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Offshoring of Construction Engineering Services-top strategy, work processes and challenges

-a two-way case study perspective between Sweden and India respectively Romania

Master's Thesis in the Master's Programme Design and Construction Project Management

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Department of Architecture and Civil Engineering
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Master's Thesis ACEX30-19-4
Gothenburg, Sweden 2019

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Examensarbete ACEX30-19-4/ Institutionen för Arkitektur och samhällsbyggnadsteknik,
Chalmers tekniska högskola 2019

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Cover:

The picture is supposed to illustrate an environment where a global collaboration is present between different persons in a virtual environment, i.e. connecting to the topic of offshoring.

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ABSTRACT

Currently planning and executing the largest urban city development project in the Nordic region, the city of Gothenburg (Sweden) is forecasting an urgent need of professionals within all chains of construction projects if the projects are to be realized. This urgent need can furthermore be expanded to other cities in Sweden such as Stockholm. The demand can only be met if several strategies are incorporated, one of which is to utilize competence and resources from other countries, hence, adhering to using offshoring as a strategy for construction engineering services. The purpose of this master thesis is therefore to analyze how a large global company within the sector works with implementing strategies connected to offshoring. Furthermore an aim is to analyze how the design process is conducted in the global virtual teams being present and to investigate which challenges which are the most prominent. A qualitative research approach together with a case study have been used in this thesis. The theoretical framework have encompassed three broad areas in total, namely strategy, work processes and challenges in global virtual teams. This was done in order to get a holistic picture of the whole chain when using offshoring as a strategy. Cost reductions and resource seeking was stressed as the fundamental strategic motives by the theoretical framework, whereas the challenges were mostly connected to communication, culture and partly interpersonal aspects. The case study has been conducted with a two-way perspective by interviewing both managers and engineers in Sweden, India and Romania, where the two later are used as offshoring destinations. The empirical findings suggests that offshoring challenges might not be as much related to language barriers and cultural aspects as suggested by previous research. The findings rather highlight the fact that the lack of project management skills from the Swedish engineers is a large contributor to obstacles in projects. In terms of strategic reasons for adapting an offshoring element, the findings correspond to much of the recent studies adhering to the ever increasing importance of seeking resources, i.e. not only searching for cost reductions. Considering that the company in hand is relatively new with offshoring services to India and Romania, a rigorous apparatus including clear strategic moves and adapted work processes has already been put into place. Furthermore a healthy awareness regarding challenges connected to the work is present among both engineers and managers in respective country. An improvement of project management skills among the Swedish engineers, coaching of senior employees which struggle with working in global virtual teams, and an encouragement of team building could benefit the organization.

Key words: offshoring, engineering offshoring, engineering services offshoring, construction engineering services offshoring, communication, culture, e-leadership, work processes in construction industry, global virtual teams, offshoring challenges, Sweden, India, Romania

Offshoring utav projekteringstjänster inom byggsektorn- övergripande strategi, arbetsprocesser och utmaningar

-ett tvåvägsperspektiv på samarbetet mellan Sverige och Indien respektive Rumänien

Examensarbete inom masterprogrammet Design and Construction Project Management

OLIVER LÖFMAN NASTEFSKI

Institutionen för Arkitektur och samhällsbyggnadsteknik

Avdelningen för Construction Management

Chalmers Tekniska Högskola

SAMMANFATTNING

Det största stadsutvecklingsprojektet i Norden planeras och bebyggs just nu i Göteborg. Dock så är det en enorm brist på arbetskraft inom alla led som måste fyllas om projekten skall kunna realiseras. Det alarmerande behovet kan vidare utvidgas till flera städer i Sverige, exempelvis Stockholm. För att möta detta behov behövs flera strategier, där en innefattar att kompetens och arbetskraft ifrån andra länder utnyttjas, vilket anknyter till den här studiens fokus på offshoring utav projekteringstjänster inom byggindustrin. Syftet med det här examensarbetet är därför att analysera hur ett stort globalt företag inom sektorn arbetar med att implementera strategier kopplade till offshoring. Vidare var ett mål att analysera hur projekterings-processerna genomförs när man samarbetar i globala virtuella team, samt att undersöka vilka utmaningar som är mest framträdande. I den här studien har en kvalitativ metodik tillsammans med en fallstudie använts. Det teoretiska ramverket omfattar totalt tre breda områden: strategi, arbetsprocesser och utmaningar i globala virtuella team. Dessa områden valdes för att få en övergripande bild utav alla led som är närvarande när man använder offshoring som en strategi. Kostnadsminskningar och resurs-sökande framhävs som de fundamentala strategiska motiven i det teoretiska ramverket, medans utmaningar kopplades främst till kommunikation, kultur och delvis interpersonella relationer. Fallstudien har genomförts med ett tvåvägsperspektiv genom att intervjua både managers och ingenjörer i Sverige, Indien och Rumänien, där de två sistnämnda fungerar som offshoring destinationer. Den empiriska datan från studien indikerar att utmaningarna i offshoring samarbetena inte nödvändigtvis är högst kopplade till språk- eller kulturellerade faktorer, som föreslås utav tidigare studier. Resultatet påvisar snarare att det är bristen på projektledning ifrån de svenska ingenjörerna som orsakar hinder i projekten. Kopplat till strategiska motiv så anknyter resultatet starkt till mycket av tidigare studier som föreslår att offshoring numera främst används för att söka resurser i form utav arbetskraft, och inte endast utav kostnadsskäl. Med tanke på att företaget inte har använt offshoring strategin i Sverige under särskilt många år, så finns det ändå redan en rigorös organisation och struktur för möjliggörandet av offshoring samarbetena på plats. Vidare finns det en sund medvetenhet bland både ingenjörer och managers inom företaget om utmaningar och steg som måste tas framöver. En förbättring utav projektledningskunskaper hos ingenjörerna i Sverige, stöttning utav äldre kollegor som är ovana vid att jobba i globala virtuella team, och en uppmuntran utav team-byggande skulle kunna gagna företaget.

Nyckelord: offshoring, offshoring utav ingenjörstjänster, offshoring utav projekteringstjänster, offshoring utav projekteringstjänster inom byggsektorn, kommunikation, kultur, e-leadership, arbetsprocesser inom byggindustrin, globala virtuella team, offshoring utmaningar, Sverige, Indien, Rumänien

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Preface

This master thesis marks the end of my university studies within Civil- and environmental engineering. After having completed my Bachelor of Science degree at Lund University-Faculty of engineering, I moved home to Gothenburg and started my final studies at the international master program called *Design and Construction Project Management* at Chalmers University of Technology. The studies have been a long and challenging journey which I now can look back on proudly. Dedication, curiosity and hard work have been guiding words for me. To perform on a high level and embrace new knowledge has always been important for me, and I believe that I have done the most of my university studies from this point of view. To begin with I would like to thank my family for all the support during the years. During tough times you have been the ones who have always believed in me and my capabilities. Secondly, I would like to thank my supervisor of this master thesis, Martine Buser, for the guidance and valuable feedback. Furthermore, I would like to give a big thank you to my contact at the company which this thesis has been performed at, our conversations have been very much appreciated by me and I look forward to further discussions. Lastly, a big thank you to all the interviewees´ from Sweden, India and Romania, without you this thesis wouldn´t have been possible.

With that being said, I´m very excited about beginning a new chapter in my life, starting at large civil engineering consultancy firm. Wherever life will take me personally and professionally, I now have a solid foundation to stand on.

Gothenburg, January 2019

Oliver Löfman Nastefski

A handwritten signature in black ink, reading "Oliver L-N" in a cursive style.

1 Introduction

This chapter will begin with a background describing the topic and its importance connected to the investigated area in this report. Thereafter the goal, purpose, problem formulation, research questions and scope will be introduced. Following after this will be an outline of the report.

1.1 Background

In recent years there has been an increased interest in the field concerning offshoring of engineering services in Sweden. Currently planning and executing the largest urban city development project in the Nordic region, the city of Gothenburg is forecasting an urgent need of professionals within all chains of construction projects if the projects are to be realized (Christensson 2016). This need can also be extended to other regions and cities like Stockholm (Almega 2017). According to an investigation performed by professors at Chalmers University of Technology related to the topic, it is concluded that the demand can only be met if several strategies are incorporated, one of which is to utilize competence and resources from other countries. Connected to the need of professionals within all chains, one of the major stages in a construction project is the design phase, where the aspect of offshoring engineering services becomes relevant.

A broad definition used in several studies defines offshoring as the transfer of business processes and activities to foreign locations (Levy 2005). Further it can be expanded to the strategy of transferring activities through either the usage of external resources (referred to as outsourcing), or through relocating internal activities across national borders (referred to as offshoring) (Bunyaratavej, Doh, Hahn, Lewin & Massini 2011, Hätönen & Eriksson 2009). Following from this there are naturally overlaps and hybrids of the two concepts, but in this report offshoring will be the subject of interest. Offshoring in itself is not a new phenomenon, starting already in the 1960's with the relocation of manufacturing jobs, it was expanded to offshoring of knowledge based services in the late 1970's (Metters & Verma 2007). The big revolution however, was made possible by the introduction of the internet during the 90's and 00's. Nowadays offshoring is used in a wide variety of disciplines including for example aerospace, financial services, engineering services, IT and software development (Hätönen & Eriksson 2009). When it comes to engineering services, the construction sector has also seen an increased interest in offshoring (Messner 2008).

Benefits with using offshoring as a strategy are according to Linares-Navarro, Pedersen and Pla-Barber (2012) that the company may carry out tasks with an increased efficiency, and furthermore reduce the operational costs. Another aspect which is contributing to the usage of offshoring is the need for resources in the shape of well skilled employees which cannot be found in the country of matter. Traditionally the most important aspect has been that of reducing the cost by offshoring services to low wage countries, but according to Hätönen & Eriksson (2009) this has shifted towards the incentive of finding well skilled employees. Offshoring collaborations can be limited to a single project, but recently several companies have started to adopt long term collaborations in order to increase their competitiveness ahead in the future (Jensen 2009). As with everything, the utilization of offshoring comes with several challenges which need to be managed properly in order to minimize the risk of failures or excessive administration work. Virtual teams, meaning that communication is

exclusively performed via technological tools instead of meeting face to face, are subject to several challenges (Jarvenpaa & Keating 2012). Global virtual teams are highly present in the case investigated in this report, hence advocating the need to investigate this matter further. When collaborating in global virtual teams, Jarvenpaa and Keating (2012) amongst several others highlight critical aspects to be connected to communication, culture and trust. A combination of virtuality, cross-cultural teamwork, trust building and clear communication adds up to a challenging task. These concepts will be elaborated on and investigated empirically in this report.

The literature connected to offshoring is in many ways built up around sectors which have utilized the strategy for the longest time, i.e. the manufacturing-, software development- and the IT industry. When it comes to literature and cases performed connected to the construction industry there is an apparent gap, hence advocating the need for further studies within the field (Bosch, Buser & Koch 2016). Being a relatively new phenomena within the construction industry, especially from a Swedish perspective, those studies which have been investigating the topic some years back, ought to be followed up by new studies following the development. Koch and Bennett (2013) notes that previous research often suggest that strategic management, operations management and international business is a good foundation for the topic, whereas engineering and construction aspects haven't been given much attention. This report will focus on the overall strategies and incentives of using offshoring of engineering services within the construction industry, furthermore investigating the critical parameters of communication and cultures influence on it, which have been identified by several studies to be of high importance, e.g Jarvenpaa and Keating (2012). In addition to these aspects, the processes of design management will be considered linked to the work with offshoring. To get a holistic view and more heterogeneity of the offshoring phenomena and the actual work connected to it, this report will collect empirical data not only from high managers, but also from the designers/engineers which perform the practical field work, both in Sweden and in the offshoring countries (India and Romania).

In this particular report the case will be focused on one large consultancy company performing services within the construction engineering industry. The company in hand is one of the largest actors within the field and has an outspoken strategy since a few years back to increase their usage of offshoring in the future. However, it is important to recognize that among the largest actors in Sweden within construction engineering services, all of them are approaching the subject of offshoring at the moment, some more aggressively and outspoken than others. Several collaborations are initiated and employees are being hired abroad, mostly in India, in order to stay competitive with the other companies in Sweden. So, although this report only focuses on one of these large companies, a lot of activity is present in Sweden within this field and it should therefore be of interest to learn more about the different challenges and incentives.

1.2 Purpose and goal

The purpose of this thesis is to understand how offshoring is adopted in a company in terms of: why it is set as out as a strategy for the company, how the offshoring collaborations are organized in the shape of work processes, and which challenges are present in the global virtual teams. The goal is to contribute with hands on facts from employees regarding the matter by performing a case study on an organization within

the field of construction engineering services. Furthermore the goal is to analyze the data gathered through the interviews and come up with practical suggestions on how the offshoring collaborations can be improved in the global virtual teams. Adhering to the boom in the construction market in Sweden since a few years back, and being about to enter it myself, I have a personal interest in investigating the need for new strategies such as offshoring which can be used in order to broaden the company repertoire.

1.3 Problem formulation

As touched upon in the background section, the topic of offshoring within the construction engineering industry is highly relevant in Sweden at the moment. But since the company in the case study has only worked with it for a few years, several challenges are arising and the development is ongoing. This report will therefore analyze how the actual situation looks in one of the largest company's active within offshoring of construction engineering services in Sweden in 2018. Empirical data will be gathered from both managers (connected to strategic choices) and engineers (connected to actual work practices). Several aspects will be elaborated upon in order to give a holistic view of the topic, i.e. both reflecting on governing strategic choices and how the work processes and daily communication in virtual teams is being performed. My interest is to investigate if the company have adopted the offshoring element within all stages, hence approaching the subject from a broad perspective. The company have been able to evaluate some of the offshoring projects being completed during the years since the strategy was incorporated, concluding that some have been more successful than others. This fact stresses the need for a fresh case study trying to encapsulate some of the reasons to this and the challenges ahead. Based on the above mentioned, the problem formulation can be condensed into the following question: why is offshoring chosen as a strategy for the company and how it is being translated to work processes in the offshoring collaborations? Furthermore, which are the challenges and how can the collaboration in the global virtual teams be improved? This furthermore ought to be of interest for other companies working with offshoring.

Previous studies have lacked a two-way perspective, i.e. only investigating the aspects from the perspective of the client which use offshoring, not considering the employees in the offshoring country and how they perceive the challenges and work processes. In this report a two-way perspective will therefore be embraced by interviewing staff from Sweden, India and Romania.

1.4 Research questions

- Why is offshoring chosen as a strategy by companies? And which are the identified challenges by the literature regarding work in global virtual teams?
- How is a large consultancy company within the field of civil- and environmental engineering working with offshoring in the context of strategy, work processes and communication?
- What are the challenges faced by employees working with offshoring within the company, i.e. in the global virtual teams? (both from the Swedish, Indian and Romanian perspective).
- How can the company improve the collaboration in the global virtual teams?

