Contracting based on Cross-Cultural Appraisal

TU Delft – CB&I

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Challenge the Future

A World of Solutions
“Education is not the learning of many facts, but the training of the mind to think”.

Albert Einstein

Dedicated to Sahar,
for being the embodiment of love in my life
Executive Summary
Large Engineering and Construction Projects (LECPs) are going to be even larger in size than ever before. The stakeholders that are involved globally in the large projects have different cultural backgrounds. However, the influence of culture on the contractual relationship is relatively unexplored. With focusing on cross-cultural perspectives, a greater understanding of how to increase cooperation among overseas project partners may be indicated. Thus, there is a need to find the influence of culture on the cooperative relationships. In addition, contracts bind contracting parties together. Therefore, in order to manage projects better in a multi-cultural environment, it would be required to realize if there would be any influential connection between culture, contract and relationship.

The aim of this research is finding whether and how culture, contract, and relationship are influenced by each other. The main research question is asked as:

- How would cultural characteristics influence the choice of contract form and cooperative relationship?

This research was undertaken by using an exploratory approach. A conceptual model has been developed. The cases have been studied in the CB&I Oil and Gas Company. Data was collected by the interviews and project records. Based on the findings in the literature review, we investigated the influence of two national dimensions of culture, which are power distance and uncertainty avoidance. The elements of the relationship are taken as trust, common goals, commitment, long-term relationship, communication, and decision making process. The form of contract is investigated together with risk sharing scheme, schedule, and budget plan. The possible influential links between culture, contract, and relationship are investigated by using the conceptual model.

As the results of this research indicated, we found that the forms of contract do not influence the success of project. Moreover, the contractual relationship can have positive impact on the project performance if the relationship governs. Otherwise, if the contract governs the contractual relationship, the project performance will be negatively influenced.

This research indicates that to some degree the level of trust influences the risk sharing scheme between contractual parties. With a trusting relationship, risks are likely to be shared between the client and contractor. Moreover, the relationship’s elements are not influenced by the forms of contract. However, schedule and budget influence common goals between the contractual parties. Realistic scheduling and budget facilitate the goals to be aligned. To a certain extent, commitment is improved by aligning the goals. This results in increasing the trust. Consequently, long-term relationships will be established.

The result of this research indicates that the cultural differences between the client and contractor do not play a major role as long as contractor adapts to the client’s culture. In order to find the cultural differences, the actual culture of client should be recognized in the early phase of project. If the project is executed based on the client’s perceived culture which is different from the client’s actual culture, the relationship will be negatively influenced. Since contractor is in the position to earn trust, the adaptation
can be done by the contractor. Communication and decision making as the relationship elements can be adapted to the client’s actual culture.

The factors as cultural adaptation, aligning the goals, and following the commitments reinforce the trust. However, trust is negatively influenced by the absence of one of these factors. Therefore, in order to increase the possibility of a good relationship quality, all three factors need to be fostered.

To some degree, uncertainty avoidance in the client’s culture influences client’s preferences in forms of contract. Nonetheless, such other factors as law, regulation, market situation, investors’ preferences, common practices in industry are also the influential factors in deciding the forms of contract.

This research recommends adapting to the client’s cultural behavior and aligning the goals in the early phase of project. Setting up an integrated team with the client can facilitate aligning the goals and the cultural adaptation.

This research only focuses on two cultural dimensions (power distance, and uncertainty avoidance). Further research would be required to study the influence of other cultural dimensions (as individualism versus collectivism, masculinity versus femininity, short- and long-term orientation, and indulgence versus restraint) on the contractual relationship. Moreover, we investigated the influence of national cultures on the relationship between the parties. These dimensions of national culture affect the thinking about the organization. A further study would be required to investigate the influence of organizational culture (also known as company culture) on the contractual relationship and contract.
Acknowledgement

Foremost I wish to offer my sincere gratitude to my supervisors, Prof. Dr. Hans Bakker, Dr. Ir. Marian Bosch-Rekveldt, Ir. M. (Prap) Suprapto, and Ir. Dick Roodenburg for supporting me. I appreciate the dedication and commitment that all my supervisors have shown throughout the process of implementing my thesis. The patience, encouragement, guidance and support that all of my supervisors have offered me has kept me motivated and on track towards my goal. Without their knowledge and assistance the results of my thesis would not be achieved.

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I want to take the opportunity to show my appreciation to my family and friends for supporting me throughout my study at Delft University of Technology. My deepest thanks go to my wife, Sahar, who has never refrained from infusing me with passion and inspiration throughout these years.

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Abbreviations
BDEP - Basic Design Engineering Package
CW - Collaborative Working
ECs - Engineering and Construction Contractor
FED - Front End Development
FEL - Front End Loading
FEED - Front End Engineering Design
ITB - Invitation to Bid
LECP - Large Engineering and Construction Project
LS - Lump Sum
LSTK - Lump Sum Turnkey
PD - Power Distance
PMC – Project Management Consultancy
SRU - Sulfur Recovery Unit
TK - Turn Key
TIC - Total Investment Cost
UA - Uncertainty Avoidance

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1. Introduction

The demand for energy is increasing worldwide and is exceeding the supply (EIA, 2013). This requires huge capital to be invested globally in the energy sector in order to keep supplies up to the demand. Worldwide involvement of stakeholders in these huge projects that can be categorized as Large Engineering Construction Projects (LECPs) increases the complexity of LECPs. Owners and contractors in LECPs have contractual relationships. The Contract binds contracting parties together. Selecting an appropriate form of contract could significantly affect the success of large construction projects. The forms of contract should reflect the nature of the required relationship. Moreover, culture and its value are the foundation of any relationship. Therefore, finding out the influence of culture on the contracts’ components and on the relationship elements and creating a suitable form of contract based on cross-cultural appraisal, could assist in building a cooperative relationship among parties involved. Literature suggests that both owners and contractors should find alternative forms of contract that foster the cooperative relation rather than adversary behavior. Thompson et al. (1998) argued that there is a need to make a balance between the relationship and the contract.

Nevertheless, the nature of different relationships and their effect on the project performance have not been investigated. Besides, the influence of different contracting types on the quality of the relationship is relatively unexplored (Suprapto, 2011). As said before, with focusing on cross-cultural perspectives, a greater understanding of how to increase cooperation among overseas project partners can be indicated.

The aim of this research is to find if there are cultural influences on relationship’s elements, on the contract, and to find the triangular relations of culture, contract and relationship. For that reason, by doing the literature review, an initial conceptual model has been developed in chapter 2 of this research. This research is undertaken by case study. The research design and analysis framework, and the developed conceptual model are in chapter 3. Chapter 4 is about the selection of the cases, and the case studies. In order to find the similar patterns and or differences in cases, there is the cross-case analysis in chapter 5. The findings of this research are discussed in chapter 6, and the managerial implication is stated there. The research questions are answered in chapter 7. Moreover, since there are still some questions that arise from this research, chapter 8 is about further research and also the recommendations to the company.

The thesis is executed within the company CB&I. The cases (projects) are studied and the analysis is carried out based on the findings in the cases.

1.1. Problem statement

Large Engineering and Construction Projects (LECPs) are going to be even larger in the future. Stakeholders that are involved globally in the huge projects have different cultural background that influence the relationship between parties involved in the projects. By fostering the cooperation relationship, the probability to meet the project objectives is higher. However, building up cooperative relationships between parties will be difficult in a global situation. Although the contract binds contracting parties together, the contract should reflect the nature of the desired relationship. Moreover, there is a need to find the influence of culture in selecting the appropriate form of contracts.
In other words, with focusing on cross-cultural perspectives, a greater understanding of how to increase cooperation among overseas project partners can be indicated (Lu and Hao, 2013).

Nevertheless, the influence of culture on building up the relation and appropriate contracting strategy has not been considered. To manage projects better in a multi-cultural environment, it would be required to determine if there would be any influential connection between culture, contract and relation. Therefore, the aim of this research is finding how culture, contract, and relationship are influenced by each other.

1.2. Research questions
The main research question to address the defined problem is designed as follow:

1. How would cultural characteristics influence the choice of contract form and cooperative relationship?

To answer the main question the following sub-questions should be answered:

1.1. What is the influence of culture on the relationship quality between client and contractor?

1.2. What is the influence of culture on the contract between client and contractor?

1.3. What is the influence of relationship on the choice of contract?

1.4. What is the influence of contract on the elements of the relationship?

1.3. CB&I
CB&I (Chicago Bridge & Iron Company N.V.) is an international complete energy infrastructure focused company. The company presents itself in the several energy markets, such as Up-stream oil & gas, Down-stream oil & gas, LNG, Power, Environmental, Infrastructure, and Water & Wastewater. Therefore, the company is organized into four business groups that are Technology group, Engineering, Construction & Maintenance group, Fabrication Services group, Government Solutions group. The company has several branches around the world. The Corporate Headquarters of Chicago Bridge & Iron Company N.V. (CB&I) is located in The Hague, Netherlands. The Worldwide Administrative Office of CB&I is located in The Woodlands, USA.

