   5-10 years   More than 10 years

2) <u>How many of these years (from question 1) have you worked in projects in Statoil, Hydro or StatoilHydro?</u>

   0-2 years   3-5 years   5-10 years   More than 10 years

3) <u>How many of these years (from question 1) have you worked in projects for Statoil, Hydro or StatoilHydro in Norway?</u>

   0-2 years   3-5 years   5-10 years   More than 10 years

4) <u>How many years have you worked for Statoil, Hydro or StatoilHydro in global projects?</u>

   0-2 years   3-5 years   5-10 years   More than 10 years

5) <u>From which countries do you have project work experience?</u>

	0-2 years	3-5 years	5-10 years	More than 10 years
Algeria				
Angola				
Azerbaijan				
Belgium				
Brazil				
Canada				
China				
Cuba				
Denmark				
Egypt				
Estonia				
Faroe Islands				
France				
Georgia				
Germany				
India				
Indonesia				
Iran				
Ireland				
Kazakhstan				
Latvia				
Libya				
Lithuania				
Mexico				
Morocco				
Mozambique				
Nigeria				
Norway				
Poland				
Qatar				
Russia				

Saudi Arabia

Singapore

Sweden

Turkey

United Arab Emirates

United Kingdom

USA

Venezuela

Other _____

6) Please specify the other country/ countries from which you have work experience:

Challenges – problems

7) What, in your opinion, are the three most challenging elements working in global projects?

a)   b)   c)

8) On a scale from 1 (not challenging) to 5 (very challenging): In your personal opinion, how challenging are these areas in a global project?

1 Not challenging……………………………………5 Very challenging   Not relevant

Handling cultural differences (in the local society)

Handling cultural differences (in the business culture)

Handling local content

Negotiations with vendors, customers, local authorities, etc.

Participating in multinational teams

Leading multinational teams

Handling different religions

Building a social network with local people (social mingling)

Gaining respect and respecting the local people

Gaining trust and trusting the local people

Contract work with local vendors

Official requirement to hire local vendors

Handling the site team's personal issues/ challenges (with family who were brought to the foreign country, or employees having problems back home in Norway)

Handling local employees in the site team (with different cultures)

Dealing with site team or employees with "difficult" attitudes

Mobilizing trained personnel (locally and globally)

Handling local and national media

Handling local and national authorities

Handling local politicians and political parties

Dealing with environmentalists

Telecommunication and infrastructure (email, phone, Internet, roads, airplanes, etc.)

Handling finance questions

Support from management and basis organisation in Norway

Dealing with ethical dilemmas

Corruption

Complying with local laws

Other (please write other areas, if not mentioned above):_____

9) Please specify the country here

10) Please specify other

Project Success

11) On a scale from 1 (not important) to 5 (very important): In your personal opinion, how **important** are these areas for project success?

1 Not important…………………………………5 Very important   Not relevant

Handling cultural differences in the local society

Handling cultural differences in the business culture

Handling local content

Negotiations with vendors, customers, local authorities, etc.

Participating in multinational teams

Leading multinational teams

Handling different religions

Building a social network with local people (social mingling)

Gaining respect and respecting the local people

Gaining trust and trusting the local people

Contract work with local vendors

Official requirement to hire local vendors

Handling the site team's personal issues/ challenges (with family brought to the a foreign country, or employees having problems back home in Norway)

Handling local employees in the site team (with different cultures)

Dealing with site team or employees with "difficult" attitudes

Mobilizing trained personnel (locally and globally)

Handling local and national media

Handling local and national authorities

Handling local politicians and political parties

Dealing with environmentalists

Telecommunication and infrastructure (email, phone, Internet, roads, airplanes, etc.)

Handling finance questions

Support from management and basis organisation in Norway

Dealing with ethical dilemmas

Corruption

Complying with local laws

Other (please write other areas, if not mentioned above):_____

12) Please specify the country here

13) Please specify other

14) <u>Preconditions for success</u>

If you should experience the same challenges again: In your opinion, what would be preconditions for project success?

1 Not important precondition………………5 Very important precondition   Not relevant

Involvement from home organization in Norway

Involvement from management in Norway

Professional help/ someone professional to talk to regarding site team's personal problems, for example medical personnel or psychologists

Visit the project site before starting working there

Focus and training on employment of "right" kind of people with a positive attitude

Better preparation of employees and site team before leaving Norway

Transfer of experience and knowledge (positive and negative) from other global project managers and teams

Available infrastructure and technology

Joint venture with other companies with more local knowledge

Perform and actively handle stakeholder analysis

Perform and actively handle risk mitigation analysis

Perform and actively handle aim and scope analysis

Coaching

Project Planning and control

Other type of solution, please specify_____

15) Please specify other

16) Preconditions for success

How good is StatoilHydro at handling these challenges?