1.5 Scope

The case study is performed in a construction engineering company active on a global market, where one of the offices is located in Gothenburg, Sweden. The study has been limited to one of the business areas at the company in hand (structural engineering), although the offshoring strategy is applied in several of the other business areas as well. 11 interviews have been performed in total, where the ones with employees in India and Romania have been conducted via Skype video calls, whilst the interviews with the Swedes have been conducted face to face at the Gothenburg office if possible. To conduct the interviews in the same manner would have been preferable, but considering the limitation of the study, travels to India respectively Romania wasn't possible. All but one of the Swedes are situated at the Gothenburg office. The employees in Romania and India respectively, are located at the same office in their country. The subject of offshoring has mostly been approached from a general perspective in the theoretical framework, i.e not being tied to any specific business area, but it should be mentioned that the company in hand operates solely in the construction engineering sector. Furthermore the case study has not been limited to any particular project, instead it has focus on holistic approaches and opinions. The time constraint is coupled to the scope of a master thesis. Economical aspects connected to offshoring has been addressed strategy-wise, but no economical data have been considered. Regarding the challenges in global virtual teams, focus has been on communication and culture whilst interpersonal aspects have been left out mostly, although being brought up partly in connection to the other aspects.

1.6 Outline

1. Introduction: This chapter will start with a background to the topic of investigation, referring to the actual situation in Sweden, and further relating to literature and studies performed within the field. Purpose, goal, problem formulation, research questions and the scope of the report will also be established here.

2, Method: Describes how the report have been carried out in terms of literature studies, interviews, analysis of data, research strategy and consideration of ethics.

3. Theoretical framework: This chapter will provide the reader with a framework which will serve as the basis for the empirical investigation and analysis.

4. Findings: Based on interviews connected to the theoretical framework and problem formulation, this chapter will present the empirical findings of the study.

5. Discussion and analysis: This chapter will discuss the different findings from the interviews in context to the theoretical framework and problem formulation, drawing analogies and finding differences between theory and practice.

6. Conclusion: Finally a conclusion will be drawn based on the theory and findings in the report adhering to the problem formulation and the research questions. Furthermore recommendations will be given for how the company can improve and use the data analyzed here. Lastly recommendations for further studies will be suggested.

1.7 Sustainable development

In accordance with the requirements from Chalmers university of Technology this small section will mention the thesis's connection to sustainable development. Sustainable development is normally divided into three different parts which concerns environmental aspects, social aspects and economical aspects. Considering the nature

of the subject at hand and the performed case study, i.e. elaborating on strategies and challenges in offshoring collaborations, the connection to sustainable development might not be obvious. However, the different aspects are touched upon indirectly. Economical sustainability refers to practices that support long-term economic growth without negatively impacting social, environmental, and cultural aspects of the community. Adhering to this, the strategy of using offshoring is intended as a long term strategy within the organization. When implementing the strategy from the Swedish side, the intention has never been to reduce the amount of employees in Sweden, and it hasn't been the case either. Some of the employees in Sweden are naturally worried that it will affect the Swedish colleagues in terms of themselves being redundant, but the company is very clear about the fact that this will never be the case and that the social aspects will always be prioritized. Furthermore, connecting to social sustainability, although having virtual collaborations with the colleagues in Romania and India, the staff is encouraged to build relationships with the colleagues in the other countries. This has been done in the shape of short trips to respective country by several of the employees working with offshoring. Concerning environmental sustainability, the travels between the different countries are limited to study visits and educational purposes. The idea of the collaborations is to utilize the effective virtual communication technology available, i.e. not having a need to travel between the countries physically. Furthermore environmental aspects are always to be considered in the projects in hand, i.e. designing structures and systems with low environmental impact.

2 Methodology

This chapter will describe how the report has been carried out in terms of research strategy, literature studies, case study, interviews and analysis of data. Furthermore it will address the importance of ethics connected to the study.

2.1 Identifying the problem

This master thesis was initiated via an explorative interview with the company which is being used in the case study. By discussing several topics from different perspectives and questioning their relevance, the topic of multinational collaboration was found to be of high importance for the company at the moment. More specifically offshoring of engineering services, which is high on the agenda and envisioned to be incorporated and utilized more as a strategy in the organization. After the first interview which was conducted with the head of the management department, topics connected to offshoring and outsourcing were examined via searches on databases. By doing so it could be concluded that there was enough literature to build the case study on. To get the best possible understanding of the company's work with offshoring, a meeting with the Sweden director for this strategy was held. The meeting resulted in a broad understanding of the work and challenges faced in the projects. A brainstorming session was also held in order to try to identify interesting angles to approach the topic, resulting in a few broad questions being of interest to the company. A consultation was thereafter held with the supervisor at Chalmers University of Technology confirming the relevance of the topic, i.e. that there was an obvious need for more (and new) studies within the field. Lastly, before initiating the literature study, an informal meeting was held with one of the engineers in the company which had worked with offshoring in practice for several years, this gave an important overview of the practical work and challenges, which set out a direction for relevant aspects to bring up in the theoretical framework.

2.2 Research strategy

A qualitative research methodology has been adopted for this study. The qualitative methodology in this case implies that data is collected via interviews. In total 11 interviews have been carried out in order to collect the empirical data which form the basis for this report. A qualitative methodology is characterized by unknown variables, having flexible guidelines, being context related and furthermore both explaining and interpreting theory (Manson 2002). Furthermore it should be acknowledged that the analysis of data is somehow subjective in terms of identifying patterns and themes. The process have been an abductive one, i.e. a combination of inductive- and deductive reasoning. When using an abductive reasoning the researcher is moving between theory and empiry to successively grow the understanding of the topic in hand (Dubois & Gadde 2002). By doing so the process naturally becomes iterative in its nature. For example the theoretical framework have been adapted to the most relevant subjects stressed in the interviews. The breakdown of the research method for the study is illustrated in Figure 1.

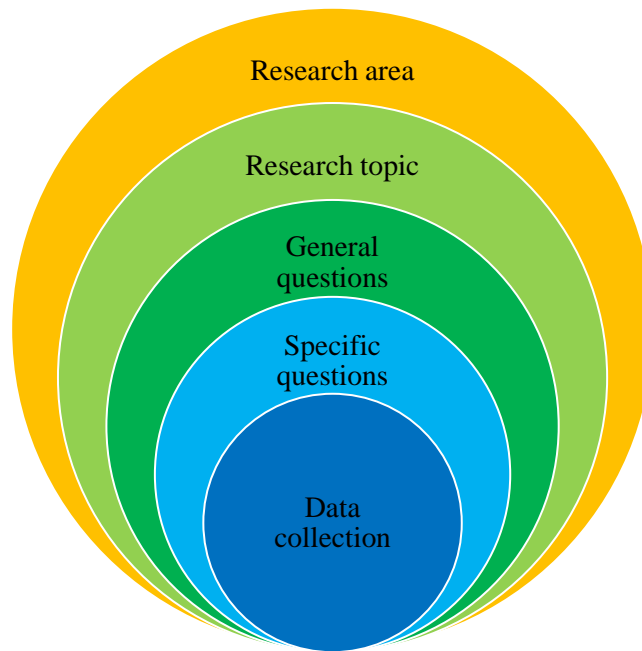


Figure 1 Breakdown of research strategy.

2.3 Literature review

Having done some initial research connected to the topic of offshoring based on the explorative interviews, several keywords and main areas of interest had been identified. The theoretical framework was then established through more extensive research connected to offshoring and outsourcing. Knowledge management, operations management and organizational theory formed as the basis for the research scope, at the same time being focused towards virtual teams and communication challenges. The searches for relevant articles and papers were primarily made on Google Scholar and the internal electronic library offered via Chalmers University of Technology (giving access to example ScienceDirect). Furthermore some papers which couldn't be accessed by myself was obtained through my supervisor. Most of the papers were chosen from organization-, business- and management areas. Considering the fact that there is a lack of studies having been performed connected to the construction industry, inspiration was collected from acquainted concepts and studies performed in other industries such as for example IT and telecommunications.

The breakdown of the research method for the report, which can be adhered to the literature search as well, is illustrated in Figure 1 above. By having this approach the focus was iteratively narrowed down and refined as the research went on. However, I realized quite early in the process that the field of offshoring connected to engineering services and acquainted challenges was relatively small. The bubble of articles and papers were all interlinked and therefore a few outstanding writers/researchers were identified such as Bunyaratavej, Jarvenpaa and Keating. Their articles served as the body of knowledge connected to the field. In one way this can be seen as troublesome since many things are being repeated over and over again in all papers. At the same time the bubble of interconnected articles gave a solid understanding of the practices, resulting in me identifying and strengthening the belief that there is a need for more studies within the field, especially in Sweden/Europe.

2.4 Case description

In this thesis the actual practices from a large consultancy company have been elaborated upon based on interviews and meetings held during the autumn of 2018. The company is present on a global market operating in various disciplines within construction and engineering, although being limited to services, i.e. not carrying out any production. The strategy of using offshoring has been used for several years, however, the actual outspoken strategy and intensification of the work have only been utilized since 5 years back. India and Romania are the countries which are used when offshoring engineering services. Depending on the business area in hand, either one single or both countries are used for collaborations. In this report the case is based on a department which collaborate frequently with both India and Romania to different extents. By interviewing staff that work with interconnected and similar tasks a good comparison can be made between the collaborations with the different countries. No specific project have been selected since the collaborations vary in their length and size of the teams. Focus have been on capturing the holistic elements present when offshoring to India respectively Romania. It should also be noted that the employees in the offshoring countries belong to the same company as the one in Sweden, thus it is a matter of offshoring, i.e. not outsourcing.




In previous studies performed within the field, suggestions have been made to reflect on the whole project process, i.e. not only looking at the starting phases which have been the case when a project is ongoing. Therefore this report has a strength in not being limited to a single project, instead wisdoms from several projects and different experiences/situations can be analyzed, overviewing all the stages in a project (start-planning-execution-finishing-follow up-feedback). Furthermore there has not been any recent study being performed on a Swedish construction company which have worked with offshoring for some years. The ones which have been performed focused on the early strategies adapted in the first projects. As mentioned, the company in the case have utilized the strategy and performed hundreds of projects in varying length by now, hence advocating a need to reflect over what is actually working well and not so well. A holistic approach is utilized, integrating data from employees on different levels both in Sweden, India and Romania. By doing so a two-way perspective is obtained which ought to give new interesting insights.

2.5 Interviews

As mentioned the empirical data has been collected via interviews with employees in different positions within the company. In order to get a broader view, not only looking from a Swedish perspective, interviews have been carried out with employees from Sweden, India and Romania. Furthermore, the aim has been to get a diversified view, hence, interviewing both high managers and engineers doing the actual work. Table 1 displays the employees from respective country which have been interviewed, further the names being used in the result chapter for respective person are incorporated in the table. The interviews conducted with managers have had more focus on strategic aspects, whereas the interviews with the engineers have focused on practical issues connected to the work process and actual challenges. A total of 11 interviews were performed in a semi-structured way. A semi-structured interview utilizes the strength from both worlds, i.e. having structured questions beforehand, but also being adaptive for follow up questions depending on their relevance (Lantz 2007). The interview is

therefore flexible and aims to encompass the most important thoughts, not being limited to the rigid questions formulated initially.

Table 1 Interviewed employees from respective country and their corresponding position.

Country	Designer/Engineer	Manager- middle level	Manager-high level
	2 "Engineer 1 and 2, Sweden"	1 "Middle manager, Sweden"	2 "Top manager 1 and 2, Sweden"
	2 "Engineer 1 and 2, India"	1 "Middle manager, India"	
	2 "Engineer 1 and 2, Romania"	1 "Middle manager, Romania"	

Ethical concerns were considered while performing the interviews, see more information in "Ethics" below. Interviews with employees located in Sweden were performed face to face while the international interviews were made via Skype video calls. There are advantages and disadvantages with all types of interviews, however, face to face interviews were chosen since the interviewer is then able to interpret non-verbal signals (Lantz 2007). Not having the possibility to travel to Romania or India, the interviews were chosen to be made via Skype instead of through telephone. By doing so, me as a writer also got a personal experience of how it actually is to communicate in a global virtual team, adding insights which were used when analyzing and presenting the material.

2.6 Findings and analysis of the data

After having performed the interviews they were transcribed using a strategy mentioned by Brinkmann and Kvale (2014). In total 11 interviews were performed, which results in a large amount of data. Brinkmann and Kvale (2014) brings up several ways to analyze interview data, one of which stresses that a condensation of answers into short simple sentences is adaptable. This strategy was used in order to generate an overview of the most important points being made in the interviews. Unclear descriptions and irrelevant data was excluded. Having done this, analogies could be drawn and patterns being identified between the interviewees' answers and the theoretical framework. Thereafter the transcriptions were sent to the interviewees if requested. In that case any corrections or misunderstandings could be cleared out before the compilation was initiated. In this interview study, none of the interviewees' requested a transcription of the interview, which adds to the credibility and validity of the given answers. In some cases additional sections in the theoretical framework were added in order to match the relevant aspects from the interview data. It should also be mentioned that the interviews conducted in Swedish have been translated by me.

2.7 Ethics

When conducting interviews for the purpose of collecting data there are many aspects to consider in order to get a valid result. One of the important aspects when conducting a semi-structured interview (either face to face, via video call or through a phone call), is the ethical one. An interviewer has a powerful position in relation to the respondent (Lantz 2007). Therefore knowledge about how to encompass ethics has been acknowledged in all the interviews in this thesis. This concerns for example how the interviewee is informed beforehand about the purpose of the interview and in which context the answers will be used. The respondents in this study have been clearly informed about the purpose and usage of the material beforehand via email. Furthermore the respondents have been informed that all their answers will be anonymous. After the interview the respondents have had the chance to take part of the transcription and data used from their responds, and further be able to correct any misunderstandings or add thoughts before publication. The interviews were recorded in order to facilitate the analysis of the extensive data collected. To adhere to ethical aspects, the respondent was asked for permission to do so beforehand, and informed that the recordings would only be used for the thesis. A written confirmation of this was sent to respondents. When the interviews with the respondents in the offshoring countries were conducted extra attention to ethics was considered, referring to Aronson Fontes (2008) which stresses that interviewing across cultures requires an extended understanding of how the influence of culture may impact the answers.

3 Theoretical framework

This section will provide the reader with a framework connected to the topic of offshoring, which will serve as the basis for the empirical investigation and analysis. The structure and sections within this chapter adheres to the different aspects brought up in the problem formulation. The chapter begins with a section establishing what offshoring is, a brief history of the subject, offshoring of construction engineering services and why businesses use it in their operations, relating to the company strategy. Following after this there will be a section describing the work processes which are traditionally used while carrying out design projects, also bringing up the nature of virtual teams. At last, there will be a section elaborating on the critical aspects connected to offshoring in terms of communication and culture.

The different aspects of importance which are brought up can be condensed into three parts: strategy, work processes and communication. All of which are of interest to the company in the case considering the fact that a recent strategy connected to utilizing offshoring have been adopted, which implies the need for new work methods and processes, in the end being finalized via communication in virtual teams. Furthermore the company have stressed that there are obvious challenges for the employees to embrace the strategy in practice, resulting in several challenges connected to streamlining the communication and collaboration.