CB&I The Hague as a leading Engineering, Procurement, Construction (EPC) contractor provides in depth technology, project execution (EPC) and project management services in the oil & gas, petroleum refining and petrochemical industries on a worldwide scale, both Up-stream and Down-stream. In other words, the whole scope of a project from basic design, detail design, procurement, and construction to start up the plant, and maintenance services can be supported by CB&I. Thus, no project is too big for this company.
CB&I The Hague has around 800 staff. The worldwide oil and gas staff consists of approximately 3000 excluding Australia. The total staff employed by CB&I around the world counts approximately 50,000 people.

CB&I and this research’s topic
Dealing with different clients across the world requires good management and the nurturing of relationships with clients. The topic of this research is interesting for the company since the result would contribute to objectively measure how effective CB&I is in improving relationships and project performance from a cultural point of view.
2. Literature Review

To cover the whole scope of these research questions, and to find out how the topic of this research has been addressed in the academic works, it requires reviewing the literature in six major areas. Dealing with Large Engineering and Construction Projects in a multicultural environment and regarding client-contractor contractual relationship led us to select these six major areas. The areas are globalization, Large Engineering and Construction Projects, relationship elements, contract components, cultural dimensions, and organizational culture.

2.1. Globalization

The global connections between countries are stronger than ever before. Global economic cooperation and technology transfer are common practice within the general trend of globalization (Chan and Tse, 2003). Operations across borders and time with multi-disciplinary, multi-cultural project teams are led by globalization. Stakeholder management, project governance, scope change control, and risk management have become more complex. Also delivery and execution in multiple jurisdictions makes procurement management more complicated. Ballow (2005) states the main issues that the companies would face in global operations is the understanding of international socio-cultural issues.

However, this general trend of globalization creates resistance. Steger (2009) argues that protecting people from the negative consequences of globalization is the aim of anti-globalist. Problems caused by anti-globalism camps can negatively influence international projects. Huntington (1993) in his paper “the clash of civilizations” believes that the great divisions among humankind and the dominating source of conflict will be culture.

Dealing with this issue would be expected to be more complex in huge international projects. Since huge international projects involve significant capital investment, the failures would result in substantial negative consequences. International construction projects are just one sort of those projects that involve multinational participants from different political, legal, economic, and cultural backgrounds (Chan and Tse, 2003). In international construction projects, at least one of the contractor, the lead consultant, or the employer is working outside his or her country of origin (Stebblings, 1998).

Giritli et al. (2013) argue that impact of globalization on construction business might influence the managers to be culturally sensitive in multicultural organizational environments.

2.2. Large Engineering and Construction Projects

Large number of artifacts such as bridges, tunnels, and processing facilities are covered by Large Engineering and Construction Projects (LECPs). Therefore LECPs form an important area of economic activity. They have huge impact on their environment. They involved many stakeholders, and large capital investment, while spanning long time periods (Berends, 2007a).

Among the international LECPs the oil and gas industry is critical. According to EIA (2013) International Energy Outlook, in the period from 2010 to 2040, the energy consumption will increase by 56 percent. Liquids consumption increases at an average annual rate of 0.9 percent from 2010 to 2040. The world’s total natural gas consumption increases by 1.7 percent per year on average, from 113 trillion cubic feet in 2010 to 132 trillion cubic feet in 2020 and 185 trillion cubic feet in 2040. Fossil fuels continue to
supply most of the world’s energy. In 2040, liquid fuels, natural gas, and coal still supply more than three-fourths of total world energy consumption. Although the high price of oil has influenced the decision in the energy consumption sector by switching from liquid fuels to other cheaper alternatives when feasible, petroleum and other liquid fuels remain the largest source of energy. According to the oil prices report provided by Bolton (25 April 2013) for the UK parliament, the oil price has fluctuated during the last decades, however despite some decreases, the price overall tends to increase. The International Energy Agency’s business projections put the price of oil at almost $250 per barrel in 2035. Deutsche Bank Markets Research in the report of Global LNG provided by Sankey et al. (17 September 2012) claims that the demand clearly exceeds the supply through 2017. The projects also tend to be more expensive such as Gorgon offshore northwest Australia project which is approximately $60bn (Sankey et al., 17 September 2012).

The oil and gas industry meets a surge in upstream activity driven by high crude oil prices. The facilities of oil and gas require Engineering and Construction contractors (ECs) which are the key players in the Large Engineering and Construction Projects (LECPs). LECPs are technically complex and owners usually do not have enough in-house capability. During the next decades LECPs would be more important and owners should deeply rely on ECs for development and execution of these projects. However, due to complexity and long life cycle of LECPs, contracts are intrinsically incomplete (Berends, 2007b).

Berends (2007b) simplified the general view of the life cycle of LECPs and states that the life cycle of LECPs consists of development phase and implementation phase. However, based on his assumption he mentioned the development phase as the most critical phase in the life cycle of LECPs.

Berends and Dhillon (2004) argued that the cost of development and the resources in projects are just ruined, if the projects are not completed. They said that the major commitments should be done early during the project implementation. Involving large number of stakeholders as owner, contractors, authorities, customers and supplier requires a systematic organizational framework for institutional cooperation to realize the success of projects (Berends, 2007b).

Traditionally, the risks of execution in LECPs are transferred to the side of ECs. LECPs involved high risks because of the large investment, indivisibility, not transferrable facility, and the long duration of development and implementation (Berends, 2007b). For that reason an integral part of project management in LECPs is risk management (Chapman and Ward, 1997). Nevertheless, only small numbers of ECs are capable of implementing LECPs. ECs are faced with two major problems. First the limitation of professional human resources and second their low liability to take financial risk compared to the financial risks associated with LECPs. Therefore, ECs would be inappropriate to handle the risks. Thus, the traditional contracting strategy leads LEPCs to meet the difficulties (Berends, 2007b). In the past owners tried to mitigate the inefficiency by making a strong competition between ECs. However, later they realized that the owners and ECs are required to find alternative contracting strategies (Lavell, 2006). In the current situation there are some alternative contracting strategies. For instance integrative model of project delivery is a quite new approach with risk sharing features, which would be effective for complex projects such as LECPs (Chism and Armstrong, 2010). Nevertheless, suitable choices of
project delivery strategies are significantly influenced by the owners’ culture and affect the relationship with all other project stakeholders (Chism and Armstrong, 2010).

### 2.3. Relationship

Recent research has shown that there is a shift in project management approach from hard aspect in the traditional view to the soft aspects (people and social). With regard to management of inter-firm projects, there have been trends on theoretical development concerning the role of contracts, the establishment of inter-firm relationships, and the development of project networks. The main issues are cooperation and coordination, governance structures, role and limits of contracts, knowledge sharing, trust and cultural aspects (Söderlund, 2004).

Findings from empirical research indicates that the relationship based on mutual trust and long term orientation will enhance project success (Carolynn et al., 2000, Chan et al., 2004, Berends, 2007c, Bakker et al., 2010, Bosch-Rekveldt et al., 2011a, Berends, 2007b). Aligned goals and interests among parties, better communication, problem solving and dispute handling, and better working conditions among parties contribute to the success of projects and are the positive effects of such relationships.

Management of business in relation to its environment has been neglected in the project management literatures (Artto and Wikstrom, 2005). Facilitating alignments between the various actors involved in the project is a role for the project manager (Winch, 2002). Reciprocal interactions in networks that foster trust and cooperation is required in complex and uncertain situations (Provan and Kenis, 2007). In order to achieve better project performance, it is important to understand the relationships between project actors (people and firms) and to properly manage the way they work together (Pryke and Smyth, 2006).

Typically, a large number of stakeholders, such as the owner, designer, consultants, main contractor, subcontractors, and suppliers, have to work together on the design and construction of a complex project (Xue et al., 2010). Good relationships between project participants is the foundation of cooperation (Hartman, 1993, Cheung et al., 2004). Project performance is influenced by the cooperative relationship among stakeholders involved. A necessary condition for having a successful construction project is the joint effort of partner organizations; even though the level of conflicts in the construction industry is higher than in other industries (Lu and Hao, 2013). Pinnell (1999) and Yiu and Cheung (2006) stated that the reality is that conflicts are inherent in most construction projects. Nonetheless, the cooperative working environment maintains the harmonious relationship between contracting parties and allows effective execution of contractual rights and obligations (Yiu and Cheung, 2006, Harmon, 2003). Adversarial behavior destroys cooperation and the amicable completion of construction projects (Byrnes, 2002, Harmon, 2003).

However, Cheung et al. (2009) suggested that construction projects may not be inherently adversarial. Contracts with equitable risks allocation supported by open discussion of problems provide the platform for team building whereby relationships among the contracting parties can be maintained.

Cheung et al. (2009) in their study of aggressive and cooperative drivers of construction contracting state that despite the general view of confrontational construction contracting, the respondents to their
study did not consider their contracting behavior as aggressive. However, the projects will often end
with disputes. Cheung et al. (2009) investigated the drivers of aggressive, and the drivers of cooperative
behavior of contracting parties. Drivers mean those strengths and stimuli that stimulate cooperative or
aggressive behaviors. Contracting parties can take a cooperative or aggressive position in pursuing their
goals depending on the significance of the influence of the drivers. Their study results suggest the most
important aggressive driver as “goal oriented” and most cooperative driver as “openness of contracting
parties”.