1 Not good at handling this…………   5 Very good at handling this   Not relevant

Involvement from home organization in Norway

Involvement from management in Norway

Professional help/ someone professional to talk to regarding site team's personal problems, for example medical personnel or psychologists

Visit the project site before starting working there

Focus and training on employment of "right" kind of people with a positive attitude

Better preparation of employees and site team before leaving Norway

Transfer of experience and knowledge (positive and negative) from other global project managers and teams

Available infrastructure and technology

Joint venture with other companies with more local knowledge

Perform and actively handle stakeholder analysis

Perform and actively handle risk mitigation analysis

Perform and actively handle aim and scope analysis

Coaching

Project Planning and control

Other type of solution, please specify_____

17) Please specify other

18) <u>Could training/ continuing education on one or several of these areas help in creating project success?:</u>

1 Not important to create project success 5 Very important to creating project success   Not relevant

    Handling cultural differences (in the society)

    Handling cultural differences (c in the business culture)

    Handling different religions

    Negotiating with vendors, customers, local authorities, etc.

    Cultural awareness for specific regions

    Local decision making processes

    Contracting strategy regarding local content

    How to handle local employees in site team (with different cultures)

    How to build a social network with local people (social mingling)

    How to gain respect and respecting the local people

    How to gain trust and trusting the local people

    Handling media

    Handling authorities

    Handling local politicians and local political parties

    Leading multinational teams

    Handling site team's personal issues/ challenges

    Mobilizing trained personnel

    Handling laws

    Contract issues

    Dealing with ethical dilemmas

    Corruption

    Environmentalists

    Local action groups

    Training on how to handle finance questions

Other type of education/ training, please specify_____

19) Please specify other

20) How good is the training/ continuing education on these areas in StatoilHydro today?

1 Not good at training on this area   5 Very good at training on this area   Not relevant

Handling cultural differences (in the society)

Handling cultural differences (in the business culture)

Handling different religions

Negotiating with vendors, customers, local authorities, etc.

Cultural awareness for specific regions

Decision processes locally

Contracting strategy regarding local content

How to handle local employees in site team (with different cultures)

How to build a social network with local people (social mingling)

How to gain respect and respecting the local people

How to gain trust and trusting the local people

Handling media

Handling authorities

Handling local politicians and local political parties

Leading multinational teams

Handling site team's personal issues/ challenges

Mobilizing trained personnel

Handling laws

Contract issues

Dealing with ethical dilemmas

Corruption

Environmentalists

Local action groups

Training on how to handle finance questions

Other type of education/ training, please specify_____

21) Please specify other type of education/ training

22) <u>Whose interest is most critical for success in global projects?</u>

(Which stakeholder is most important for project success)? Please rank from 1 (unimportant stakeholder) to 5 (very important stakeholder).

1 Unimportant stakeholder…………………5 Very important stakeholder   Not relevant

Local authorities

Partners

Contractor/ subcontractor

Suppliers

Your project owner

StatoilHydro home organization

Local media

Local politicians and political parties

Norwegian politicians and political parties

Activist groups (safety and health groups, environmental groups, big issue groups, etc.)

Local government

Client

Client advocate groups

Unions

Competitors

Employees

Law enforcement – legal authorities

Local inhabitants

Others, please specify _____

23) Please specify country

24) Please specify other

25) <u>Other areas - not mentioned</u>

Are there any areas not mentioned in the questionnaire? Please feel free to write in your own words about the challenges you have experienced in global projects and your suggestions as to solutions.

Thank you very much for your help!

11.5 Questions for interviewees in global projects

1) On a scale from 1 (not challenging) to 6 (very challenging):
   Which of the following is <u>most challenging</u> in global projects and why?

- Internal stakeholders in the project team: e.g. handling and participating in multinational project teams, project workers with different religions, infrastructure, handling economical questions in the project.
- External stakeholders in the project: e.g. contract work with local vendors, local content, local and national authorities, different business culture.
- External stakeholders outside the project: e.g. handling environmentalists, media, politicians, political parties.
- External requirements from stakeholders outside the project: e.g. corruption, local law, ethics.
- Organizational Support: e.g. Support from management and the home organization in Norway, mobilizing people, handling personal problems, handling project workers with difficult attitudes.
- External stakeholders in the local community: e.g. Respect and trust local people, building a social network.

Please elaborate more on these challenges.

Explain more thoroughly what these challenges consists of!

What in your opinion are the reasons for these challenges?

What can be done to avoid these challenges in the future?

2) On a scale from 1 (not important) to 6 (most important)

What is most important for project success in global projects and why?

- Internal stakeholders in the project team: e.g. handling and participating in a multinational project team, telecommunication and infrastructure, handling economical questions in the project.
- External stakeholders in the project: e.g. contract work with local vendors, handling local content, official requirement to hire local vendors.
- External stakeholders outside the project: e.g. handling environmentalists, media, politicians, political parties.
- External demands from stakeholders outside the project: e.g. corruption, local law, ethics.
- Organizational Support: e.g. support from management and home organization in Norway, mobilizing people.
- External stakeholders in the local community: e.g. building a social network, handling cultural differences in the society.

Please elaborate on what you perceive is most important for project success.

Please explain more thoroughly what you think is most important for project success and why.

What can be done to ensure success in global projects in the future?