3.1 The concept of offshoring

“Diversification and globalization are the keys to the future” -Fujio Mitarai

Offshoring as a strategy can be described and defined in several different ways, however, one of the most frequently used definitions is the following; offshoring is “the transnational relocation or dispersion of service related activities that had previously been performed in the home country” (Bunyaratavej et al., 2011). The topic of offshoring has in many ways evolved from the acquainted concept of outsourcing, which is not to be mixed up with even though there are hybrids of the two of them. Outsourcing refers to when a company transfers activities or services by using external resources, whilst offshoring, as mentioned in the definition, refers to the relocation of services to a foreign country within the same organization (Bunyaratavej et al., 2011, Hätönen & Eriksson 2009). In this report offshoring will be the topic of empirical investigation, although interlinked concepts such as outsourcing will be discussed when it is considered to be relevant.

Historically companies in all industries were organized in a vertical manner, i.e. performing all of the links in the value chain internally (Hätönen & Eriksson 2009). However, increasingly competitive markets eventually led to the need of new strategies where costs could be reduced, hence initiating a development where activities which weren't core activities, ought to be outsourced to either low wage countries or other domestic firms that could execute the required task at a lower cost. Through studies of the history of outsourcing Hätönen and Eriksson (2009) have been able to identify three broad phases. Although the focus is on outsourcing, it is still highly connected to the concept of offshoring and its development. As mentioned, the initial reason for using outsourcing as a company strategy was to reduce the operational costs, this period is

referred to as the “big bang era”, i.e. instead of performing all activities in house, many were now being outsourced. Following after this was the so called “bandwagon era”, where cost efficiency wasn’t the only motive anymore. Instead, increased focus was spent on more complex processes where external skills, competence and knowledge became of importance. The third era, which is the present era, is referred to as the “barrierless organizations era”. Internet, increased bandwidth and other advances in communication technologies has enabled us with an opportunity to outsource and offshore an increasingly variety of tasks (Metters & Verma 2007). When all companies nowadays have access to a global resource pool the boundaries are fading, focus is now shifting towards flexible organizational forms, management of business development and continuous improvement where loosely coupled networks of actors are connected (Hätönen & Eriksson 2009, Schilling & Steensma 2001). This is seen as a necessary demand in order to survive in the present competitive market. Nowadays the strategy of outsourcing and offshoring is used in pretty much all industries and sectors, spanning from aerospace to financial services (Hätönen & Ericsson 2009).

When it comes to engineering services, the total worth of the outsourcing business is expected to increase fivefold between 2010 and 2020 (Sehgal, Sachan & Kyslinger 2010). Narrowing down the focus to construction engineering services, there has not been a widespread strategy as far back historically among the companies as in comparison to other industries (Lewin 2012), possibly due to the nature of construction projects being very localized and project specific (Messner 2008). Furthermore the local building codes which differ between most countries can be seen as a barrier (Koch & Bennett 2014). However, in a case study conducted by Koch and Bennett (2013) on a Danish engineering firm active within the construction industry, it becomes obvious that they have offshored routine tasks in one way or another to foreign countries for over 30 years, similar records are brought up by Messner 2008 connected to the US market. Comparing this with the Swedish market, it becomes evident that there is a clear difference since the Swedish engineering firms generally have only started to adopt the offshoring strategy in recent years (Koch & Bennett 2013). When it comes to the countries which are used for offshoring of engineering tasks, India and China are by far the largest (Messner 2008). Depending on the country which offshore tasks there are several other alternative countries including for example Romania, Poland, Czech Republic and Mexico. Connecting to the different phases established by Hätönen and Ericsson (2009), India and China are ideal since they offer large workforces of highly qualified engineers to a relatively low payment compared to their western counterpart. Furthermore they communicate in English on a high level, these aspects will be elaborated more upon later on in this report. Varying tasks both in terms of size and difficulty level are offshored depending on the company in hand, spanning from simple activities to high knowledge intensive activities (Roza, Van den Bosch & Volberda 2011). The commonly largest area appears to be within civil engineering and infrastructure when examining the Scandinavian countries (Koch & Bennett 2014). The nature of the tasks are often standardized and routinized, at least initially, like for example CAD drawing, BIM modelling and bridge design. However, as brought up in the case study by Koch & Bennett (2013), senior Indian engineers are willing and interested in taking on more and more complex tasks considering their engineering experience and expertise. Here it becomes evident that a company can take advantage of these aspects, not only incorporating cost saving aspects in their strategy, but also transforming their organization (Roza, Van den Bosch & Volberda 2011, Hätönen & Eriksson 2009).

3.2 Offshoring strategy

Connecting to the framework provided by Hätonen and Eriksson (2009), the different eras or phases can be associated with a certain underlying ground theory, see Table 2. Using these as a background, the different drivers associated with offshoring as a company strategy will be brought up below. Focus will be on the broad and general drivers, not digging into the underlying theory. Firstly the objective of reducing costs will be discussed and secondly the motive of seeking resources and skills beyond its own company will be addressed. Even though a company might be in the so called barrierless organization phase, the objectives of cost savings and resource seeking are still vital and underlying, therefore the last phase will not be elaborated upon here.

Table 2 The three eras identified by Hätonen & Eriksson 2009 together with the underlying theory and prime motive.

Phase	Underlying theory	Prime motive (driver)
Big bang	Transactional theory	Reduce costs
Bandwagon	Resource based view theory	Seek resources and knowledge
Barrierless organization	Resource based view theory and organizational theory	Organizational transformation

3.2.1 Reduction of operational costs

Examining the literature connected to outsourcing and offshoring, there seems to be a unison agreement that cost savings have been the most important strategic driver historically (Aksin & Masini 2008, Bunyaratavej, Hahn & Doh 2007, Lewin & Peeters, 2006, Stratman 2008, Contractor, Kumar, Kundu & Pederen 2010). One of the main explanations to this fact is the intensified competition within many industries which have forced companies to seek new strategies for reducing costs (Dossani & Kenney 2007). The cost savings are typically based on the fact that there is a wage difference between the developed countries and the developing countries (used as offshore destinations) (Lewin & Couto, 2007). From an outsider's perspective this can be perceived as a one way win for the client country, but among others, Jensen (2009) brings up some important aspects which relates to the fact there is a mutual benefactor while engaging in this relation. I.e not only that the developed country reduces its operational costs (Sehgal, Sachan & Kyslinger 2010), but also that the offshoring country create employment and an industrial competitiveness in connection to the developed countries (Bennett & Vaidya 2005). Furthermore Jensen 2009 concluded from a case study that the Indian firm (the country used for offshoring) obtained organizational changes and learning effects on a systematic level.

When it comes to offshoring of services, there is one particular factor in our society which have revolutionized and facilitated the offshoring work, namely the improvements in global telecommunications and information communication technologies (ICT) (Blinder 2006, Levy 2005). Along with the improvements and the increased bandwidth we are now able to communicate seamlessly undisrupted globally, furthermore the technological advancements lead to lower costs of the ICT (Contractor et al., 2010).

Cost reduction in terms of lower wages represents one side of the offshoring strategy. However, one must not neglect the extra costs which are added when engaging in co operations separated in time and space. Hidden costs related to communication, coordination, governance etc. need to be considered (Stringfellow, Teagarden & Nie 2008). At the same time interaction between the service providers and the client over time ought to be improved and therefore enhance the cost efficiency and project execution (Ethiraj, Prashant, Krishnan & Singh 2004). Higher performance, partly in terms of cost savings are also more likely when a company has a clear strategy for their offshoring operations, i.e. not just offshoring primarily to reduce costs (Bunyaratavej, Hahn & Doh 2007). Indeed, cost savings are most often initially the main driver or incentive, as concluded for example in a case study by Koch (2013). With this objective in mind, most companies start off with offshoring routinized work which does not require any high level of skill or analytical thinking (Lewin, Massini, & Peeters, 2009; Maskell, Pedersen, Petersen, & Dick-Nielsen, 2007). If the cooperation and work is successful, the offshored activities could include more advanced and complex tasks in future collaborations as mentioned by for example the company in the case study (Koch & Bennett 2013). Connecting to Table 2, for example Vivek, Banwet and Shankar (2008) have through studies of offshoring relations overtime concluded that transactional theories describes the earlier phases well, whilst the later phases are better described by resource based theories.

The costs related to offshoring are also highly connected to the offshored country in hand. Apart from the difference in wages, there are several other factors to consider, for example geographic-, temporal-, linguistic-, political and economic elements (Carmel & Abbott 2007). Geographical- and temporal proximity are found to be the most important factors according to Carmel and Abbott (2007). Cagliano, Marco, Rafele nad Arese (2012) extends this to also include technical- and cultural proximity. The mentioned elements are considered when discussing the topic of nearshoring, which as the name suggests, means that the offshored country is located close by geographically (Koch & Bennett 2014). Similarities in culture provides many benefits and is likely to reduce costs associated with training and travel costs for managers (Bunyaratavej, Hahn & Doh 2007). Aspects associated with culture and communication will be discussed in one of the sections later in this chapter.

3.2.2 In search for resources and well skilled employees

Costs undoubtedly remains an important factor when choosing whether to offshore services or not (Youngdahl & Ramaswamy 2008). However, connecting to Table 2 and the framework established by Hätönen and Eriksson (2009), much of recent research suggests that the drivers for offshoring have shifted from being mainly cost focused towards being a strategy for seeking resources and well skilled employees as well (Manning, Massini & Lewin 2008, Roza, Van den Bosch & Volberda 2011). When it comes to offshoring of knowledge intensive activities, for example Lewin, Massini & Peeters (2009) empirically found this to be true in a case study. Furthermore, the search for global talent and resources is not only connected to the lack of resources, but can also be extended to the fulfilment of international strategies in order to be present in a global marketplace (Roza, Van den Bosch & Volberda 2011). There is also a difference in the most important drivers depending on the size of the company as found by Roza, Van den Bosch and Volberda (2011). The search for resources are especially important for medium-sized and large firms according to the study. Nowadays even the largest

companies don't have all the competences needed in order to be competitive in for example research and production within their own organization, this is due to the increasing complexity of products and services, hence advocating knowledge seeking elsewhere (Contractor et al., 2010). Offshoring and outsourcing are no longer limited to standardized activities performed by low-skilled labor, but is extended to more complex and sophisticated activities such as design, engineering and product development (Lewin & Couto 2007) , enabled by the large amount of scientists and engineers abroad, especially in India and China (Koch & Bennett 2013).

There are several emerging economies which graduate an increasingly large number of qualified engineers, with China and India being the largest. At the same time the U.S and European graduates are decreasing within the same field (Bunyaratavej, Hahn & Doh 2007). Hosting the two largest populations in the world but still having a relatively low per capita income, the potential of these countries are unmatched anywhere in the world (Gerefi, Wadhwa, Rissing & Ong 2013). Both of these countries have played, and will play an important role in the future connected to offshoring of services and product development considering their resource- and talent pool, as it was put by Gerefi et al., (2013): *“It is no accident that China is called the “factory of the world,” while India claims to be the “back office of the world”*. The underlying reasons are partly due to growing young populations and growing investments in education systems (Freeman 2005). Several investigations linked to the amount of annually graduating engineers, including by for example the U.S Department of Education 2006, found that the U.S graduated 70 000 undergraduate engineers in 2004, whilst India and China graduated 350 000 and 600 000 respectively. Although a wide circulation of these numbers, several authors have questioned the statistical validity, claiming that there is a broad difference in how an engineer is defined in respective country, claiming that if defined in the same way, the gap would be smaller between the countries (Bialik 2005). Nevertheless, the numbers gives a general overview of the proportions, amplifying the presence of offshoring markets both now, and further on in the future.

At the same time China and India, in particular hot spots like Shanghai and Bangalore, are subject for high local competition for the employees. This have led to a wage inflation and an increase in the attrition rate, which in its turn result in a perceived lower interest by several companies, instead shifting focus to other potential countries (Manning, Massini & Lewin 2008). Other offshore destinations are catching up and many of them are offering closer proximity to the client country from several aspects, connecting to the topic of nearshoring. For example: emerging offshore countries in eastern Europe attract close by developed countries, in the same way the Philippines and Latin America are attracting companies from the U.S and Spain, mostly due to linguistic compatibility. Not only do the countries offer work at a lower wage, but also a closer cultural proximity which are to be seen as important factors (Carmel & Abbott 2007). Furthermore aspects such as corporate culture, education level, political system and business environment are likely to be more similar. As mentioned by Koch and Bennett (2014) related to the Scandinavian offshoring market, there are several eastern European countries which are within a close travel distance and furthermore share similar construction standards (Eurocodes in Europe), making them highly attractive. The choice of which country to offshore ought to be investigated by the company in hand, weighing in important factors for their own company. Furthermore, the choice does not need to be limited to one single country, several companies spread their operations over a variety of locations in order to spread the risk- and cost sensitivity,

i.e. having a blended portfolio of some more expensive countries and some less expensive (Bunyaratavej, Hahn & Doh 2007).

3.3 Work processes and global virtual teams

This section will briefly address the design process in a construction project and the importance of work processes and routines. Furthermore the aspects relating to teamwork and management/leadership in global virtual teams, which is present when offshoring services, is brought up. This adheres to the situation in the case company which was addressed in the problem formulation, i.e. that global virtual teams are highly present when you offshore engineering services in the company at hand.

3.3.1 The design process

“Strategy without process is little more than a wish list.” - Robert Filek

Construction projects are endeavors which are characterized by being unique, often spanning over long time periods and engaging a wide variety of actors within the different stages (Nordstrand 2008). Furthermore, every new project often involves new actors which are to cooperate towards a common goal. One of the major stages in the building process is the design phase, i.e. the stage where professionals which design and model the building or construction project are active. This stage engages several different actors within different specializations, for example HVAC engineers, MEP engineers, structural engineers, architects and design project managers to name a few. Offshoring of construction engineering services, which is the focus of this thesis, will elaborate on the different phases and professionals involved in the design stage. A generalized building process (Nordstrand 2008) and the phases in the design stage (Gray & Hughes 2007) can be divided into the steps illustrated in Figure 2, furthermore the broad process stages are listed in connection to the design phases (PMBOK 2008). As brought up by for example Knotten, Svalestuen, Hansek and Lædre (2015) the processes and phases are likely to contain several iterative elements, i.e. not being strictly linear.

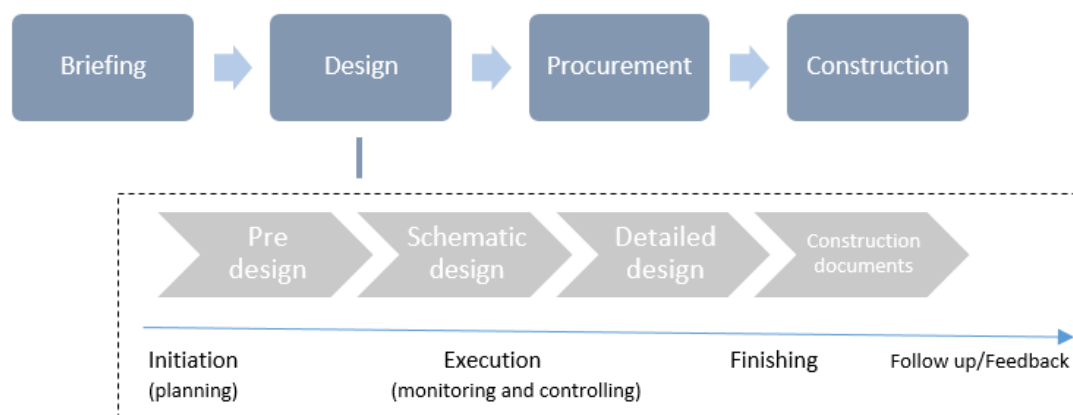


Figure 2 A generalized building process including the design stages.