Over the past few decades researchers have identified a large number of cooperative mechanisms. Chen
et al. (1998) state the main cooperative mechanisms as follows: super-ordinate goals, group identity,
accountability, communication, reward structure and incentives, and trust.

Sambasivan and Soon (2007) mentioned the lack of communication between parties as one of the most
important causes of delay that may lead to disputes and litigation between parties. The situation would
be more complex when many parties are involved in the project. Morgan and Hunt (1994) argue that
“commitment and trust lead directly to cooperative behaviors.” They theorized commitments as the
central to all the relational exchanges between firm and its partners (Morgan and Hunt, 1994). Moreover, Berry and Parasuraman (1991) state that “relationships are built on the foundation of mutual
commitment.”

Among the cooperative mechanism, trust has been highlighted by many studies. Trust among project
participants enable problems to be solved more effectively (Luo, 2002). In construction, trust is the key
driver in fostering cooperation (Cheung et al., 2011b). However, Zaghloul and Hartman (2003) state that in
the construction industry trust between contracting parties is low.

Current contractual relationship between parties is based on a confrontational situation that indicates
the level of trust or mistrust in the contract documents. This results in increasing of the total cost of
projects and influences overall relationship between parties involved (Zaghloul and Hartman, 2003).

Chow et al. (2012) stated that project team members should develop trust between themselves.
Members in a project team may have opposing interests, but trust may facilitate cooperation in such a
team (Mayer et al., 1995). Trust-based relationship between owner and contractor makes the possibility
to command structure and authority systems, incentive systems, administrated pricing systems (cost,
qualities, and prices), good communication, and team working environment in order to reduce the total
cost of a project (Zaghloul and Hartman, 2003). By increasing the trust among parties the cost of
negotiation and monitoring could be decreased and possibility for attaining mutually beneficial
agreements would be increased (Chow et al., 2012). The opportunistic behavior might also be
suppressed by building up the trust between construction contracting parties (Wong and Cheung, 2004).

Since conflict is inherent in the construction projects (Yiu and Cheung, 2006), trust would play an
important role to reduce the conflicts. Based on a “trust relationship” contractors and clients may be
ready to change to a different mechanism for risk allocation that depends on whether the parties have
cooperated before, and whether each has a good reputation and the knowledge to manage risk
(Rahman and Kumaswarasamy, 2008).
Zaghloul and Hartman (2003) state that trust and contracting methods are related and that this relationship is of vital importance to effective project management and contract administration. In addition to reach a better risk allocation process, a trust relationship between the contracting parties should exist first. To build up a trust relationship between the contracting parties, a negotiation phase prior to the start of the contract should exist. Risk sharing, risk reward, mitigation and clear understanding of risk may facilitate building trust.

Lu and Hao (2013) in their paper of the influence of owner power in fostering contractor cooperation consider the trust and power as two mechanisms for promoting cooperation among construction partners. Kadefors (2004) states contractors often accept extra requests from owners that are not in line with the contracts, as they are concerned about the owner’s coercive power to reduce their benefits. That cooperative behavior may be stimulated by fear and force. The use of forced power to stimulate cooperative behavior is a convenient option for the powerful organizations (Pretty and Ward, 2001). In addition, Pretty and Ward (2001) claim that although the institutional arrangements between contracting parties in the construction industry has well-developed under risk-laden contracts, the situation and exchanges are based on fear and/or power rather than trust.

The use of coercive power influences negatively the long-term relationship between owner and contractor (Lu and Hao, 2013). Construction firms that overcome the barriers against trust could successfully build up the long-term business partnerships (Wong and Cheung, 2004).

2.4. Contract

Construction contracts are the written agreements signed by the contracting parties (mainly an owner and a contractor), which bind them, defining relationships and obligations (O’Reilly, 1996). Contract theory describes a contract as an agreement under which two parties make reciprocal commitments in terms of their behavior—a bilateral cooperation arrangement (Berends, 2007b). Indeed, whilst contracts define the scope of work and the responsibilities of the parties involved, above all they define the consequences of nonperformance and the associated liabilities (Berends, 2007b).

The selection of proper contracts results in saving time and money in the project. Project cost can be reduced 5% by efficient contracting methods (Christopher, 1994). In any certain project, the owner’s goal can best be achieved by selecting the contract type that will most effectively motivate the contractor to the desired end (Zaghloul and Hartman, 2003).

Generally, the contract’s form can be classified in four major groups that are namely 1) traditional, 2) collaborative, 3) integrative, and 4) partnership. Each of them has different delivery strategy for projects’ promises that affect the success of the project (Chism and Armstrong, 2010).

Merrow (2011) defines four basic form of contract for mega project as:

- EPC lump sum fixed price contracting
- Reimbursable EPC and EPCm
- Alliance contracts
- Mixed contracts (mixed of lump sum and reimbursable)
Remuneration principle plays a noticeable role in each categorization. Another categorization is based on remuneration scheme. Veld and Peeters (1989) distinguish two extreme forms of contracts as:

- Cost reimbursable contracts
- Fixed price contracts

Conceptually, contracting strategy is defined as a process of choosing various forms in the continuum between traditional lump sum and cost reimbursable. The key characteristics of various forms of contracts are illustrated in Table 1.

<table>
<thead>
<tr>
<th>Contract Type</th>
<th>Key Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lump sum</td>
<td>• The contractor bid on a contract based upon specifications provided by the owner against competitors, agreeing to develop a project at a fixed price</td>
</tr>
<tr>
<td>Negotiated fixed-price</td>
<td>• The contractor is selected first then the price is negotiated with the owner</td>
</tr>
<tr>
<td></td>
<td>• Generally used when the contractor commence work before a final price is agreed upon</td>
</tr>
<tr>
<td>Unit price contract</td>
<td>• The contractor is paid a set amount for every “unit” of work performed</td>
</tr>
<tr>
<td></td>
<td>• If the contractor perform well under this contract, contractor can benefit from cost savings; however, if the project does not proceed as originally planned, the contractor cannot recover cost overruns except in certain limited situations</td>
</tr>
<tr>
<td>Guaranteed maximum price</td>
<td>• Is performed in a manner similar to cost reimbursable contract except that the total fee plus the total cost cannot exceed an agreed upon guaranteed maximum price (GMP).</td>
</tr>
<tr>
<td></td>
<td>• The contractor maybe responsible for some or all of the total cost of the project if the cost exceeds the GMP; if the total cost is less than the negotiated GMP, the contractor may get the benefit of the cost savings based upon a negotiated agreement with the owner</td>
</tr>
<tr>
<td>Cost reimbursable</td>
<td>• The owner reimburses all cost in performing a project and pays contractors a pre-determined fee or a percentage fee of the cost incurred</td>
</tr>
<tr>
<td></td>
<td>• The contractor’s profit may be in the form of a fee, a simple mark-up applied to labor cost incurred, or a combination of the two</td>
</tr>
<tr>
<td></td>
<td>• The fee may be an incentive fee based upon achieving certain performance factors, milestones or targets; it may be a fixed amount in the contract; or it may be based upon a percentage of the cost incurred</td>
</tr>
<tr>
<td>Converted lump sum</td>
<td>• A hybrid form of reimbursable and lump sum contract with a single contract for development and implementation.</td>
</tr>
<tr>
<td></td>
<td>• Initially during development phase (FED), a reimbursable contract will be used, after the certainties of scope and costs are known, the contract is converted to lump sum for implementation phase (detail engineering, procurement, and construction works).</td>
</tr>
</tbody>
</table>

Table 1: key characteristics of various types of contract; adapted from (Suprapto, 2011)

Contracting should offer a strategic view of the best relationship to realize required results (Bresnen, 2007, Bygballe et al., 2010, Gadde and Dubois, 2010, Meng et al., 2011). The contract represents the decision on remuneration and risk allocation. Nevertheless, the form of contract should reflect the nature of the desired relationship. The relationship between different people within different organizations often starts before and continues well beyond a contract (Bygballe et al., 2010, Smyth and Pryke, 2008, Walker and Hampson, 2003).
As the conceptual framework of a contract suggested by Thompson et al. (1998), a contract consists of four main elements:

1. the relation between parties
2. the responsibilities of each party within the transaction
3. the risk apportionment of the contract for given actions and events;
4. the reimbursement structure

The interaction of these four components define the contractual relationship (Cox and Thompson, 1997) and the linking of the contract to the relationship (Figure 1).

![Figure 1: The four R’s of contractual relation (Thompson et al., 1998)](image)

Contractual responsibilities and the apportioning of risk should be driven by the relationship between parties. Some contracting strategies put the risk at the side of contractors, while some other forms of contract focus on joint responsibilities and risk sharing. Reimbursement structure of the contract reflects the responsibilities and the risk sharing scheme between parties (Thompson et al., 1998).

In the contracts of Large Engineering and Construction Projects (LECPs) exchanging the information about the role and responsibilities between the owner and Engineering and Construction contractor (EC) is essential to make them able to play their role effectively (Berends, 2007b). Elements of contract which Berends (2007b) describes are information transmission and incentives. He believes that both elements go hand-in-hand.