Success factors connected to the management of the design stage are among many communication, decision making, knowledge management, planning, performance evaluation, risk management and team management (Knotten, Lædre and Hansek 2017). When it comes to offshoring of engineering services, the management of these factors becomes extra important since you will work in a virtual environment for most of the time. In a traditional project, if the size of the project requires so, there exists a professional called design manager which is to manage the different professionals involved. Eynon (2013) summarizes the task of the design manager to be the following:

- enable an effective flow and production of design information
- contribute to a successful delivery of a project in terms of time, cost and quality
- deliver value through integration, planning, coordination, innovation and reduction of risks

However, when an engineering firm engages in a construction project the disciplines involved can range from one to several, i.e. in Project X the Company A might only be involved in designing the sewage pipes. Hence the need for a unique design manager might not be the case, instead there ought to exist an internal manager managing the different designers doing the practical work (Andersen, Nycyk, Jolly & Radcliffe 2005). Although not always having the need for a unique design manager, the factors brought up above are still vital. How teams are to be managed, especially virtual global teams, connected to the topic of offshoring, will be discussed in the upcoming section.

In a case study by Jensen (2009) investigating offshoring of construction engineering services to India, it is mentioned that the engineers in India are responsible for the design work, whilst functions like project management, client contact and project monitoring remained in the parent country. Another case investigated by the same author, involving a Danish IT company, highlights several differences between carrying out a traditional project in Denmark compared to a project when offshoring is used. Streamlining of work processes, a more thorough division of labor and a plan for integrating the Indian counterpart are seen as differences to a traditional project in house, all of these aspects need to be more detailed in the case of using offshoring (Jensen 2009). Furthermore the obvious aspect of translating project documentation requires substantial work. Considering all these aspects, the need for well-established work processes, routines and management are key for a successful offshoring project. The Danish companies in the case studies mention that the process of adapting and preparing the organization and the employees for offshoring projects is ongoing, meaning that trial and error, internal feedback and follow ups are important for future improvements. Some examples of improvements which have been implemented by the company are; more structured and transparent work flows, adaptation of using English as work language, routines for monitoring and follow ups, organization and routinization of communication flows. Teamwork is always present in projects and another layer of complexity is added when offshoring, the following section will address that aspect.

3.3.2 Challenges in global virtual teams

“Every project is an opportunity to learn, to figure out problems and challenges, to invent and reinvent” - David Rockwell

Having already defined offshoring as “the transnational relocation or dispersion of service-related activities that had previously been performed in the home country”, offshoring as a strategy results in the presence of global virtual teams (Jarvenpaa and Keating 2012). Global virtual teams are characterized by having geographically distributed project team members from a variety of nationalities relying on technology-mediated communication, and consequently having minimal or non-existing face to face interaction (Gibson & Gibbs 2006). Depending on the project or company in hand the virtual teams vary in their composition (Brewer 2015). Size of the team, lifespan of the project or team, mix of nationalities, mix of cultures and location of team members are only a few factors which contribute to the unique characteristics of a virtual team. If a global virtual team is managed in a good way there are many gains in terms of cost reductions, knowledge sharing and organizational learning/-development, which of course is the main objective for using offshoring as a strategy as mentioned in earlier sections. However, naturally the nature of global virtual teams is connected with several challenges which have been observed in a wide body of literature (Lee 2014). Some of the core challenges divided into different categories are listed in Table 3 which is a compilation made by Lee (2014).

Table 3 Identified challenges when collaborating in global virtual teams.

Communication	Culture	Interpersonal	Technology	Economy
Language barriers	Differences in work- and life philosophies	Trust issues	Difficulty in finding information	Setup and equipment costs
Interpretation of contexts	Cultural differences regarding time and deadlines	Respect for different members	Usage of different tools	Maintenance costs
Different time zones	Lack of understanding of client	Conflict management	Integration and sharing of knowledge and information	Difficulties in tracking, measuring and controlling work
Little or non-existing face to face interaction	Team formation in terms of hierarchies and governance	Motivation and personal development issues	Internet speed access and connectivity issues	Virtual infrastructure support within organization
Lack of communication approaches	Differences in perceived status of members	Relationship building	IT support	Missed deadlines, rework
			Perception of what can be seen (limited to the screen)	

The table categorizes the challenges in broad terms since many of the factors are interconnected in several ways (Lee 2014). Communication is a factor which is recurrent as critical among the existing research about project management and management of virtual teams. In many ways, communication is what offshoring is all about and it is influenced by factors listed in the table such as culture, trust- and relationship building, technology etc. Another layer of complexity is added since virtual teams rely on technology to be able to communicate, and considering the wide variety of communication mediums it is crucial for a team to early on establish which are the most appropriate. According to Lee (2014) a common mistake is to assume that one particular communication medium fits all communications, advocating that different mediums fit different functions. Increasing year by year, some of the communication mediums right now are for example: email, voicemail, collaboration sites, texting (so called asynchronous tools) and furthermore video conferences, skype, cloud platforms, teleconferences, and screen sharing (so called synchronous tools). Proper training and a common vision of how and when to use the different mediums is highlighted as important.

Trust is another important factor which is highly connected to communication in virtual teams (Jarvenpaa and Keating 2012). Research have found that lack of shared language skills and common procedural aspects amongst others can affect the trust building perception of the team, furthermore trust is less interpersonal and instead more focused on the project or process in hand. Arising diffuse conflicts and how to manage them virtually is another challenge (Lee 2014). The cultural factor is also a recurrent factor which varies depending on the composition of the team. In a case study by Jensen (2009) some elements related to cultural differences between a Danish and Indian firm is brought up in terms of Indian engineers not understanding what the client in Denmark expects documentation wise. Similar stories are mentioned in a case concerning a US and Indian company (Jarvenpaa and Keating 2012). As mentioned in Koch and Bennett (2014), nearshoring is a concept which ought to minimize the cultural differences which might occur between certain countries. Referring to the case study concerning the US and Indian virtual team again, it was found that the Indian engineers considered the US team members to lack the additional planning required, resulting in unpredictable work flows. Furthermore a polarization in terms of “us vs them” became obvious based partly on the differences in engineering training, English proficiency, work behaviors, execution etc. which damaged the trust between the team members. In this report the study of investigation will be limited to communication, culture and technology connected to the two of them. This has been done since they were stressed most frequently in the interviews. Based on the many challenges, Lee (2014) suggests that a modern so called E-leadership is necessary. E-leadership will be addressed in the next section.

3.3.3 Preparing employees for the future with E-leadership

“We are shaping the world faster than we can change ourselves, and we are applying to the present the habits of the past.” -Winston Churchill

E-Leadership refers to leadership and management which takes place in an environment where work is conducted electronically through information technology (Lee 2014). To understand the need for E-leadership in global virtual teams is vital for the success of organizations virtual projects. Considering all the challenges presented in Table 3,

traditional leadership used for collocated employees will not be enough in a non-traditional environment. As stated by Lee (2014), strong leadership and management qualities does not necessarily transfer to the virtual environment. Therefore leading a virtual team imposes the need for new leadership tools primarily concerning means of communication and cross-cultural management. Depending on the extent to which the manager will handle traditional- versus virtual teams, many managers are suggested to become so called hybrid managers (Garton & Wegryn 2006). Hybrid teams being the most common type of virtual teams, i.e. having both team members at your home office and on different locations, hybrid managers ought to be competent in both traditional face to face management and virtual management.

So what leadership style should be applied by an E-leader? The simple answer is that there is no fit it all approach. Exactly as when it comes to traditional leadership- and management styles the one which is most appropriate is dependent on many factors, including for example the industry, team composition, business culture, size of the team, project length etc. (Lee 2014). However, two of the most established traditional leadership theories are “control-related”- and “task-related” leadership. Control related leadership is characterized by leading by task, but at the same time to include motivation of team members, providing clear roles, setting clear goals and directions. Task related leadership is on the other hand more focused on planning, scheduling and task achievement. In a study performed in Germany Konradt and Hoch (2007) found “that managers in virtual teams viewed control-related roles as more appropriate for virtual team success and performance than non-control-related roles”. Another study by Lee-Kelley (2002) indicates that task-related leadership is more appropriate, at least when engaging in shorter projects. More studies are required within this field, however, there seems to be an agreement that an authoritarian leadership, i.e. where the leader dictates policies and procedures in a coercive way, is ought to have a negative influence on a virtual team in the same way which it has in a traditional environment. Connecting to the quote by Winston Churchill, there ought to be a shared understanding regarding the need for new means of leadership in a virtual environment, not applying techniques of the past.

As addressed in this chapter, the usage of offshoring imposes many challenges but also many opportunities. Furthermore the traditional work processes and leadership-/management styles need to be updated in accordance with the globalized virtual work environment in order to be successful. Apart from adapting the traditional leadership styles to E-projects, Lee (2014) suggests that usage of the so called ARCS model (Keller 2008) is a fresh alternative applicable for leading/managing E-projects. The ARCS model (Attention-Relevance-Confidence-Satisfaction) is designed to motivate, stimulate and sustain motivation via a problem-solving approach. When it's necessary for a team to learn and explore new solutions, like for example in a virtual environment, the model is said to be especially useful. In Figure 3 a combination of the ARCS model (Keller 2008) and suggestions connected to virtual projects (Lee 2014) is compiled.

Attention

- Use novel, surprising, and interesting communications to get the team involved; help the team members get to know each other personally; share stories about virtual project work
- Pose questions and generate problem solving; nurture thinking; encourage conversation
- Vary the types of communications to the team (e-mail, virtual meetings, documents, teleconferences, personal phone calls, etc.); encourage relationships within the team

Relevance

- Use templates and standardized forms; provide e-databases and knowledge-sharing technology; use a common methodology
- Communicate clear goals and objectives; visualize success for the project
- Adapt a leadership style that matches the situations that arise and individuals on the team

Confidence

- Provide clear requirements for accountability and responsibility for each team member
- Provide training and challenges for team members; set standards for success
- Include frequent feedback and support to motivate the virtual team

Satisfaction

- Place value on team relationships and provide opportunities to build virtual relationships
- Provide incentives, rewards, and kudos; provide opportunities for the project work to be presented to appropriate audiences
- Maintain consistent standards and consequences for task accomplishment; complete a lessons Learned session for the project

Figure 3 The ARCS-model combined with suggestions for virtual collaborations.

3.4 Communication and cultures influence in virtual teams

The previous sections addressed the nature of project work in a traditional project, furthermore bringing up the challenges in terms of working in global virtual teams. Finally an approach for a modern E-leadership was brought up. Connecting to those aspects, this section will elaborate on the challenging- and important factors when offshoring identified in Table 3. The focus will be on communication and the role culture plays connected to it, furthermore including the aspects of technological communication, all of which are adhering to the problem formulation and the situation of the particular company in the case. Economic data and interpersonal aspects will not be discussed as mentioned in the scope, however, aspects connected to for example trust are touched upon indirectly in some cases.

3.4.1 Communicate, communicate, communicate

“The most important thing in communication is hearing what isn't said” -Peter Drucker

The heading refers to the three C's, which is described as the best practice for project management. Communication is the basis for all human interaction and relies on the basic communication model, i.e. that there must be a sender, a message, a medium used for communication and a receiver (Lee 2014). In a recent survey interviewing business leaders, 97 % of the respondents claimed that communication is vital for being an effective leader in the digital and virtual environment. There are many challenges arising in traditional communication, and as touched upon in the previous sections there are even more of them when communicating via technology. One of the basic differences between regular face to face communication and virtual communication is

the time of response (Rad & Levin 2003). Consider the following situation; if you communicate with your colleague in the office there ought to be an immediate response or feedback from the other person. However, when sending an email (which is the most common way of communication in virtual projects), the receiver can choose to respond anytime he likes. This element in the communication can cause the sender to wonder if the message was received and when he is about to respond. What appears is that in the traditional situation there is a sender controlled communication, whereas in the other situation there is a receiver controlled communication, this naturally imposes some challenges for the project team, advocating the need for clear routines and communication flow processes. One way to routinize and establish standardized rules for the communication is to create a communication plan which should encompass the following aspects; communication requirements, -technology, -models and -methods (PMBOK 2008). Furthermore including when communication will happen (frequency), who it will be intended to and shared with, rules regarding when to respond to emails, rules for meetings, documentation procedures etc. The communication plan should be the foundation for the virtual project team referring to an empirical analysis conducted by Sarker and Sahay (2003), claiming it to facilitate consistent and standardized communication. An example of a simple structure for a communication plan can be seen in Table 4.

Table 4 An example of a simple structure for a communication plan.

To	From	Copy to	Frequency	Priority	Medium	Objective
Kim. J	Carlson. I	Johnson. A	Weekly	High	Phone call	Sewage pipes

Considering the wide variety of communication mediums available nowadays it is important for the project team to find out which fits the best for them in each and every situation. The type of communication should be matched to the type of message being communicated, in Table 5 the most effective tool for different situations according to Lee (2014) are listed.

Table 5 The most effective tool to respective situation according to Lee (2014).

Communication problem	Most effective tool
Long email chains	Phone call
Performance problems, initial meetings	Face to face
Sensitive or confidential information	Phone call or face to face
Reports, meeting notes	Collaboration database/site
Positive milestones, news, updates	Conference call or social media
Individual kudos	Phone call or personal email
Team kudos	Collaboration database, email

Connecting to the challenges addressed in Table 3 again, language barriers is one of the most obvious and vital challenges in global virtual teams when communicating. The fact that language is a contributor to miss communications is stated in many researches throughout the years (Brewer 2015, Jarvenpaa and Keating 2012). English is by far the most common language used in offshoring. A survey by Brewer 2015 showed that over 90 % of all respondents within the engineering sector uses English when

communicating in virtual teams. Although English being used most commonly, English itself is not a single language, instead there are hundreds of different variants globally, opening up for misunderstandings of context and meanings. Indeed we can agree upon the fact that a word doesn't mean the same thing to everyone even in our own language. Zakaria, Amelinckx & Wilemon (2004) and Rad & Levin (2003) mentions some aspects which need to be considered when communicating, for example the tone style, sociolinguistic variations, usage of slang, facial expressions, body language and gestures, which all contribute to the interpretation of a message. To make things even more tricky, communication via technology eliminates the non-verbal clues either completely (e.g. email) or partly (e.g. video call). Considering the fact that communication is composed of 55% body language, 38% tone and inflections, and words only 7% (Verma 1996), training of employees to communicate via ICT is not to be neglected by the management.

An example of native English speakers being fearful of language barriers when offshoring is brought up in a research of U.S companies engaging in offshoring (Beyene, Hinds & Cramton 2009). According to the study the US employees lacked strategies for communicating with non-native English speakers, taking into account the difference in English proficiency, dialects, prosody etc. Considering the amount of global organizations using English as their concern language, the amount of people who have English as their 2nd or 3rd language is expected to surpass the amount of native English speakers in the near future (Brewer 2015). This fact in combination with the fear experienced by the US employees further emphasizes the need for clear communication plans, education of staff and a modern e-leadership for the virtual environments. Another important aspect connected to the language factor is if the organizations have any English requirements in the hiring process. According to a survey by Brewer (2015) including 149 professionals, 51 % answered that their firms have requirements on the English proficiency, 7 % said it depends on the position/region, 16 % didn't know and 26 % answered no. Referring to a study performed by Jensen (2009) involving three different Danish companies offshoring to India, it was mentioned from all three companies that a learning experience after some years for the offshoring company in India was to enhance their recruitment process, not solely focusing on the language proficiency, but also introducing "training weeks" where an introduction to the Danish way of working (culture wise, client expectations, documentation requirements etc.) was mandatory. The last section in this chapter will adhere to communication in global virtual teams by addressing communication and the influence of culture connected to it.

3.4.2 Cultures role in communication

"The international manager reconciles cultural dilemmas"-Fons Trompenaars

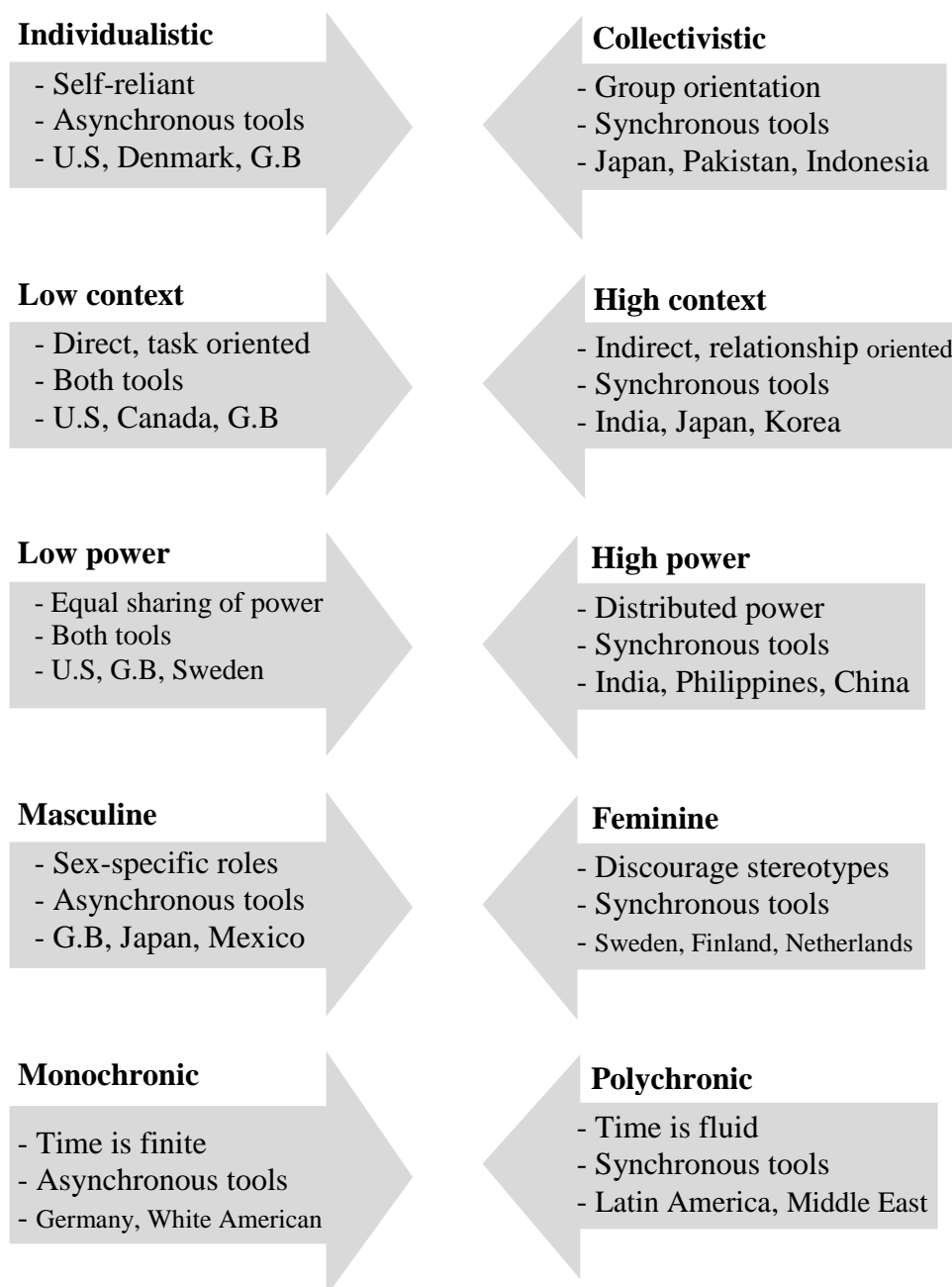
Culture can be defined as "the totality of learned, shared symbols, language, values, and norms that distinguish one group of people from another" (Hofstede 2003). To further extend the definition elements which influence a person's belonging to a culture can be religious beliefs, nationality, ethnicity, gender, age, organizational identity, bias, assumptions, worldviews, and communication patterns. All these dimensions imposes the members of a virtual team to have a foundational understanding of the cultures involved in the team. Cultural differences also highly affect the appropriate leadership style which is also connected to trust-building (Jarvenpaa and Keating 2012). Other

dimensions of culture, which are relevant when discussing global virtual teams, are organizational- and sub-cultures. Organizational culture is the system of shared values and beliefs which characterizes the organization, which is proven to be directly connected to the success of an organization (Lee 2014). Whereas sub-cultures, as the name implies, is smaller groups of people within a large culture (e.g organization culture), which share activities, traditions, interests etc. Subcultures exist within almost all larger cultures and can be a positive element, giving a feeling of special belonging to a unit or workgroup, i.e. not counteracting the larger organizational culture in a negative way. Connecting culture to communication challenges, Gerard Hofstede have developed a well-known framework which brings up six dimensions which have been identified to influence communication. The dimensions of culture are the following; individualistic vs collectivistic, low- vs high context, low power- vs high power distance, masculine vs feminine, monochronic vs polychronic and low uncertainty- vs high uncertainty avoidance.

Using those six dimensions it is possible to characterize different countries and regions in a quite accurate way. The six dimensions will now be brought up briefly and then summarized in Figure 4. In an **individualistic** culture self-reliance and personal growth/development is valued although not having to be selfish, whereas a **collectivistic** culture is characterized by individuals which care more about the needs of the group, i.e. that the family/community/employees is the primary responsibility (Lee 2014). Furthermore collectivistic cultures tend to prefer face to face communication, video conferences or group meetings as means of communication, in contrast to individualistic cultures which prefer emails and reports. **Low context** cultures is characterized by being task oriented, using direct and straightforward communication, often preferred to be used in disciplines as engineering. **High context** cultures on the other hand is more relationship oriented and recognized by employees speaking more indirectly and ambiguous, furthermore having a reluctance to speaking negatively or saying “no”. Moving on to **low power-** vs **high power** distance, the differences are found in terms of equality, hierarchies and distribution of power. Low power cultures embrace equality between sexes and different individuals no matter their position, further not asserting an exclusive power to certain individuals in the team. In high power cultures the power is distributed unequally and directed to certain individuals based on their position or role. In these cultures it is also of high important to respect the hierarchies. Another difference is that low power cultures prefer autonomous work and further being involved in decision making, whereas high power cultures are defined by decisions being made almost exclusively by the employer, which also provide all the input to the work. Being able to question authority and come up with own ideas is another aspect which differ between the two cultures.

The difference between **masculine** and **feminine** cultures is as the name suggests, concerned with gender aspects. This involves elements like sex-specific roles, wage gaps, decision making and stereotypes to name a few. In a masculine culture it is natural to assign certain tasks and trades to men, whereas discourage of stereotypes is advocated in feminine cultures. The dimension of **monochronic** or **polychronic** culture is almost completely concerned with the perception of time. In the monochronic culture time is tangible and finite, if a meeting is scheduled to start at 8.00 AM, then it should start at that specific time. The same meeting however, from the standpoint of a polychronic culture, could mean that arrival during some period of time around the morning is acceptable. The underlying reason is that time is considered to be fluid,

holistic and never ending in this culture. Associated with these perceptions of time, monochronic people sometimes interpret polychronic people to be uninterested or inefficient. On the other way around the people are interpreted as being assertive, aggressive and over ambitious. The last dimension is related to the openness and extent of acceptance for new ideas, situations and opportunities. **Low uncertainty avoidance** cultures are open minded for taking risks in order to gain rewards, whereas **high uncertainty** cultures tend to take fewer risks, instead preferring to stay in familiar situations. All of these dimensions should be considered by the virtual team members when planning, executing and finishing the projects. Figure 4 summarizes the dimensions in terms of keywords, preferred ICT tools (synchronous or asynchronous, see page 19) and examples of countries which encompass the characteristics.



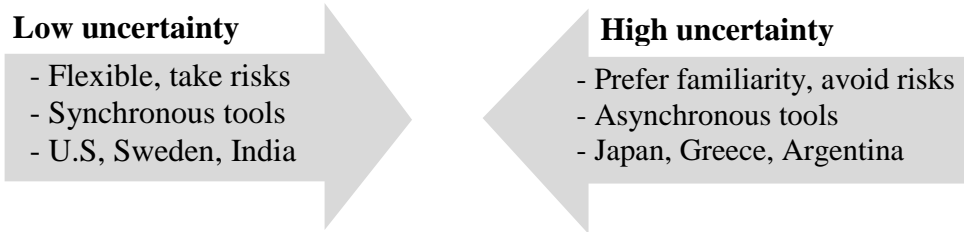


Figure 4 Hofstede´s cultural dimensions associated with communication in terms of keywords, preferred tool (synchronous or asynchronous) and examples of countries

4 Findings/result

“Data are just summaries of thousands of stories – tell a few of those stories to help make the data meaningful” – Dan & Chip Heath

Based on the interviews which have been conducted in connection to the aspects brought up in the theoretical framework, this section will present the empirical findings of the study. In total 11 interviews were conducted with people from Sweden (5), India (3) and Romania (3) as mentioned in the method chapter. The structure of this chapter will follow the headings established in the theoretical framework, i.e. firstly focusing on the holistic company strategy from a managerial perspective, thereafter the sections will focus more on the tangible challenges identified when collaborating in global virtual teams with input provided by interviewees from respective country (by the engineers/designers especially). Considering the qualitative research strategy adopted in this report, the answers are aimed towards providing opinions from the interviewees regarding the different aspects in a holistic way. Further, the amount of interviews is limited to the time-scope of the report, hence, the answers may not be representative for the large amount of employees in all cases.

This case study have been limited to one of the business areas within the company. The business area in hand collaborates with both India and Romania. The offices in India and Romania have one office each which works towards all the offices in Sweden. The size of the offshored tasks or projects varies, and therefore also the amount of people in the team from respective country. There is no general team size according to the interviewees, it can vary from just 2-3 people up to 10 in total, or more. Apart from the engineers that perform the practical work, there also exists a project coordinator in respective country. The coordinator is to organize the team and choose the appropriate persons to each and every project, at times the coordinator can also become a part of the design team, i.e. not only managing them but also performing practical tasks. The managers being interviewed in this case study have a position which solely concerns management and development of the organization. Considering the fact that the Indian and Romanian offices work towards all offices in Sweden (up to 10 different), the composition of the teams are most often new. However, some of the colleagues have worked with the same persons from the other countries throughout different projects.

4.1 Offshoring as a strategy for the future

The strategy of using offshoring is well established on a management level within the company. A rigid organizational structure have been established and future objectives and directions have been set out. Being a global company having offices worldwide, the strategy of using offshoring have been used for many years by several of the other offices. From this perspective there is much knowledge and experience which can be found within the global organization, facilitating the incorporation of processes and structures in Sweden to a certain extent. Since the offshoring strategy was established around five years back there has been an ongoing development where the amount of employees in both Sweden, India and Romania have increased. Along with the increased amount of projects being conducted using offshoring, the processes and routines connected to the project execution have also increased and improved during the years. The work has come a long way since the start, but there is a common agreement between the managers both in Sweden, India and Romania that there is a

long way left until the strategy is incorporated according to the company goals. This concerns for example the utilization rate, the acceptance and familiarity amongst the employees in Sweden, and the adaption of work processes. Like with all changes or new strategies being implemented in an organization, there are many obstacles to overcome, not only requiring investments in time and money, but more importantly spreading the word within the organization in order to get the employees to embrace the new tools and approaches.

There are several reasons to why the offshoring strategy was initiated and embraced by the company in Sweden. One of the reasons is the current market conditions within the building sector. The market have been characterized by high investments in infrastructure- and buildings projects and the conditions are forecasted to stay stable for many years ahead. As brought up by all the interviewed managers in Sweden, this is a perfect time for investing in new organizational changes and trying out new approaches.

“I would like to say that we take advantage of the construction boom in order to implement the strategy and build up the organization. Making these changes requires that we spend both money and time on it, therefore having plenty of projects and an allowing economy are prerequisites” Top manager 2, Sweden*

“.....in the future the things that we normally do today might not be needed anymore due to relocation or digitalization, the boom is a perfect possibility to prepare us for this” Middle manager, Sweden

Furthermore it is stressed by the managers that this is a long term strategy which is necessary in order to stay competitive and attractive on the Swedish construction market ahead. The degree of globalization has become evident even on the Swedish construction market lately, where several of the largest infrastructure projects are partly being both designed and built by foreign entrepreneurs. Further, most of the competitors are also investing in offshoring of engineering services, mainly to India. With this in mind, using offshoring is seen as a necessary step in order to stay updated in a rapidly developing market.

With market conditions and the transformation of the construction market being the enablers, the strategy with offshoring is in its core connected to finding resources which cannot be found in Sweden in terms of qualified staff. One Swedish manager mentions that it has pretty much been harder to find resources than projects lately. The benefit of cost reductions due to wage differences between the countries is of course a benefit and a good incentive when bidding for projects, but it is stressed by all Swedish managers that the main reason for using the offshoring strategy is to get access to more resources. By doing so, the organization in Sweden can get relieved from the high workloads and focus on specific task while some of the other work is being executed in India or Romania. *“Having more resources enables us to take on more projects, and therefore becoming more relevant to our clients”*, as mentioned by one manager. The third reason as mentioned before, is to transform the way of working, to implement new tools and prepare for the future.

**references to the construction boom in Sweden can be found in the Background section, i.e. Christensson 2016 and Almega 2017.*

“...if finding resources is the main and largest reason, the cost reduction is a positive side effect” Top manager 1, Sweden

“When we have more resources we are able to release more time in Sweden....enabling us to develop in new areas which nowadays is constrained by other tasks” Top manager 2, Sweden

Both Romania and India functions as support centers to Sweden, i.e. that the collaboration has been initiated by Sweden from the beginning. Having a tradition of supporting countries worldwide, India especially is familiar with the concept. The organization in India solely works with offshoring projects, i.e. not being present on the domestic market. The same thing applies to Romania, with the difference that they are active on the domestic market as well. From their perspective the managers highlight that the collaboration with Sweden is seen as a good way to offer challenging international projects to their employees. The company has a good reputation for offering good career opportunities, both in terms of technical- and personal development, which is of high importance in order to attract talented employees. In this way the global trademark is enhanced while at the same time taking advantage of the global knowledge and resources which is available.