Thompson et al. (1998) state collaborative relations have higher relational influence and less contractual influence. They describe contractual relations as two extremes of Arms-length with more confrontational situation and collaborative with more harmonized situation between parties. As illustrated in Figure 2, influence of the relation in a collaborative contractual relation would be higher than the influence of the contract. “Fit-for-purpose” contractual relation is defined as optimum contracting strategies for the successful procurement of construction. Cox (1996) stated that “fit-for-purpose” should be based on finding partners who are interested in collaborative forms of sourcing rather than adversarial forms.
As discussed earlier, the risk allocation is one of the components in a contract. Zaghloul and Hartman (2003) state that in a situation where more than one party (owner, contractor, consultant, etc.) is responsible for execution of the project, the risk allocation should be done accurately. The allocation of risks affects the behavior of parties involved and has a significant influence on the final cost. Transaction cost may be lower by a suitable risk allocation and the appropriate allocation of risk has a dramatic influence on the successful contacting process. However, despite the fact that contracting should be based on the way of managing and distributing of risks, the form of contract should reflect the nature of required relation.

Zaghloul and Hartman (2003) in their research based on two independent surveys of Owners, Consultants and Contractors across Canada, find out that the connection between trust and risk allocation is significant. They state “owner’s and contractor’s risk allocation contracting practice is mainly a function of their trust (or mistrust) relationship between each other.”

The correlation between the contract and the relationship is of major importance in projects. Building up a contract without considering the appropriate relationship may result in an adversarial behavior between parties. Therefore there is a need to make a balance between the relationship and the contracting as shown in Figure 3 (Thompson et al., 1998).

Figure 2: A conceptual approach to contractual relations (Thompson et al., 1998)

Figure 3: Balancing the contract against relation (Thompson et al., 1998)
Thompson et al. (1998) argued that trying to change contractual relations and behavior by changing the contractual elements alone has little or no effect, since the contract is only complementary to the relationship and the relationship governs. Suprapto et al. (forthcoming) stated that “contract should not be used to manage the working relationship”.

2.5. Cultural dimension

“People are the ones that make or break the project.” (Bosch-Rekveldt et al., 2011b). Project outcomes will be optimized and performance level will be higher, if efforts on contractual and non-contractual requirements, practice, and their relevant protocols would be coordinated. This requires an efficient merge of collaborative efforts from various professional, organizational, operational, and regional/national cultures, and fostering of harmonious relationships during project execution (Rahman and Kumaraswamy, 2008).

Hofstede et al. (2010) define culture as “the collective programming of the mind that distinguishes the members of one group or category of people from others”. Hofstede mentions that values are an invisible part of culture until they become evident in behavior. Human mental programs cannot be observed directly and only words, attitudes to real or hypothetical dilemmas, and actual deeds can be ‘observed’. Figure 4 illustrates the onion model of culture. According to the onion model, values are located at the core and in the deepest part. This means that value of a culture cannot be changed simply.

![Figure 4: The “onion diagram”, manifestations of culture at different levels of depth (Hofstede et al., 2010)](image)

Loosemore (1999) stated that “a culture of a society is its shared values, understandings, assumptions, and goals learned from earlier generations. It results in common attitudes, codes of conduct, and expectations that guide behavior.”

There is relationship between cultural behavior and trust. Developing the trust across culture with different values and mores makes it a unique and complex problem (Rowlinson and Cheung, 2004). Lu and Hao (2013) state that the relationship between trust and coercive power are somehow mixed. They state that the perception of power is necessarily associated with individual beliefs and the cultural context of non-Western cultures. Lu and Hao (2013) conclude that the use of coercive power to threaten
contractors may not have as serious a negative impact in China as it does in a Western context, owing to the dominant high power distance culture in China.

A recent study done in a Chinese context indicated that trust and coercive power can jointly promote collaborations between suppliers and consumers in China (Yeung et al., 2009). Hwang (1987) claimed of the relation between trust and two central values in Chinese cultures: hierarchy and guanxi. Guanxi is defined as “an informal, particularistic personal connection between two individuals who are bounded by an implicit psychological contract to follow the social norm of guanxi such as maintaining a long-term relationship, mutual commitment, loyalty, and obligation” (Chen and Chen, 2004). Hwang and Staley (2005) state that the traditional Chinese concept of personal relationships, guanxi, is prevalent in all aspects of Chinese life and is recognized as a key factor for success when doing business in China.

Giritli et al. (2013) published their findings in Turkey and state that, based on Turkish society, the Turkish construction industry exhibits high ratings in clan and hierarchical culture. The result of their study also indicates the significant relationship between specific leadership practices and specific cultural profiles within the construction sector in the Turkish culture.

Cultural issues are likely to raise to conflicts among the parties to an international project and increase problems in the management of the project (Fellow and Hancock, 1994). Chan and Tse (2003) argued that cultural differences can do substantially damage to the organization of an international construction project. They conclude that a better understanding of influential cultural factors will help to reduce and manage conflicts in international construction projects. Recognizing and sensibly employing cultural differences could allow improvements in the efficiency and profitability of international projects.

All of them indicate the relation between some cultural aspects and construction work. The finding of Rowlinson and Cheung (2011) ‘s research shows that the degree of match and mismatch between values and contract strategy impacts commitment and the engagement and empowerment of the supply chain. Xue et al. (2010) stated that “better understanding of influential cultural factors will help to reduce and manage conflicts in construction projects.” Therefore, with focusing on cross-cultural perspectives, a greater understanding of how to increase cooperation among overseas project partners can be indicated (Lu and Hao, 2013).

Although cultures have been studied in different ways and methods, taking into consideration the cultural dimensions may facilitate the understanding of differentiation between cultures. A dimension is an aspect of a culture that can be measured relative to other cultures. Dimensional model of culture is preferred for research (Hofstede et al., 2010). However, the dimensions of cultures have similarities and differences according to the scholars’ idea; Hofstede, Minkov, Inglehart, Schwartz, Globe, Kluckhohn, Hall, Douglas, Triandis and Trompenaars can be mentioned as scholars who study the cultural dimensions.

### 2.6. Organizational culture

Organizational culture gives identity to an organization (Cheung et al., 2011a). It expresses the social ideals, values and beliefs that members of an organization come to share (Louis, 1980). However
organizational culture is a phenomenon itself and is different from national culture. Research results regarding national cultures and their dimensions proved to be only partly useful for understanding of organizational culture (Hofstede et al., 2010).

Cheung et al. (2011a) state that several major industrial reviews have pinpointed that the construction industry need to improve its efficiency. A conducive, progressive and enduring culture is believed to be a foundation for efficiency (Kotter and Heskett, 1992). Subsequently individual and organizational performance could be influenced strongly by conducive and enduring culture (Cheung et al., 2011a), while organizational culture and performance have a significant statistical correlation (Petty et al., 1995).

Cheung et al. (2011a) highlighted result-focused and teamwork characteristics of construction businesses by ranking the “Goal setting and accomplishment” and “Team orientation” as two most highly ranked organizational culture factors in construction. They say that “having clear goals will guide the formulation of strategies and implementation plans, both need the concerted effort of members of a multi-disciplinary team”.

Hofstede et al. (2010) believe that there are six dimensions of culture. Those are namely:

1. power distance
2. individualism versus collectivism
3. masculinity versus femininity
4. uncertainty avoidance
5. short- and long-term orientation
6. indulgence versus restraint

These are the dimensions at the level of national culture, however, as mentioned before, research result regarding national cultures and their dimensions proved to be only partly useful for understanding of organizational culture. Therefore, according to Hofstede et al. (2010) from the dimensions of national culture, power distance and uncertainty avoidance in particular affect the thinking about organizations. Since organizations require answering two questions as:

- Who has the power to decide what?
- What rules or procedures will be followed to attain the desired end?

The answer to the first question is influenced by cultural norms of power distance and the answer to the second question by the cultural norms of uncertainty avoidance.

In addition, Zuo et al. (2009) state that Hofstede's dimensions are well structured for studying the organizational culture. Nevertheless, as mentioned before, national cultures and their dimensions demonstrated to be only partly useful for understanding of organizational culture. Hofstede et al. (2010) indicated that to what extent value of power distance and value of uncertainty avoidance affect the implicit model of organizations in people’s minds and to what extent this model differs from one
country to another. Thus, among the Hofstede’s dimensions power distance and uncertainty avoidance could be taken to study how organizations in different cultures would deal with solving their problem.

2.7. Literature review conclusion

Energy consumption will drastically increase in the next few decades. Since fossil fuel will remain the main resource of energy, substantial capital investment is required for oil and gas projects such as Gorgon offshore northwest Australia project which is approximately $60bn. Thus, meeting the projects’ objectives is very important, since any failure would have huge negative impact on the capital invested. Moreover, by fostering the cooperative relationship, the probability to meet the project promises will be higher.

In the large energy infrastructure projects that can be categorized as LECPs, many stakeholders are involved globally. Thus, the issue of globalization would be raised. Globalization influences managers to be culturally sensitive. People in different cultures would have different values. The people’s mindset about the organizations is affected by the values of power distance and uncertainty avoidance in their culture. In addition, cultural behavior and trust has a strong relation. Developing the trust across different cultures would require different behavioral approach.

Furthermore, in the relationship between clients and contractors, relationship and contracting should be balanced. The contract indicates how parties are sharing risks between each other. Forms of contract are explicitly based on the remuneration scheme. However, the contract should be complementary to the desired relationship.

The relationship elements which play roles in the relationship between client and contractor can be mentioned as trust, common goals, commitment, long-term relationship, communication, and decision making process. The contract consists of many parts. However, those that we are taken in our research are the forms of contract and the risk sharing scheme as components of contract, and scheduling and budget plan as the content of contract.

Nevertheless, the nature of different relationship and its effect on the project performance has not been investigated. Besides, the influence of different contracting types on the quality of the relationship is relatively unexplored (Suprapto, 2011). As said before, with focusing on cross-cultural perspectives, a greater understanding of how to increase cooperation among overseas project partners can be indicated.

2.8. Conceptual model

The literature conclusion led us to provide a conceptual model for this research. The model is an assumption. Based on the problem statement, research questions, and literature review, the aim of this research would be finding the cross-cultural appraisal influence on contracting. For this purpose the initial model below (Figure 5) would be used as an illustration.
Figure 5: initial conceptual model

Based on the conceptual model illustrated above, the aim is to find whether the relationship would affect or be affected by the contract, while investigating the influence of culture on the contract and on the relationship. The results might assist to find the links between culture, contract and relationship. In the assumption, culture and contract would be given as the independent variables and the relationship elements would be presumed as the dependent variables.

Moree (2013) in his thesis drew the conclusion that the forms of contract do not influence the relationship elements. However, culture was not a variable in his study. In this research culture is taken as a variable and the influential link between contract and relationship is considered.


3. Research Design

3.1. Case study based on Qualitative approach

By searching through the literature it has been shown that available literature would provide no conceptual framework or hypothesis in the field of this research. Strauss et al. (1998) stated that in substantive areas about which little are known, qualitative methods can be used to explore. Therefore, this research and the questions are designed to answer as an exploratory research which is executed by case study. Since case study research allows investigators to retain the holistic and meaningful characteristics of real-life events (Yin, 2003), case study method is beneficial to answer the questions of this study. The theory developed by the case study could be practical and not just academic (Yin, 2003). Definition of the case being studied, collecting of relevant data and analyzing collected data are required steps in a case study method.

Yin (2003) mentioned the following steps in the multiple cases:

1. Define and Design
   1.1 Develop the theory
   1.2 Select cases
   1.3 Design data collection protocol
2. Prepare, Collect and Analyze
   2.1 Conduct case study
   2.2 Write case report for each individual case
3. Analyze and Conclude
   3.1 Draw cross-case conclusion
   3.2 Modify theory
   3.3 Develop policy implications
   3.4 Write cross-case report

The development of the theory has been undertaken by the literature study in the fields of globalization, Large Engineering and Construction projects, relationship elements, contract, and cultural dimensions. It resulted in a conclusion, problem statement and research questions.

The case study in this research contains the multiple-case designs with multiple units of analysis (embedded). The overall study of the multiple case is more robust and considered more convincing (Yin, 2003). Strauss et al. (1998) in their book of Basics of Qualitative Research stated that “different shifts in an organization often do different types of work or do the same work in alternative ways. Therefore, the more persons, places, and events that are interviewed or observed, the more one is able to check out his or her interpretations against alternative explanations of events while also discovering properties and dimensional ranges of relevant concepts”.

The geographical and time boundaries should be applied to selecting the cases. Since the aim of this research is to investigate the relation between culture, contract, and relationship, the cases should be separated geographically around the world to let the researcher have a valuable data collection. This allows the researcher to have the data of cultural differences from diverse nations. In addition, the cases
should be completed recently to make the researcher able to collect the lessons learned data of the projects.

The unit of analysis consists of cultural differentiation between the client and the contractor, and the different contract components that could be either risk sharing or forms of contract as reflected the remuneration scheme.

Data collection is mainly done via the interviews. The other possible methods of collecting the data would be observation, documents review and archived records. Regarding to the requirements of data collection process some of the methods mentioned is used, anyway, the main method to collect the data is the interviews and collecting project records.

3.2. Data collection

As mentioned before, the data will be collected by interviews. Since the research is exploratory in nature, there would not be a set of structured questions but rather a semi-structured collection of topics would be discussed with the aim of obtaining “narratives” rather than “answers” (Binder and Edwards, 2010). Strauss et al. (1998) stated that “although the initial question starts out broadly, it becomes progressively narrowed and more focused during the research process as concepts and their relationships are discovered. So, the research question begins as an open and broad one, but not so open, of course, as to allow for the entire universe of possibilities”.

To gather the data two tracks are taken. One is collecting the data related to the contract. This type of data could be called “hard data” since it is found in contractual and official documents. The other type of data which could be called “soft data” is about the relationship and culture. This data would be gathered by interviews.

The objectives of the case study could be listed as follow:

- Find out the elements of contracts by checking the contractual documentations.
- Find out the elements of relationship by interviews.
- Find out the cultural influence by interviews.
- Find out the projects’ success (according to time, cost, and quality) by checking the project records.

As mentioned before, based on the literature review, the elements of relation, contract, and cultural dimensions are considered.

The interviews should be done with the key individuals of the parties involved in the projects. Therefore, it would be needed to interview different managers who were involved in different phases of a project.

3.2.1. Hard data collection

A set of questions and issues may evoke from investigation of the official project information and records, such as the history of project, the contractual agreement, the progress of project in the course of each phase, and the claims of the parties involved. They may influence the questions that could be asked and answered during the interviews. This data helps to understand the project and form better
and efficient questions for the interviews. As well as this data could be useful in the analysis step, where the influence of culture on the contract and the relation between contract and relationship would attempt to be found.

3.2.2. Soft data collection
Data collection for the relationship and cultural aspects require mainly interviews. However, some hard data could also provide some information for these aspects. Since interviews are carried out based on open questions, a set of questions are designed. The collected hard data is influential to conduct the interviews open questions. Appendix A, Interview questions is the set of possible questions. These open questions just determine the orientation that should be kept during the interviews. However, some questions would be raised during the talking with the interviewees. The questions cover the three major phases of the contract that are before signing contract, during the execution of the contract and after the contract completion. Here we called them as Pre-contract, During-contract and Post-contract, respectively. The cultural consideration index for Power Distance and Uncertainty Avoidance has been mentioned as PDI and UAI respectively. In addition, the relationship elements related to the questions are indicated. Since the interviews are implemented as open questions, it gives enough room to maneuver during the interviews to learn the important issues. Moreover, to assess the cultural value of the contractor we use Hofstede et al. (2008)’s value survey model (Appendix B).

3.3. Objectivity of this research
The questions in the interviews would be propounded as open questions to avoid influence on the candidates in the interviews. It should be mentioned that as the research is exploratory, both objectivity and sensitivity are necessary for making discovery, “Objectivity is necessary to arrive at an impartial and accurate interpretation of events. Sensitivity is required to perceive the meanings in data and to recognize the connections between concepts.” (Strauss et al., 1998).

This research would try to be as objective as possible. The plan to serve the objectivity is to collect the data from different angles, for instance by interviewing relevant project people in different positions. In the case of facing major conflicts, this data is checked by the hard data and with other people to collect more accurate data. Furthermore, the investigator in this research does not belong to any parties involved in the projects.

3.4. Analysis plan
This research aims to investigate the influence of culture on the choice of contract and the cooperative relationship. The analysis starts by looking at the nature of the relationship between the parties involved in a contractual agreement. This is done by examining the quality of the relationship elements. The relationship elements are considered according to:

- trust
- common goals
- commitment
- long-term relationship
- communication
• decision making process

Furthermore, the affiliation between contract and relationship is studied. We assume two parts in a contract as its components and its contents.

The contract components would be seen as:

• forms of contracts (the forms of contract in this study reflect the remunerations scheme)
• risk sharing scheme

The contents of contract would be taken as:

• Scheduling
• Budget plan

Moreover the influence of parties’ culture on the contract and on the relationship is examined. Culture is recognized by the two influential national cultural dimensions in organizations, which are:

• power distance
• uncertainty avoidance

The contractor’s culture is recognized by using the questionnaire of Hofstede et al. (2008). The questionnaire is illustrated in Appendix B. The questionnaires have been filled by the project managers and some other key players in the contractor’s organization. Although the size of the sample is not enough to provide an accurate result, it gives an overall insight into the contractor’s culture. The result is explained in Appendix B.

Since there was a limitation in collecting this data by the questionnaire in the clients’ organization, the clients’ culture has been addressed in the interviews. Some interview questions are presented to determine the cultural aspects of the clients (Appendix A). However, the other limitation is that the interviews are mainly implemented in the contractor’s organization. Therefore, the cultural assessment of the client has been undertaken from the contractor points of view. However, we tried to avoid significant bias by the hard data provided in the project documents.

3.4.1. Contract – Relationship proposition

This research studies the influence from contract to relationship and from relationship to contract while culture has also been involved. The interviews are used as the input of the analysis. Available documentation and project records in the organization provide additional data to ensure more accurate analysis.