The reason to why India and Romania are being used as offshoring countries specifically is according to the managers due to historical reasons. The global organization have had collaborations with India for many years, which is based on several reasons. Mainly since India together with China is graduating the most engineers in the world by far, and also since the English proficiency is widespread in the culture since long back. Furthermore there are a few hubs where many good universities are located, for example outside New Delhi and in Bangalore, so there is a huge talent pool available with highly skilled engineers and technicians. Romania on the other hand is offering other possibilities due to example the temporal- and technical proximity. Both Sweden and Romania using standard building codes (Eurocodes in Europe) and only being separated by one hour in time is seen as advantages for the offshoring collaboration. There are advantages and disadvantages with all countries according to the Swedish managers, and of course there is always a chance that other countries will become more relevant in the future, but to set up a new organization in China for example would require a lot of investments and time. So at the moment focus is kept on the current collaborations.

“...it's difficult to say why one country is better than the other...but some important factors that we evaluate is the language, the education level, the rates of salaries and quality.....but surely this is something that needs to be evaluated continuously” Top manager 1, Sweden

The tasks which are offshored differs according to the Swedish managers. Romania is seen as a complement to the Swedish organization, i.e. that the Romanian staff can execute pretty much the same things as the staff in Sweden. This is based on the fact that the education level is the same and that the staff is therefore highly qualified to perform calculations and drawings/details. The tasks being offshored to India are more focused on drawings, detailing and modelling specifically, i.e. not doing any calculations. Having both these options is seen as an advantage from the Swedish

perspective. It should also be mentioned that all the managers both in Sweden, India and Romania share the perception of that the collaboration has evolved in a positive way through the years. Following from this the complexity of the tasks have increased in order to match the competences of staff in the offshoring countries alongside the familiarity of collaborating in global virtual teams. Naturally, there are many aspects which differ between the countries which will be brought up later, but some obvious are that the Romanian engineers are used to more “advanced” designs considering that they are located in a seismic zone whilst Sweden is not.

“The complexity and the size of the tasks have increased through the years....starting with only small detailing task but now also including modelling and more complex detailing” Middle manager, India

“.....in the beginning we received to easy tasks considering our competence, so then I had to stress to the Swedes that we can do more complex tasks, which is now the case” Middle manager, Romania

The Swedish managers also agree upon the fact that there might take some time before the economic benefits become more apparent. Considering the fact that it's a long term strategy, the initial “extra” costs which might appear in the early stages of the implementation is not the most important. Coordination, governance, misunderstandings and changes are always present, even in local projects. But of course the collaboration with persons in a country which you have never been in or persons you have never met, in combination with new ways of working virtually, is challenging, especially since we haven't worked with the offshoring strategy for that many years yet, as stated by the Swedish managers. The managers in the offshoring countries consider the economic model to be beneficial from their perspective as well, but also agree that this is an ongoing journey where many steps need to be taken ahead, right now focus is on increasing the utilization rate each year.

4.2 Challenges according to the managers

Several challenges for the global virtual collaboration which is present when offshoring were identified by the managers in all countries. Later in this chapter more focus will be spent on this, especially looking from the perspective of the engineers and designers which perform the actual work. However, in their positions as managers an holistic picture of the challenges are gained drawing from feedback and meetings with employees, but also meetings with the managers in the offshoring countries. The language barrier is highlighted as a challenge by all managers, however to different extents. Furthermore the managers from Romania and India stress that the difference in building techniques and level of detail varies from their home country when doing drawings, which imposes some learning curves for their employees. There is also a clear difference in the requirements from Sweden depending on which office we work with says the managers in India and Romania. The way that the different project leaders/coordinators in Sweden want the presentation of the drawings and calculations varies a lot. This was brought up both by the Indian and Romanian managers and engineers. From the Swedish perspective this is a point which is brought up continuously and there is an awareness about the problem at least when it comes to the managers.

“...a prerequisite for the collaborations to work is that we from the Swedish side can standardize and be clearer about what we require....today the requirements differ even between persons at the same office.....it's very complex and challenging to change the habits of people, but we're constantly trying to improve this” Middle manager, Sweden

Since it's a relatively new way of working, at least from the Swedish perspective, there are some introductions/courses available regarding things to consider when collaborating with the offshoring countries. These are highlighted to be of importance before someone wants to utilize staff from India or Romania. Furthermore some persons on different levels within the organization works as connection/knowledge nodes concerning how to work with offshoring. That means that if someone is unsure how to initiate an offshoring project, there is a person closeby in the organization which can facilitate this. The organization is built up in a similar way in all the countries. When it comes to the English proficiency, which of course is a factor which imposes a large and natural challenge, there are different approaches on how to tackle this from a management perspective. There is no clear English proficiency required when working with the offshoring projects, and there is no “English course” in that sense. However, one of the Romanian engineers states that when recruiting people the English proficiency is very important, and that it's required if you are to be hired for that position. Thereafter it's more up to yourself to develop your level of English. In India there is no English proficiency requirement either, having a large talented pool of engineers which in most cases speak English fluently, there hasn't been any problem concerning this matter states the Indian manager. The common factor when interviewing the managers seems to be that the predominantly language barrier is found amongst “older” employees which aren't as used as the younger people to speak or lead projects in English. Since Sweden is the client, i.e. asking for assistance from Romania and India when needed, and not vice versa, it's also in Sweden where the lack of English proficiency becomes apparent. This is due to the fact that both India and Romania has to adapt to the offshoring requests from Sweden, and therefore necessarily have people which know English well. In Sweden it becomes more self-regulatory according to a manager in Sweden.

“..we don't have any requirements on the English proficiency....but it's quite self-regulatory I would say...if you don't have the right level of English you can't work in the projects” Top manager 1, Sweden

“...we recruit people with different backgrounds...many of them have experience of working with projects in the U.S or U.K.....but if it's a talented engineer that may need to improve the English we will assist them with this...” Middle manager, India

4.3 Adapting the design process to offshoring projects

Having worked with offshoring projects for several years by now, the Swedish organization has set up a framework for how to conduct the projects. This includes standard documents, manuals for drawings & calculations, checklists, start up protocols and routines for communication. From the Swedish perspective the design process seems to be quite well established among the engineers as well among the managers, however, the extent to which it is followed can be questioned according to the engineers. There are a lot of documents and templates available, and most of the stages resembles that of a traditional local project, however, naturally there are some extra

stages added when the person you collaborate with sits in another country says one engineer. Both the interviewees from India and Romania describes the work processes in the similar way as the Swedes.

“...we have several routines and templates for how we want the offshoring project to proceed... ..but I think the extent to how much they are used differs between project to project depending on the project size and the person in hand” Engineer 1, Sweden

A project starts when a person in Sweden is in need for personnel to a project and want to utilize the colleagues in India or Romania. Depending on the department or the tasks to be completed either of the countries is chosen. The person then initiates contact with one of the coordinators in Sweden, which will help him to take contact with the country in hand. A preliminary meeting is then held with a coordinator in Romania or India which will put together a team there which is appropriate for the project tasks. Things which are discussed are how many hours that will be required, start and finish date, deliverables, softwares to use and info at the project itself. Thereafter some estimations are done in the offshoring country connected to the input, and then Sweden is contacted again and a project plan is established. In the project plan all the input is gathered, i.e. which people will be involved, estimated hours, purpose, budget, contact persons etc. When the plan has been completed a startup meeting is decided upon where all the involved will be informed about the project plan content. The project is then executed from both sides and a continuous collaboration is held between engineers and coordinators between the two countries. The means of communications will be brought up later in this chapter.

All engineers and managers agree upon the fact that the starting phase is critical for a successful collaboration. *“If we are not super clear about what we require, than we cannot expect to get back the right things, it's as simple as that”*, says one Swedish engineer. The engineers in India and Romania agrees that the startup phase is important, otherwise errors will appear much more frequent and be worse later on in the project. Sometimes the offshoring country gets involved from the beginning of a project and sometimes first in the later or finishing stages. This is highlighted as a difficulty from both the offshoring countries, especially when you get involved in a project which people might have worked on for several months.

“...if we get involved in later stages we often feel that we lack an overview of the project, the big picture.....the ideal is if we can be involved as early as possible, or else, get sufficient background information” Engineer 1, India

The communication is primarily made via OneNote where all the project information is gathered under different tabs. Furthermore mail, phone calls and screen sharing are used to uphold the communication. Using OneNote is standard for all projects and a part of the company framework for working with offshoring projects. All the interviewed engineers were satisfied with this approach. As in the traditional design process there are several quality checks which need to be performed. This is done in the offshoring country and then another one is made in Sweden before the drawings are sent off to the final client. Since there are large differences between the ways of designing and calculating structures in all the countries, Sweden has put requirements on the offshoring countries to follow design- and calculation templates in order to understand how the Swedish way of working is. The templates are useful according to

the Indian and Romanian engineers, but sometimes there's a need for them to also develop their own routines, checklists and detail-libraries, which evidently is the case. In this way the routines are improved from the two sides of the collaboration.

".....India in particular is very good in making checklists and templates.....sometimes it feels like they have taken on a greater responsibility than us...and I can feel that we need to improve that from our side.." Engineer 1, Sweden

"...apart from the Swedish manuals we also build up detail-libraries with experience from previous projects, so then we can ask Sweden like...is it ok if we follow this approach and steps etc.. We do this to make it easier for the colleagues in Sweden, sometimes instead of asking for input we can suggest ideas based on previous projects" Engineer 2, India

"...most templates and manuals are developed in Sweden, and we adapt them a bit from project to project, but they always need to be approved by Sweden first" Engineer 2, Romania

At the end of the projects the communication is often intensified and the final drawings are being sent to Sweden. The Swedish engineers then make a final quality check, and if everything is according to the requirements the project collaboration is finished. If there are some things that need to be changed the drawings are sent back to the offshoring country again. When the project collaboration is finished there is a final process/stage which involves gathering feedback from the team members. Both the engineers and the manager in India stress that receiving feedback is extremely important in order for the collaboration to be improved in the future. India also has a culture where feedback is natural and expected to a wider extent than in Sweden. The Swedish engineers and managers agree upon the fact that Sweden is poor in giving feedback and that it needs to be improved, it is something which is quite rooted in our culture I think, i.e. that we are bad in giving feedback says one engineer. Furthermore there is a silent awareness among the Swedes that if a project works out good in the end, feedback isn't necessarily given, however, if there are complaints from the client in Sweden the feedback to the offshoring country becomes more evident. The staff in Romania also agrees that the feedback loops are crucial for improving the collaboration but that time is always a constraint. The Indians in particular are sending feedback forms to Sweden where ratings can be done, and lately the rating also goes both ways, i.e. that the offshoring country also rates the Swedish management of the collaboration.

All the engineers agree that the feedback has improved through the years, especially from the Swedish side, however they also agree upon the fact that it is highly connected to the relationship you have. If I have worked with a person in several projects, or for a long time it might be easier to express my feelings to him regarding what could be improved, states several engineers. *"At the same time the Swedes must be better in giving professional feedback, now it feels like they are afraid that we will take it personally so to say"*, states one Indian engineer and manager. It is also stressed by several Swedes that an increase of feedback would be positive in order to get more people in Sweden aware of the possibilities with the offshoring alternative, not only to lift up the obstacles but also the positive feedback.

“...the Indians are very good in arranging feedback forms and meetings...in Sweden we are more like...if a project turns out fine in the end...we are poor in giving feedback even though there might have been many obstacles along the way” Engineer 1, Sweden

“...in Sweden we are extremely poor in taking some time after the projects to compile lessons learned and feedback...we can complain about that things didn't work out the way we wanted, but when it comes to doing something about it..then the interest is too low..I don't understand that parallel” Middle manager, Sweden

“I try to have feedback loops, but due to the workloads and deadlines it feels like it get lost along the way.... I don't feel like Sweden is asking for feedback at all actually, only if we have a problem...I would appreciate more feedback in the end of projects” Engineer 1, Romania

“ ...if we will work with that person again sometimes we can take a look at the last feedback and adapt to these things so that we understand the person in the best possible way, to get a good relationship” Engineer 2, India

4.4 Challenges in global virtual teams according to the engineers

It becomes clear that the composition of the project teams in between the countries varies much between the projects. The Indian unit is working with projects from most cities in Sweden, and the same goes for the Romanian unit. Furthermore the size of the project team varies depending on the size of the project and the tasks to be performed. Although having been on trips to India and Romania, and vice versa sometimes, the collaboration is a virtual one between the countries, hence a presence of global virtual teams. According to the engineers and coordinators the communication is made pretty much on a daily basis between the members in the team using different kinds of mediums. When interviewing the engineers regarding practical challenges in their everyday collaborations, there are many different aspects being brought up. The most frequent challenges are being connected to communication in terms of language barriers and misunderstandings of contexts. Furthermore cultural differences are highlighted by the interviewees as being present. Although not having to affect the collaboration negatively, cultural differences still impose some barriers which need to be understood by both sides. This can be in the form of the present hierarchies and the different communication routes in respective country. Another challenge, which probably was the most addressed one, concerned the difficulty of understanding the requirements set by the different project leaders in Sweden, this aspect will be brought up more later on in this chapter. As mentioned in earlier chapters the category of interpersonal and economical factors have not been given much attention in this study, however, interpersonal factors were brought up by several persons and they are therefore considered in the section which adheres to E-leadership and the ARCS model, which are brought up later on.

4.4.1 Language

Considering the obvious fact that none of the countries has English as their native language, all interviewees stress that this is a challenge to different extents. India is a country which is more used to the English language and basically have it as company language. *“Furthermore we have a long experience from working with offshoring*

projects with English speaking countries, for example the US, U.K and Australia”, as stated by one Indian engineer. The Indians claim that in the big majority of the projects the language isn't a large obstacle, however, since project collaborations is all about communication, the language barrier plays in even if you talk in the same language, and if you are not used in speaking English, naturally that will add some dimensions to the complexity of communication. The Romanians are also pleased with the English proficiency in Sweden in the big majority of the collaborations. As might have been expected, all interviewees stress that the English proficiency might be too low sometimes when it comes to senior or older employees in Sweden. Surely, to speak in a normal conversation might not be a problem, but when communicating professional information in a structured way, another degree of knowledge is needed, as stressed by both the managers and engineers. Another interesting point from a Swedish engineer is that even though most Swedish people speak English on a high level, it consumes extra energy to shift between the languages and therefore some might try to avoid it if possible. In summary the language barrier is highly dependent on person to person. In the large majority of the collaborations the language is not seen as a large obstacle, however, in the case where one or a few don't understand English it will directly impact the quality of the communication and more likely increase the misunderstandings.