3.4.2. Culture – Contract proposition

Resulting from literature review, two dimensions of culture from Hofstede et al. (2010) are selected to use in this research. These are uncertainty avoidance and power distance. The influence of Uncertainty Avoidance (UA) on contract components is measured by looking at:
Dealing with risk: Uncertainty avoidance addresses the concepts of risk, risk preference, and reliance on risk reducing strategies. Tolerance for unstructured, unclear, or unpredictable situations determines the extent to which people try to mitigate uncertainty (Patricia M. Doney et al., 1998).

In a culture with strong UA, if the party is the owner or client, the risks would be put completely on the side of contractor. If the parties are from a weaker uncertainty avoidance culture, sharing the risks between contractual parties would be also possible.

Preference of payment scheme: UA influences on the preference of payment scheme. With a stronger UA culture, more certainty of the payment is preferred. A weaker UA culture accepts some flexibility in the terms of work and subsequently the payment required for it. Lump Sum is quite more in the favor of culture with a strong UA. While in a weaker UA culture, reimbursable payment is also accepted.

However, the culture of clients determines remuneration scheme, if investment in the project has been provided by the client itself. If the investment has been provided by the bank, the remuneration scheme of the contract is made in the favor of the bank, which is lump sum.

Definition of scope: when the UA is strong, a clear and complete definition of scope is favored. Ambiguity is disliked. The work will not be commissioned, if the scope is not defined well. Parties from stronger UA culture are not open for changes during the project. While in a weaker UA culture, creativity and innovation are more appreciated. Therefore, the scope definition can be more flexible towards changes. In the strong UA culture, the findings in innovation are defended aggressively. While in the weak UA culture, consensus in innovation is desired.

Complexity: Hofstede et al. (2010) stated that people in a strong UA culture seek for structure in their organization and relationship. Involving more stakeholders in a project raises the complexity of the project. Therefore, complexity of a project is avoided by a stronger UA culture. A preference to work with fewer parties in the project is seen in strong UA cultures.

Laws and rules: ambiguity is tried to be reduced by stronger UA culture. Therefore, stronger UA cultures have more laws and rules than weaker UA culture. Bureaucratic organizations with much administrative paperwork are located in a stronger UA culture.

The influence of power distance on contract components is measured by looking at:

Scope and cost changes: In large power distance cultures any changes in the scope of project requires the acceptance and permission from high level managers in the organization. Following the scope changes, cost changes are occurred in the project. Subordinates are not free to apply their ideas without the acceptance from a higher level in the organization. Sometimes the permission requires to be made by the highest level in the organization.

On the other hand, in a culture with small PD, although the changing of scope requires the permission from a higher level in the organization, subordinates have more freedom to decide about the necessary changes and are able to apply these changes before receiving an official permission from the high level in their organization.
As mentioned above, PD influences the decision making process related to the contract. Decision making process is taken as one of the relationship elements. Therefore, to find the influence of PD on the scope and cost changes, we will investigate the influence of PD on the decision making process.

**Law and regulation**: in a high PD culture, law and regulation would be more complex.

Based on the project records and interviews, the cases are analyzed to find culture-contract relationship.

### 3.4.3. Culture – Relationship proposition

Acting in the cultural context of a party might facilitate a better relationship with that party, since the parties feel the mutual understanding. Power distance characteristic of culture influences the relationship between employer-employee. The use of hierarchical status symbols is appreciated in large power distance culture. Uncertainty avoidance also influences the way of building up a relationship. In the strong uncertainty avoidance culture negotiation about the work and reaching a consensus before starting the work is privileged.

How the relationship elements are varied in different cultural circumstances and whether the cultural differences influence the relationship elements are studied by the cases. Based on the interviews data, the cases are analyzed to find culture-relationship relation. However, the documentation has also been used to avoid significant bias.

### 3.4.4. Conclusion

Trust, common goals, commitment, long-term relationship, communication, and the decision making process are the elements of relationship which are studied in this research. Firstly, the quality of the relationship between the contractual parties is considered. Furthermore, the influences of relationship on the contract are studied. Although Moree (2013) concluded that the forms of contracts do not influence the quality of the relationship, by including the cultural variables this link from contract towards relationship is studied. We assume two parts in the contract as components and contents. The contract components which are studied in this research are forms of contract which reflect the remuneration scheme, and risk sharing scheme. The contract contents in this research are scheduling and budget plan.

Two dimensions of culture which are uncertainty avoidance and power distance are used in this research, since they are the influential national culture on perceived about the organizations. It tries to find the influential link from culture towards the contract. The influence of culture on contract components are measured by considering the behavior of parties through preference of the payment scheme, dealing with risk, definition of scope, complexity, and their laws and rules. Figure below illustrates the analysis framework structure.
Firstly, each case is analyzed based upon the data collection. This means that the projects’ records and interviews are used for each analysis. After that, in order to answer the research questions, the cases are analyzed together as the cross-case analysis.
4. Case Study
This section is about the case study implementation.
5. Cross-Case Analysis
This research aims to investigate the influence of culture on the choice of contract and the cooperative relationship. According to the conceptual model and analysis framework (Figure 6) of this research, the influential links between the culture, contract, and relationship have been studied in each case. The culture has been investigated according to its UA and PD characteristics. Contract and relationship are studied according to their elements. In this chapter, the result of each case will be compared to each other.

Based on our analysis, the connections among culture, contract, and relationship are illustrated in Figure 7.

![Figure 7: influential links between culture, contract, and relationship](image)
Analysis according to the project performance

It can be concluded that the contractual relationship had positive impact on the project performance when the relationship governed. In contrast, when the contract governed the relationship, the project performance was negatively influenced.

The factors as cultural adaptation, aligning the goals, and demonstrating commitments together reinforce the trust and have a positive influence on the project performance. On the contrary, the absence of one of these factors leads to deterioration of the trust. Consequently, project performance is negatively influenced. Therefore, all four factors need to be fostered in order to increase the possibility of effective relationship. This can be conceptualized by the conceptual formulation below (Figure 8), where the project performance is a function of adaptation to client’s actual culture, common goals, commitments, and trust.

\[ PP \approx f(A, C, G, T) \]

*PP*: project performance  
*A*: adaptation to the actual culture of client  
*C*: commitments  
*G*: common goals  
*T*: trust

Whereby having any negative factor, the project performance (*PP*) is negatively influenced.

Figure 8: Conceptual formulation of project performance function
6. Discussion and Managerial Implication
The findings of this research are discussed in this chapter. Afterwards, there is the managerial implication.

6.1. Discussion
The discussion is done based on the results of cross-case analysis (Figure 7) and the literature review. This research aims to investigate the influence of culture on the choice of contract and the cooperative relationship. According to the conceptual model and analysis framework (Figure 6) of this research, the connection between the culture, contract, and relationship have been studied. The culture has been investigated according to its UA and PD characteristics. Contract and relationship are studied according to their elements.

6.2. Managerial Implication
Based on our findings, the managerial implication of this research is mentioned in this section. The managerial implication indicates that how our findings can be utilized in the company.

Based on our findings, the factors as cultural adaptation, aligning the goals, and following the commitments reinforce the trust. However, trust is negatively influenced by the absence of one of these factors. Therefore, to increase the possibility of improving the trust, all three factors need to be fostered.
7. Conclusions

Having carried out the case studies and discussion, this chapter answers the research questions. By answering to the sub-questions, the main question is answered. There is one main question and four sub-questions.

Four sub-questions are answered as follows:

7.1. What is the influence of culture on the relationship quality between client and contractor?

The actual culture of the client needs to be recognized by the contractor. The actual culture of the client may be different from perceived culture. Therefore, even if the parties are familiar with each other, this recognition should be undertaken before starting the project. The contractor can foster trust by cultural adaptation to the client’s culture. Clients are in less flexible positions in terms of cultural adaptation. Therefore, as long as the cultural adaptation is undertaken by the contractor, the cultural differences do not play a major role. Our research shows that in the successful case, the contractor is able to build up trust with the client by adaptation to the client’s culture. In the unsuccessful case, the client’s actual culture was not recognized by the contractor and client’s staff.

Moreover, the decision making process and communication of the parties are influenced by their cultural characteristics. By cultural adaptation and awareness, a mutual understanding is shaped between the parties. The contractor is able to communicate with the client in an effective manner and influence the decision process of the client to some degree, if the client trusts the contractor. Our research indicates that the contractor was able to influence the clients’ decisions to some extent, when the clients trusted the contractor.

7.2. What is the influence of culture on the contract between client and contractor?

The choice of contract is determined by the clients’ preferences. To some degree, these preferences are influenced by uncertainty avoidance (UA) of the client. Uncertainty avoidance of the client influences the forms of contract. Uncertainty avoidance addresses the concepts of risk, and risk preference. Tolerance for unstructured, unclear, or unpredictable situations determines the extent to which parties try to mitigate uncertainty. Clients with a weak UA culture can tolerate dealing with a reimbursable form of contract, while clients with a strong UA culture accept rigidly a lump sum form of contract to avoid absorbing the risks.

Nonetheless, such other factors as law, regulation, market situation, investors’ preferences, and common practices in industry are also influential factors in deciding the forms of the contract. The findings indicate that the contractor’s preferences are not influential on the form of the contract.