“..the Indians have a high English proficiency level.....we especially notice this in the way they can communicate in written text...I think we Swedes can improve the text writing more...” Engineer 2, Sweden

“.....in the start I felt a bit about the language barrier, but not that much, it was less than I expected” Engineer 1, Romania

“sometimes a few don't know much English, they are not used to English language, those times we have very large problems....because the one part is..if I don't understand him sometimes we can try to clarify things....but if we keep misunderstand each other, the whole project can be affected” Engineer 2, India

“the different offices in Sweden have different English proficiency and familiarity with speaking English. In India everyone is used with speaking English even at work” Engineer 1, India

4.4.2 Different work philosophies

Another challenge is connected to the differences in work philosophy between the countries. Swedish people highlight the fact that both the Indians and Romanians are perceived as more ambitious and eager to come up with new solutions. *“I think it is connected to the differences in hierarchies in contrast to Sweden”,* says one Swedish engineer. The engineer which have also spent some time on place in India to understand their way of working stresses that the desire to advance and gain management positions is higher in India. Both Swedish engineers stresses that in Sweden the engineers would rather try to avoid advancing into management positions, and the relationship with your superior is very casual. They have perceived that Romania as well has more of a disciplined work life so to say. These aspects can partly be reflected in the everyday work, for example in terms of Indians suggesting several ideas, but none of them might have been according to what was expected by the Swedes. So sometimes there appears to be a gap in the understanding, in India it might be standard to suggest 3 different

alternatives, whereas in Sweden it might be enough with one good. From that point of view the Swedes maybe don't feel the same need to impress their manager. *“Instead of suggesting 3 alternatives which might be of “lower” quality, it might be better with one alternative which is based on really understanding what we request”*, as stated by one Swedish engineer.

“...we Swedes often think that we are more similar to the Romanians than the Indians...but in reality I think that India and Romania are more similar to each other...and Sweden is the one that separates the most” Engineer 2, Sweden

4.4.3 Understanding the Swedish client

Another challenge brought up by all of the engineers and managers from the offshoring countries is the fact that it's difficult to understand the requirements from Sweden at times. Firstly the way of engineering or drawing things are completely different between the countries, even though Sweden and Romania both use Eurocodes there are other significant differences in the way you design structures, for example that the Romanians always consider seismic activity in their country, whilst it's not needed in Sweden, instead snow loads are of high importance. And when it comes to India the difference is even bigger since they are used with US and UK standards for example. Secondly, the requirements differ between all the projects we work with says the engineers. So not only do the engineers in the offshoring countries need to adapt their skills to the Swedish way of doing things, but also to adapt after each and every requirement which is set by the different persons in Sweden. Both the managers in Romania, India and Sweden have discussed this matter and they are well aware about the fact that the Swedish way of working, i.e. the requirements, need to be more standardized between the offices and even in between the colleagues at the same department. Another thing which was mentioned frequently by the engineers is that being limited to the screen, i.e. not sharing the same physical space, meaning that you can't take out your notebook and do some sketches and see how the other persons reacts, instead screen sharing is used and then you kind of work one at the time an engineer says. It's a challenge, but at the same time not a barrier, it only takes some extra time.

“...when the requirements differ between every project we do for Sweden it takes extra time to adapt, that's why we often try to suggest several solutions based on the different requirements we met in previous projects” Engineer 2, India

4.4.4 Communication

Adhering to the communication routes within the projects again, OneNote is the governing communication platform where most of the information is gathered connected to the project. Phone calls and emails are also used a lot, but in order to structure things, for example decisions being made via phone or email, these are also gathered in the OneNote document. The engineers from all countries stress that there are no standard plans for when to use either of the communication mediums, it is rather subject to the situation and priority in hand. Mails are always preferable when you want to transmit more information in a structured way, phone calls are rather preferred to be used to quickly clarify things as mentioned by several engineers.

“...instead of spending a lot of time trying to interpret an email.. it's easier to just make a call.....however, when having done so it's super important to document what have been agreed upon in writing as well..otherwise the info will be lost by time” Engineer 1, Romania

The majority had no complaints about long email chains, they were rather seen as valuable and important since everything is structured in a logical way. However, as mentioned earlier, when long email chains appear and there seems to be some kind of difficulty in understanding each other, a quick phone call is seen as a facilitator as long as the conversation is saved in writing afterwards. When it comes to the initial meeting/start-up meetings, all engineers responded that they were performed via an electronic phone-call where all the involved people participated. Video calls were not used at all, there was only one of the engineers which recalled that it had been used in some larger project some years ago. The reasons mentioned for why video calls weren't used differed among the engineers and managers. Some highlighted the fact that when having the initial meetings it is important to sit with your laptop and follow the “introduction” on the collaboration site, and therefore you seeing the person is not necessary. Another reason was that when there are a lot of people involved in a project it can be tricky to arrange a meeting where everyone are present. But the underlying reason seemed to be that there was no routine for having video calls, and therefore no one gave it much thought. Connecting to difficult problems which you might get stuck with, the respondents said that this could be solved with screen sharing, phone calls and mails. No one mentioned that a video call had been used for this either. Reports, meeting protocols, calculation templates etc. were gathered in OneNote, this was seen as very convenient by everyone.

4.4.5 Feedback

Feedback was highlighted as extremely important, especially from the Indian and Romanian interviewees. Any type of feedback is welcomed said the engineers from the offshoring countries, whether it's a call or an email or message is not the most important, as long as you receive it. Although adding a more personal feeling when having a call, one engineer preferred to have it in writing since you could keep it for the future. During the years the feedback have most often been directed towards India or Romania, but lately the feedback have also gone both ways. One must also remember that there are different types of feedback, not only can it be positive or negative, but it can also be continuous or more finite, furthermore it can be on a personal level or on a strict task-oriented level. Both Swedish engineers recognize the fact that they probably are too poor in giving both positive and constructive feedback, and that it should not only be limited to the finishing stages, i.e. it should be more continuous. This was also mentioned by the engineers and managers in India and Romania, however, there was a unison view that the Swedes had improved their feedback through the years and that more people have started to understand the benefits of collaborating internationally, much of which is related to the fact that feedback about the projects are gathered.

“Personally I think a call is always good, it gives a different feeling than a mail. The feedback forms that we ask them to fill in is mainly regarding tech things, so a call is good for expressing it more elaborately, to exchange ideas for the future. So to first have the feedback form and then make a call is what I want” Engineer 1, India

“I use the chat function in Skype very often to communicate with my team members in India...it's simple and more relaxed, you can use emoji's if you want and the feedback/conversation is more casual...” Engineer 2, Sweden

4.4.6 Cultural differences impact on the collaboration

Another aspect which influences how the communication and collaboration is conducted is the company culture and the country specific culture. When conducting the interviews these aspects were touched upon several times indirectly, however, in order to get a more compiled view of the matter, the interviewees were asked to choose how they would perceive themselves and their colleagues connected to the six dimensions established by Gerard Hofstede, see theoretical framework page 23-26. Considering the fact that the data comes from two engineers from respective country, the following data is to be interpreted as very subjective and holistic, i.e. not claiming to be true for everyone. Regarding the company culture, the interviewees felt a pride to represent the company. Most of the interviewees had visited Sweden and vice versa, which had strengthened the feeling of belonging to the same organization. Considering the fact that the company is present on a global scale, there naturally ought to be country specific differences, however, the core values, the trademark, the interior of the offices, and the competent and talented employees are recognized independently of the country as mentioned by one interviewee. The company culture is also present considering the shared work processes which are present in the global virtual teams, furthermore using the same softwares.

The Swedish engineers considered themselves to be quite collectivistic in most situations, although being very individualistic at times when working. One Indian engineer however, felt quite clearly that the Swedes he had worked with were more individualistic than collectivistic. The Romanians perception of Sweden was that it was very person to person specific. The Indians perceived themselves to be more collectivistic in general, one of the engineer stressed that when it came to work however, he was more individualistic than in the personal life. The Romanian engineers also felt that they would characterize themselves and their colleagues as more collectivistic. The Swedes furthermore considered themselves to be task-oriented and direct in their approach, the Indians and Romanians agreed upon this fact. The Romanian engineers also described themselves as being more task-oriented than relationship-oriented, this was also the case for the Indians although not as clearly.

“.....I can say that the ca 70% of the Swedes I have worked with are low context, i.e. very task oriented and direct in their communication” Engineer 1, India

Regarding having hierarchies and clear distributions of power within the organization, the answer from all the engineers were quite unison, claiming to have a flat organization with short communication routes. The Swedes perception however was that they had the flattest organization of the three countries, whereas Indians still have more hierarchies and distributed roles. Furthermore, all of the interviewees highlighted the fact that the company culture is advocating equal rights no matter your gender, and that sex specific roles belongs to the past. Although the actual distribution or mix of men and women varies between the countries, which is a result of many variables, equality was stressed as important for all the interviewees, and that it is also incorporated in the global organizations values.

Regarding perception of time, i.e. the importance of delivering on time and being in time generally there were some small hints about differences between the countries. Here the Swedes and Romanians were clear about being very time-oriented in general. Especially the Romanians in regards to being more used to working overtime and even during weekends if necessary. In general the Indians perceived that the country is more polychronic, i.e. that time is a bit fluid, but when it comes to work they stressed that this wasn't the case to that extent. An important aspect connected to this reasoning, as mentioned by engineers in all countries, is the fact that construction projects can be quite fluid in their nature, and therefore the design process can also be fluid at times, i.e. that deadlines are adjusted and moved back and forward several times. Concerning preferring familiarity over risk taking, the Indians themselves, and the Swedes also, perceived them as low uncertainty, i.e. being very flexible and innovative, and therefore open for taking risks. Both the Swedes and Romanians had more trouble in defining themselves regarding this matter, they thought that it was very person to person specific and that in general they are probably a bit of both. However, both the Indians and Romanians claimed that the Swedes were more high uncertainty considering the fact that they prominently want to avoid risk and stay with solutions that the client expects.

“Regarding being monochronic or polychronic...I have no comment haha...in general maybe we are more polychronic in India, but when it comes to offshoring work we are very keen on meeting the requirements accordingly” Engineer 1, India

“I think that Sweden is monochronic in general...but sometimes I feel that I’m personally quite polychronic haha” Engineer 1, Sweden

“...we are low uncertainty in Sweden I would say, we are very flexible and take many individual initiatives” Engineer 1, Sweden

“...we are high uncertainty in Sweden, we stick with what we know that the client wants and expects...India are more low uncertainty and want to try new solutions” Engineer 2, Sweden

4.5 Preparing staff for the future of project management

E-leadership was nothing that the neither the managers nor engineers had heard about before, surely they understood the concept when I explained some more about it, but there was no common understanding of how to use it or apply it within the organization. However, when conducting the interviews the concept of E-leadership and the ARCS model is woven into many of the other aspects brought up connected to collaborations in global virtual teams, and the parameters were touched upon by the interviewed persons several times. A more thoroughly explanation and discussion regarding this will be brought up in the next chapter.

All the managers agreed upon the fact that this was an important question, and something which might need to be considered more in the organization. It is very different between person to person says one Swedish manager, some are more comfortable with leading virtual projects whilst especially our senior colleagues might try to avoid it. The managers in Sweden reflected over the fact that the “best” leaders in Sweden often are the ones with long experience, considering the fact that they have

participated in more projects and know how to coordinate and communicate efficiently. However, these persons are more used to operate in the physical world and have not grown up with internet and all technology which comes with that. That can be a barrier, and it's a large challenge for many according to one manager. *“Sometimes we have the paradox that we want our senior and experienced staff to lead the offshoring projects, but they don't feel comfortable with it, and on the other hand we have junior employees which feel very secure with communicating in English and solely in a virtual environment, but they lack the experience which we want them to have”*, the manager continues.

In conclusion the Swedish managers could agree upon the fact that a good leadership in the physical environment does not necessarily transfer to the virtual environment. However, they also agree upon the fact that it probably facilitates a lot if you are comfortable with leading projects back in Sweden, and at the same time feel comfortable with communicating in English. Another aspect highlighted by one of the Swedish managers concerns the fact that the senior employees might feel uncomfortable with building “virtual relations” in contrary to the younger employees. Our younger colleagues are used with having friends all over the world, to use skype, Facebook, get media from all corners of the world, for them there's nothing strange with the globalized world the manager continues. From this point of view he thought that the organization would benefit with having this strategy in the future. The other managers agree upon this fact and acknowledge that a large challenge is to utilize the senior employees experience efficiently in order to be able to conduct the offshoring projects.

The Romanian manager, and the Indian manager in particular, stresses that they have a long experience with working with offshoring projects globally and therefore feel comfortable with doing it. As mentioned by the Indian manager, most of the employees working towards Sweden have previous experience from working with clients from the U.S, U.K, Australia and Middle East. It becomes quite obvious that the Indians expect more project management from the Swedish side than what is being made today. Since Sweden is the owner of the project so to say, they need to improve their project management skills in terms of project planning, project governance, feedback etc., as stressed by both the Indians and the Romanians. Both one of the Swedish engineers and high managers agrees upon this fact and agrees that project management is not as widespread among engineers as it might be abroad. Engineers in Sweden wants to focus on engineering tasks, and rather try to avoid getting into management positions. *“I think this is something we need to improve if we want the offshoring projects to be as efficient and successful as possible”*, says one Swedish engineer. One way could be to acknowledge this more and offer some kind of training or introduction course, says the manager. A Swedish engineer continues with saying that sometimes the information flow might be too poor, for example when a long conversation has been going on for a week in Sweden, and then the persons in the offshoring country aren't aware of this, and might just receive a short mail summing it up.

“...working with offshoring projects are similar to traditional design processes back in Sweden, but of course new routines are added in the shape of templates, translation, platforms, and on top of that the language...so surely you cannot assume that the “leadership” necessarily transfers without modification” Middle manager, Sweden

“...what we see now many times is that...they only need us in a rush..they want help in the last minute....the governance, the planning and the standardization of the requirements needs to be improved from the Swedish side”” Middle manager and engineers, India

“I think one thing which is lost when working solely in a virtual environment is the corridor/lunch talk...those small chats are lost and therefore we might need to transfer this info better to India and Romania, i.e. to improve that aspect of proper project management” Engineer 1, Sweden

5 Discussion

*“The aim of argument, or of discussion, should not be victory, but progress”
- Joseph Joubert*

This chapter will discuss and analyze the different findings from the interviews in context to the theoretical framework, drawing analogies and finding differences between theory and practice. Much as in the result chapter, this chapter will follow the headings and sections established in the theoretical framework in order to get a natural flow of the information. Considering the fact that several of the aspects brought up in the theoretical framework are interconnected, the discussion and analysis will also follow this structure.

5.1 Offshoring as a strategy

The company in the case study uses offshoring as a strategy, i.e. not outsourcing. This is based on the fact that the employees working in the offshoring countries belongs to the same company as the ones in Sweden. This is seen as a strength since the global knowledge and competence can be utilized to benefit the organization in its whole. Hätonen and Eriksson (2009) have identified three broad phases which are normally present for a company which adapts an outsourcing or offshoring strategy. The company in hand does not follow the natural chain of order according to Hätonen and Eriksson’s framework, they have rather skipped the first phase which focuses solely on achieving cost reductions, and have instead initiated their strategy based on the need for seeking resources that cannot be found in Sweden. As mentioned by all the Swedish managers however, the benefit of cost reductions are of course an advantage in the long run, but that is not the main objective at the moment. Furthermore hints are being brought up which adheres to the specifics of being in the third phase (the barrierless organization era) in terms of preparing the organization for future ways of working, i.e. that the national boundaries are fading and that the organization becomes flexible with adapting to new means of working in order to stay updated and competitive on an increasingly competitive market as in Sweden. The staff in India in particular, have long experience from collaborating with countries such as the US, U.K, Australia and Middle east, and from that point of view they have already been involved in the international collaboration which the global company have set out as strategic.