7.3. What is the influence of relationship on the choice of contract?

Among the relationship elements, trust influences the choice of contract form to some extent. The forms of contract indicate the risk sharing scheme between contractual parties, from reimbursable in which risks are covered by client to lump sum in which risks are covered by contractor, and also hybrid forms of contract as various combination of lump sum and reimbursable. The level of trust influences
the risk sharing scheme between contractual parties. Our research indicates that with a trustful relationship, risks are likely to be shared between the client and contractor. On the contrary, the client expects contractor to cover whole risks, when trust is not strong. In addition, negotiations about the content of contract can be facilitated by trust.

The unsuccessful case in our research shows that owing to decreasing trust between parties, the form of contract was converted from reimbursable to lump sum to avoid further overruns in the budget. However, according to strong trust between the client and the contractor in the successful case, the form of contract may be a hybrid form (combination of lump sum and reimbursable) in the next project, although the client’s preference is lump sum.

7.4. **What is the influence of contract on the elements of the relationship?**

Relationship is not influenced by forms of contract and the risk sharing scheme. Our research shows that in the unsuccessful case converting the form of contract from reimbursable to lump sum did not improve trust.

However, scheduling and budget influence the common goals as the relationship elements. Our research indicates that in the unsuccessful case the unclear scope, an unrealistic schedule, and unrealistic budget and incentives together negatively affect the common goals between the parties. Consequently, commitments are damaged, since the parties provide their resources towards their own goals. As the result, trust between the parties declines, and the long-term relationship is damaged.

*By answering the sub-questions the main question is answered:*

- **How would cultural characteristics influence the choice of contract form and cooperative relationship?**

The actual cultures of parties need to be recognized in the early phase of project. The actual culture may be different from the perceived culture. Therefore, even if the parties are familiar with each other, this recognition should be undertaken before starting the project. If the parties’ behavior is based on perceived culture that is different from the actual culture, trust is negatively influenced. When the client and contractor have different cultures, cultural differences do not play a major role as long as the contractor adapts to the clients’ actual culture. The adaptation should be done by the contractor, since the contractor needs to earn the clients’ trust and also the clients are in less flexible position for cultural adaptation.

Dealing with similar national cultures does not mean that the relationship can improve more easily than dealing with different cultures. When parties are from different national cultures, it makes them be cautious about the cultural differences. The parties may pay more attention in the cultural differences. However, when the parties belong to the similar national culture and worked together in the previous occasions, they may underestimate the potential changes in the culture. Cultural awareness and adaptation can be materialized by recognizing the clients’ actual culture in the early phase of project. By cultural adaptation the mutual understanding is shaped between parties, trust improves, and a cooperative relationship can be fostered.
The factors as cultural adaptation, aligning the goals, and demonstrating commitments all together reinforce trust. However, the absence of one of these factors negatively influences the trust. Therefore, all three factors need to be fostered in order to increase the possibility of trusting relationship. Our cases show trust as the foundation of the cooperative and long-term relationship.

Our research indicates that to some extent, trust influences the decision making process of the client about the forms of contract. The level of trust influences the risk sharing scheme between contractual parties. With a trustful relationship, risks are likely to be shared between the client and contractor. On the contrary, the client expects contractor to cover whole risks, when trust is not strong enough.

The relationship’s elements are not influenced by the forms of contract. But schedule and budget influence common goals between the contractual parties. Realistic scheduling and budget facilitate the goals to be aligned. To a certain extent, commitment is improved by aligning the goals. This influences the trust to increase.

To some degree, uncertainty avoidance influences client’s preferences in forms of contract. Nonetheless, such other factors as law, regulation, market situation, investors’ preferences, common practices in industry are also the influential factors in deciding the forms of contract.

Our cases indicate that the forms of contract do not influence the success of project. Moreover, we have found that the contractual relationship can have positive impact on the project performance if the relationship governs. Otherwise, if the contract governs the contractual relationship, the project performance will be negatively influenced.
8. Recommendation

Based on the research results, the managerial implication and recommendations are mentioned in this chapter.

8.1. Further research

This research was undertaken by using an exploratory approach. A conceptual model has been developed by using case study and qualitative data collection. The possible influential connection between culture, contract, and relationship are investigated by this conceptual model. However, we can advise that in order to improve the conceptual model, more multiple cultural cases with participations of both client and contractor are required. Furthermore, the conceptual model can be developed by quantitative data collection and survey analysis.

In this research, we investigated the influence of only 2 national dimensions of culture, which are power distance and uncertainty avoidance. Although we found the influence of one more dimension of culture which is collectivism, further research would be required to study the influence of other cultural dimensions on the contractual relationship (other cultural dimensions as individualism versus collectivism, masculinity versus femininity, short- and long-term orientation, and indulgence versus restraint).

Moreover, we investigated the influence of national cultures on the relationship between the parties. These are the national dimensions that in particular affect the thinking about organizations. The argument to recognize the differences between the organizational cultures is not in the scope of this research. Therefore, it will not be fully discussed here. A further study would be required to investigate the influence of organizational culture (also known as company culture) on the contractual relationship and contract.

8.2. Recommendation to CB&I

The recommendations to CB&I are based on the findings of this research. CB&I can manage and nurture relationships with clients by improving the level of trust to support cooperative, long-term relationship. Since we found that cultural adaptation, common goals, and commitments influence trust, the recommendations suggest how CB&I can deal with these elements in the business relationships.
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ROWLINSON, S. & CHEUNG, F. 2011. SUPPLY CHAIN SUSTAINABILITY – A RELATIONSHIP MANAGEMENT APPROACH MODERATED BY CULTURE AND COMMITMENT.


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Appendix A - Interview questions

The open questions below illustrate the orientation that should be kept during the interviews. However, some questions would be raised during the talking with the interviewees.

The questions cover the three major phases of the contract that are before signing contract, during the implementation of the contract and after the contractual relation, here we called them as Pre-contract, During-contract and Post-contract respectively. The cultural consideration index for Power Distance and Uncertainty Avoidance has been mentioned as PDI and UAI, respectively. As well as, the relationship elements related to the questions would be indicated. The overall aspects of contract, Relationship, and culture are covered by 34 questions.

The interview will be started with the general questions:

- Age and education of interviewee
- Work experiences
- The role of the interviewee in the project and the phases the interviewee involved

Table 2: Appendix A, Interview questions

<table>
<thead>
<tr>
<th>Pre-project</th>
<th>During-project</th>
<th>Post-project</th>
<th>Questions?</th>
<th>culture</th>
<th>cover</th>
<th>relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>How did you choose different type of contract for your project? How did the client’s preference determine the type of contract? How did your preference influence on the type of contract? How did the type of chosen contract determine your relation with the client? Have the contract style and remuneration scheme changed during the project? Why?</td>
<td></td>
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<td>contract</td>
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<tr>
<td>Pre-contract</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>relationship's elements</td>
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<tr>
<td>Pre-contract</td>
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<td>How did the relationship with the client have been a key factor to win the tender? How having a good relationship with the client did help you to manage the project? Did contractor offer additional facilities to the client, such as training program for the local business, building hospital, education center, etc.?</td>
<td>UAI</td>
<td></td>
<td>contract</td>
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<td></td>
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<td></td>
<td>2</td>
<td></td>
<td></td>
<td>relationship's elements</td>
</tr>
<tr>
<td>Pre-contract</td>
<td>During-contract</td>
<td>Post-contract</td>
<td>During-contract</td>
<td>Post-contract</td>
<td>During-contract</td>
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<tr>
<td><strong>What aspect in the contract hindered your relation with the client?</strong></td>
<td><strong>How did the negotiation influence the project, to have it, to determine the contract element, and to solve disputes? (Before-during-after the contract)</strong></td>
<td><strong>How were the laws, regulations and paperwork of the client?</strong></td>
<td><strong>How were the terms and conditions in the contract influenced by the client/contractor? How did your relationship with the client/contractor influence the terms and conditions in the contract?</strong></td>
<td><strong>Did the common goals between the client and the contractor influence the risk sharing scheme? How did it happen? How was the situation about remuneration and scope addressed?</strong></td>
<td><strong>How did the contractor determine and apply safety in the project? How was the safety agreement in the contract? Did contractor receive any incentive for applying a sufficient level of safety? How was the situation in the projects before this project was addressed? Has the contractor capability of maintaining safety been a success factor to win the tender?</strong></td>
<td><strong>How did the contractor’s reputation (in terms of completion on time and in budget) influence the contract of the addressed project?</strong></td>
</tr>
<tr>
<td>Post-/</td>
<td>During-</td>
<td>12</td>
<td>How do you see the project, could the project deliver the promises (time/cost/quality)? How were the objectives measured? How was the client satisfaction? How were the success criteria of the projects determined by the client? Who made the decisions? What was the preference of client (technical / time&amp;cost)? Has the contractor received any incentive? Why?</td>
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<tr>
<td>contract</td>
<td>contract</td>
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<td></td>
<td></td>
<td>UAI-PDI</td>
</tr>
<tr>
<td>During-</td>
<td>During-</td>
<td>13</td>
<td>How was the performance of the client to provide the agreed items during the project?</td>
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<td>contract</td>
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<tr>
<td>Pre-</td>
<td>During-</td>
<td>14</td>
<td>How did the contractor/client’s willingness to have future work with client/contractor attempt the contractor/client to accept the client/contractor’s extra willingness which was more than the agreed responsibilities in the contract? How did the contractor/client’s willingness to have future work with client/contractor influence the risk sharing, remuneration and scope in the contract?</td>
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<td>contract</td>
<td>contract</td>
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<tr>
<td>During-</td>
<td>During-</td>
<td>15</td>
<td>What was the risk sharing scheme in the project? How did the contract reach the step of risk sharing decision? What kinds of risks were absorbed by the client/contractor? What happened in the project?</td>
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<tr>
<td>contract</td>
<td>contract</td>
<td></td>
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<td></td>
<td>UAI</td>
</tr>
<tr>
<td>Pre-</td>
<td>During-</td>
<td>16</td>
<td>How many technical/organizational interfaces occurred in the project (internal/external)? How were these interfaces managed? Were they addressed in the interfaces meetings? Was the client involved in the meetings?</td>
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<tr>
<td>contract</td>
<td>contract</td>
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</tr>
<tr>
<td>Pre-</td>
<td>During-</td>
<td>17</td>
<td>How was the remuneration scheme in the project? And how was the decision been made about the remuneration scheme? How many milestones were there for inspections and payments? How has the agreement been done? What happened in the project? Did the remuneration scheme change during the project?</td>
<td></td>
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<tr>
<td>contract</td>
<td>contract</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>UAI</td>
</tr>
<tr>
<td>Pre-</td>
<td>During-</td>
<td>18</td>
<td>What were the preferences of your management concerning your goals and those of the client? Did you take into account the goals of the client? How did you align the client goals with your goals?</td>
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<tr>
<td>contract</td>
<td>contract</td>
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<tr>
<td>Pre-</td>
<td></td>
<td>19</td>
<td>How was the trust between you and the client/contractor? How did this trust influence the risk sharing, remuneration and scope in the contract?</td>
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<tr>
<td>During- contract</td>
<td>20</td>
<td>How has the communication arranged between the client and contractor? How was the verbal communication? How was the preference of client to use of privileges and status symbols?</td>
<td>UAI-PDI</td>
<td>communication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>During- contract</td>
<td>21</td>
<td>How was the quality of teamwork between the client and contractor? Was information transferred smoothly between team members? How was about disagreements?</td>
<td>communication</td>
<td>Trust cooperation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>During- contract</td>
<td>22</td>
<td>How would it be possible to report the mistakes in the design or in the execution to the client and how was the reaction of the client?</td>
<td>communication</td>
<td>trust</td>
<td></td>
<td></td>
</tr>
<tr>
<td>During- contract</td>
<td>23</td>
<td>Were the managers of client reachable by the contractor(s)’ people (contractor’s engineers and managers)? Did the client’s people have the right to say their ideas directly to the contractor? How was this achieved?</td>
<td>communication</td>
<td>PDI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>During- contract</td>
<td>24</td>
<td>In the case of need to make decisions with the client during the project, who had the power to make the decisions on the client’s side? How was it in the case of an immediate requirement?</td>
<td>communication</td>
<td>trust</td>
<td></td>
<td></td>
</tr>
<tr>
<td>During- contract</td>
<td>25</td>
<td>How were the conflicts with client managed? How was the client’s behavior?</td>
<td>conflict</td>
<td>trust</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post- contract</td>
<td>26</td>
<td>Have any disputes lead to the court? What happened?</td>
<td>conflict</td>
<td>trust</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post- contract</td>
<td>27</td>
<td>What was your experience with the client? What is your perspective to have future work with the client?</td>
<td>UAI</td>
<td>Past/future</td>
<td>long term</td>
<td></td>
</tr>
<tr>
<td>Pre- contract</td>
<td>Post- contract</td>
<td>28</td>
<td>Did the parties work together before the addressed project? How was the experience of the last work between parties? (Did project close, or are there still some disputes) Have the parties worked together after the addressed project?</td>
<td>Past/future</td>
<td></td>
<td></td>
</tr>
<tr>
<td>During- contract</td>
<td>29</td>
<td>What was the influence of incentives on the relationship?</td>
<td>contract</td>
<td>relationship's elements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-contract</td>
<td>Post-contract</td>
<td>30</td>
<td>Were there any political risks associated with the project? Have these risks been seen before?</td>
<td>PD</td>
<td>PDI</td>
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</tr>
<tr>
<td>Pre-contract</td>
<td>During-contract</td>
<td>31</td>
<td>Were the project risks according to technical/execution/operation area considered fully in the project?</td>
<td>contract</td>
<td>long term</td>
<td></td>
</tr>
<tr>
<td>Pre-contract</td>
<td>During-contract</td>
<td>32</td>
<td>How was the responsibility of the contractor to develop the local sub-contractor? Was it put forward in the contract? What was happened in the reality?</td>
<td>contract</td>
<td>long term</td>
<td></td>
</tr>
<tr>
<td>During-contract</td>
<td>33</td>
<td></td>
<td>What are your preferences for trading off between Quality/Time/Cost? What was the client preference?</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Post-contract</td>
<td>34</td>
<td></td>
<td>How would be this project execution with a different client, in a different country? (imagine if you did the same project with different client and in different country)</td>
<td></td>
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</tbody>
</table>
Appendix B - Cultural questionnaire

VSM 08
“The Values Survey Module 2008 (VSM 08) is a 34-item paper-and-pencil questionnaire developed for comparing culturally influenced values and sentiments of similar respondents from two or more countries, or sometimes regions within countries. Research experience has shown that the answers to the 28 content questions are influenced by the nationality of the respondents. This is not to say that every respondent of nationality A gives one answer and every one of a nationality B another, but one can expect systematic differences between the average answer from a sample with nationality A and a comparable sample from nationality B (in statistical terms, an analysis of variance on the answer scores shows a significant country effect). As the relationship is statistical, the samples per country should be of sufficient size. An ideal size for a homogeneous sample is 50 respondents. Sample sizes smaller than 20 should not be used. The VSM 08 does not apply to individuals, but to national societies. What a person can do is find out how the values prevailing in a national society differ from those in another society. The VSM should only be used by researchers who subscribe to the concept of a society differing from other societies”. (Hofstede et al., 2008)

Since in our research we only focus on Power Distance and Uncertainty Avoidance, only the questions regarding these two dimensions have been selected from the main questionnaire.

Following is the questionnaire that has been filled by managers in CB&I. After that the results and the analysis formula are demonstrated.

Questionnaire
Please think of an ideal job, disregarding your present job, if you have one. In choosing an ideal job, how important would it be to you to ... (please circle one answer in each line across):

1 = of utmost importance
2 = very important
3 = of moderate importance
4 = of little importance
5 = of very little or no importance

1. have a boss (direct superior)
you can respect
   1  2  3  4  5

2. be consulted by your boss
in decisions involving your work
   1  2  3  4  5
In your private life, how important is each of the following to you: (please circle one answer in each line across):

3. How often do you feel nervous or tense?
   1. always
   2. usually
   3. sometimes
   4. seldom
   5. never

4. All in all, how would you describe your state of health these days?
   1. very good
   2. good
   3. fair
   4. poor
   5. very poor

5. How often, in your experience, are subordinates afraid to contradict their boss (or students their teacher?)
   1. never
   2. seldom
   3. sometimes
   4. usually
   5. always

To what extent do you agree or disagree with each of the following statements? (please circle one answer in each line across):

1 = strongly agree
2 = agree
3 = undecided
4 = disagree
5 = strongly disagree

6. One can be a good manager without having a precise answer to every question that a subordinate may raise about his or her work

7. An organization structure in which certain subordinates have two bosses should be avoided at all cost

8. A company's or organization's rules should not be broken - not even when the employee thinks breaking the rule would be in the organization's best interest

Questionnaire's analysis

Power Distance Index (PDI)
Power Distance is defined as the extent to which the less powerful members of institutions and organizations within a society expect and accept that power is distributed unequally.

The index formula is

\[ PDI = 35(m07 - m02) + 25(m23 - m26) + C(pd) \]

In which m02 is the mean score for question 02, etc. The index normally has a range of about 100 points between very small Power Distance and very large Power Distance countries. C(pd) is a constant (positive or negative) that depends on the nature of the samples; it does not affect the comparison between countries. It can be chosen by the user to shift her/his PDI scores to values between 0 and 100. (Hofstede et al., 2008)
Uncertainty Avoidance Index (UAI)
Uncertainty Avoidance is defined as the extent to which the members of institutions and organizations within a society feel threatened by uncertain, unknown, ambiguous, or unstructured situations.

The index formula is

\[ UAI = 40(m_{20} - m_{16}) + 25(m_{24} - m_{27}) + C(\text{ua}) \]

In which \( m_{16} \) is the mean score for question 16, etc. The index normally has a range of about 100 points between weak Uncertainty Avoidance and strong Uncertainty Avoidance countries. \( C(\text{ua}) \) is a constant (positive or negative) that depends on the nature of the samples; it does not affect the comparison between countries. It can be chosen by the user to shift his/her UAI scores to values between 0 and 100. (Hofstede et al., 2008)

Questionnaire results
In order to realize the company’s uncertainty avoidance (UA) and power distance (PD) the analysis is undertaken by using the scores that the candidates gave to each question.
Appendix C - Case study summaries
The summaries of case studies are indicated in the tables.