As mentioned by for example Bunyaratavej, Hahn & Doh (2007) and Contractor, Kumar, Kundu & Pederen (2010), the most important strategic driver has historically been that of **reducing costs**, however, as mentioned, the company does not use that approach, instead they correlate to much of the recent research which implies that the focus have shifted more from cost reduction to that of **seeking resources** in the shape of qualified personnel, as stated by Manning, Massini & Lewin (2008). This can possibly connect to the fact that the construction market in Sweden has experienced a boom during recent years, and that the market is furthermore forecasted to stay relatively stable for the years ahead. With this in mind, as also stressed by the Swedish managers, the market has not been characterized with high competition from that point of view, it has rather been a choice regarding which projects which can be accepted based on the internal resources available in the company. However, one can question if the underlying reason of seeking resources will stay as important when a recession

appears, then the advantage of cost reductions might become the most important aspect connected to tough tender and bidding competitions.

Most of the research suggests that a good approach when **initiating the collaborations** is to offshore relatively small and simple tasks in the beginning (Lewin, Massini, & Peeters 2009). If the collaboration works and the management is satisfied, it would be logical to increase the frequency of collaboration and furthermore utilize the competence available in the offshoring country to its fullest. This has been the case for the company in hand, hence correlating to the research theory. However, both the managers in India and Romania stressed that they in several cases have felt that the complexity of the tasks have been too low. Based on feedback between the countries, both on a managerial- and team based level, this aspect have been considered year by year. Romania have engineers which are qualified to perform the equivalent tasks of the engineers in Sweden, based on this fact they felt a bit “devalued” in the early years when they only received routine tasks from Sweden as stressed by the Romanian manager and engineers. The same thoughts were expressed from the engineers in India, however not to the same extent. At the moment there seemed to be a unison agreement among both the engineers and managers from respective country that the level of complexity of tasks was satisfactory. Considering that all changes take time, it feels like the Swedes used an appropriate approach when initiating the collaboration with Romania and India, i.e adhering to the approach mentioned by Lewin, Massini, & Peeters (2009) above, and now the utilization of the resources and competence available is on a higher level than in the first years. Furthermore, as mentioned by Bennett & Vaidya (2005), there is not only a one way win with the offshoring collaborations. The benefit for the organization in Sweden is obvious, i.e. getting access to skilled resources and at the same time reducing the costs. For the organizations in India and Romania the beneficial aspects of the collaboration adheres to several points, these are for example that the company can offer attractive career possibilities to the employees, i.e. working with international projects, furthermore the company offers many attractive benefits in terms of work conditions, pension, insurances etc. which separates them from many of the local employers.

According to Stringfellow, Teagarden & Nie (2008) **hidden costs** related to communication, coordination and governance needs to be considered in offshoring collaborations. The result from the case study however, does not stress that there are significant hidden costs associated with the collaborations. The managers in Sweden rather highlight the fact that “hidden costs” related to the above mentioned aspects will always be present, even in domestic projects. Surely the unfamiliarity with working solely in a virtual environment with people you have never met, from a country you might never have visited, imposes some more challenges connected to the parameters. But from a holistic point of view the Swedish managers stress that the most important thing in order to not get to high “hidden costs”, is to have an appropriate amount of projects running, i.e. having a proper utilization rate, by having so the “hidden costs” can be spread out evenly in an acceptable manner, much like in domestic projects. The managers from India and Romania agreed upon this fact and claimed that the economic model used was satisfactory and that hidden costs weren't significant. To measure “hidden costs” or indirect costs associated to governance, coordination, communication in a new language, is of course very difficult, and at the moment the organization does not seem to focus on these parameters, instead focus is kept on how to increase the utilization rate. Since this report does not aim towards analyzing the economic aspects

in depth, not much can be concluded regarding how the “economic model” is dependent on the country in hand, i.e. if the costs are significantly lower when offshoring to Romania than India. However, Carmel & Abbot (2007) and Cagliano, Marco, Rafele & Arese (2012) brings up some country specific characteristics which are associated with the costs of an offshoring collaboration, namely geographical- and temporal proximity, respectively technical- and cultural proximity. These aspects will be analyzed and discussed later on in this chapter from a perceptual perspective connected to challenges, however, as mentioned the actual costs are not elaborated upon.

In for example the U.S, **offshoring of engineering services within the construction industry** have been present for several decades (Messner 2008). A study conducted by Koch (2013) also finds this true for a Danish engineering firm (which also is active in Sweden), however, the study also highlights the fact that the Swedish companies within the construction industry have only started to adopt the strategy recently. With this in mind, the company in the case study aligns with the development seen in Sweden, so although having adopted offshoring strategies at several of the global offices, the Swedish organization have not utilized the strategy long before the competitors in Sweden. The theoretical framework brings up the fact that there are several emerging **offshoring destinations** worldwide, but the two dominants are India and China with hotspots like Noida, Bangalore and Shanghai to name a few (Manning, Massini & Lewin 2008). With huge talented and competent workforces these economies have attracted companies from a variety of businesses for decades, especially India considering their high English proficiency. The company in hand have had collaborations with India since they started to adopt the strategy globally and the Swedish managers concludes that they haven't been involved in the decision of why India is chosen instead of China. However, the choice of offshoring to Romania was a more random one, where some personal connections to the country from the Swedish organization was taken as a standpoint. Connecting to the hotspots in India and China again, Manning, Massini and Lewin (2008) states that they are subject for high local competition for the employees, and that this in turn have led to wage inflations and an increasement in the attrition rate, which in its turn result in a perceived lower interest by several companies. The Swedish managers acknowledge this fact, but didn't perceive it to be “worrying” in any way, surely they keep their eyes on possibly increasing wages and attrition rates, but the fact is that the attrition rate does not differ much between Sweden, India or Romania. As also stressed by the managers from all the countries, it takes time and investments to build up offshoring collaborations, based upon this very rudimentary fact, one does naturally want to stick to the collaborations which are ongoing unless something very alarming pops up. This aligns with much of the research, briefly mentioned in the theoretical framework, which highlights advantages with long term relationships and strategies.

5.2 Work processes

Construction projects are endeavors which are characterized by being unique, often spanning over long time periods and engaging a wide variety of actors within the different stages (Nordstrand 2008). This holds true for the design process which is present in the offshoring collaborations in the case study as well. All the engineers from respective country stressed that the size of the projects and the composition of the teams varied between almost each and every project, which imposed several challenges. This is partly due to the fact that the Indian and Romanian offices collaborate with most of

the offices in Sweden. Therefore the Romanians and Indians have to be very flexible in adapting to new “project leaders” depending on the project and office in hand. From the Swedish perspective the possibility of collaborating with the same persons in India or Romania ought to be higher since they only have one office to collaborate with in respective country, which was also stated by the Swedish engineers. To manage a design project, there usually is a design manager present whose mission is to contribute to the achievement of successful project deliveries in terms of time, cost and quality (Eynon 2013). Furthermore the design manager should enable an effective flow and production of design information through integration, planning, coordination and reduction of risks. From my point of view, the case study indicates that the role of the design manager is undervalued and perhaps forgotten. When utilizing the offshoring country, the engineers in Sweden naturally becomes the “**project leaders/project managers/design managers**” of the project, however, as stated by the Swedish engineers, this is not a role which they necessarily want to have. Both of them claimed that engineers in Sweden generally want to avoid having management positions in favor for working solely with engineering tasks. Based on this study, this is in contrary to way of thinking in both Romania and India, in these countries the engineers are in a way more used to working both as engineers and managers. This fact imposes some interesting questions which relates to the offshoring collaborations. On the one hand, the importance of project- and design management, is concluded over and over again to be of high importance if projects are to be successful (Eynon 2013, Knotten, Lædre and Hansek 2017). Furthermore the variety of tasks associated with the position of a project manager are several. On the other hand, the Swedes seem to be unfamiliar and a bit insecure in taking on this position in the offshoring projects. Furthermore it was stressed by both the managers and engineers from India and Romania that the Swedish way of acting as project managers needed improvement in terms of project planning, - coordination and - communication. It can therefore be questioned how well prepared the Swedish engineers are for working with offshoring projects at the moment. More of this will be brought up in connection to the perceived challenges later on in this chapter. However, the importance of having clear work processes and means of managing projects are well recognized in the company in respective country. Through the years the **routinization and standardization of the design process** have been of high importance, and at the moment there are large amounts of governing documents and templates which are to be used from both sides of the collaboration. From this point of view all the interviewed were satisfied, and acknowledge the progress through the years. So in its core, an improvement or increasement of the Swedish “project management”, ought to facilitate the project executions ahead.

Connecting the results from this case study in terms of work processes, much of the findings aligns with the ones found in a study by Jensen (2009). The study concluded that there are several **differences between conducting and managing a domestic project and an offshoring projects**, not least when it comes to preparing their own employees for new ways of working. Trial and errors, internal feedback and follow ups were highlighted as important for future improvements. Furthermore, more structured and transparent work flows, adaptation of using English as work language and routines for monitoring & follow ups were brought up as improvements implemented by time. The study by Jensen (2009) concerns a Danish engineering company, and therefore the resemblance with the case study in this report seems logical and relevant. Although the engineers and managers from India and Romania urged for an improvement of the Swedish project management, it should not be interpreted as being very alarming.

Instead it should be interpreted as a valuable advice which should be considered by the Swedish organization. In the large majority of the projects the offshoring engineers were very satisfied with the collaboration and the relationship with the Swedish counterpart. Considering the fact that the Swedes are still in the early years with utilizing competence from offshoring countries, the engineers in India (where most of them have worked for years with offshoring) are still pleased with the skilled and empathic colleagues in Sweden. My reflection is therefore that the Swedes should take this as a very good piece of advice, i.e. that when working with offshoring projects, there is a necessity to adapt to a role where you have to act more as a project manager, considering that the engineers in both Romania and India, (especially India), expects a more international way of leading projects.

5.3 Challenges in global virtual teams

When working in global virtual teams, being characterized by having team members from a variety of nationalities relying on technology-mediated communication (Gibson & Gibbs 2006), naturally plenty of challenges arise in the collaborations connected to different parameters and aspects. Surely they are present even in domestic projects, but when adding a mix of cultures and languages a new dimension is added. In the theoretical framework a table by Lee (2014) was used as a standpoint for getting an overview of identified challenges from global virtual team collaborations based on previous research. The table is inserted below with the most frequently mentioned challenges by the interviewees from this case study being circled. Focus is still being kept on communication, culture and technology whereas interpersonal- and economical aspects are partly touched upon interconnected to the others.

Table 6 Most frequently mentioned challenges by the interviewees adhering to Table 3

Communication	Culture	Interpersonal	Technology	Economy
Language barriers	Differences in work- and life philosophies	Trust issues	Difficulty in finding information	Setup and equipment costs
Interpretation of contexts	Cultural differences regarding time and deadlines	Respect for different members	Usage of different tools	Maintenance costs
Different time zones	Lack of understanding of client	Conflict management	Integration and sharing of knowledge and information	Difficulties in tracking, measuring and controlling work
Little or non-existing face to face interaction	Team formation in terms of hierarchies and governance	Motivation and personal development issues	Internet speed access and connectivity issues	Virtual infrastructure support within organization
Lack of communication approaches	Differences in perceived status of members	Relationship building	IT support	Missed deadlines, rework
			Perception of what can be seen (limited to the screen)	

As brought up in the result chapter, more or less all of the factors from the table were acknowledged to be present in the offshoring projects in the company at hand, although the predominant challenges were connected to language barriers, interpretation of contexts, lack of understanding the client and the perception of what can be seen on a screen. Previous research, as mentioned in the theoretical framework, stresses that **communication** is the most recurrent aspect of which challenges are related to (Lee 2014), and the case study therefore confirms this belief, although not being limited to it only. The spectrum of communication encompasses many different factors, where some of the most important are listed in the table, it should however be kept in mind that many of the factors in the table are interconnected, which becomes evident from this case study. Addressing the first and most obvious factor, the **language**, the result indicates that the perceived challenges are very much related to the person in hand. People in Sweden have a very high English proficiency in general, and as stressed in this case study the lower English proficiency can almost exclusively be associated with older persons, at least in the work environment present at the company in hand. India is a country with hundreds of different major languages, where English is recognized as one of the official ones. Based upon this fact the communication between people from different regions are almost always conducted in English, and as stated by the interviewees from India, English almost become the corporate language unless someone speaks your own specific language. Furthermore all the university educations are being held in English which strengths the general English proficiency at professional companies. In Romania the interviewee's state that the English proficiency in the country is quite low generally, but amongst university students the level is higher and being recognized as important.

Certainly the result addresses the fact that **misunderstandings** and difficulties in finding the correct or appropriate words are present. As stated by one engineer in Sweden, it might not be the English itself which is a challenge, but the challenge is the unfamiliarity with using it professionally, and that it furthermore consumes extra energy when communicating in English orally or in writing. I believe this is a very valid point being made, and it deserves some consideration. However, if you are to work in global virtual teams, each and every person should strive towards overcoming that barrier. Surely it might consume some extra energy to shift between Swedish and English, but it should not be at the expense of trying to avoid or limit the communication based on this fact. The Swedes are also confirming the stereotypical Swedish shyness of acknowledging competence. I.e. that if asked about their **English proficiency** they most certainly will answer that it is on a good or average level, although when comparing it to other countries it is in fact on a very high level. The point being made here is, which also was elaborated upon by one of the Swedish engineers, is that sometimes when communicating with Indians, which are recognized as having a very high English proficiency although speaking a bit fast sometimes, the Swedes might underestimate their English and therefore feel insecure if they don't understand something being discussed. So in all cases it might not be that the older Swedish engineer has a poor English proficiency, it would rather be that the Indian counterpart has a very high proficiency and familiarity with communicating in English. Therefore it can be discussed how the Swedes can improve their familiarity with communicating in English, and therefore also being more comfortable with the offshoring collaborations. The holistic reflection based upon the interviews, is that the English proficiency is certainly on an acceptably high level in Sweden, Romania and India, but the usage of English in a professional context would need some improvement both in

Sweden and Romania. This point can be connected to the discussion earlier concerning the perceived “poor” project management by the Swedes. If feeling more secure in their English, and not feeling that it is a large effort to write an extra mail in English, the project management might be perceived as better from the Romanian and Indian side.

5.3.1 Communication mediums

In terms of which mediums to use for communication there seems to be a quite unison approach and understanding. Lee (2014) stresses that it is of high importance to know which and when to use different mediums in order to be as efficient as possible. In the company OneNote serves as the master collaboration platform where most of the governing data is gathered. The daily communication is being conducted much like if it was a domestic project with professionals located on different locations, i.e. via phone calls and emails, so from this point of view there is a resemblance with the literature. One way to organize and routinize the communication is via establishing a communication plan, as stated by Sarker and Sahay (2003) this should be the foundation for the virtual project team. The interviewees in this case study does not refer to having any established communication plan to that extent, it is rather up to each and every person. However, weekly meetings or follow ups are of course recurrent. My personal reflection based on the interviews is that the teams often are of a relatively small size, and therefore the communication plan does not necessarily need to be as rigorous as stated in the literature. With this being said, I do not state that it should be neglected, however, the communication routes might be of a more natural or spontaneous nature generally.

The lack of physical meetings is of course the largest difference in terms of work execution. Again, the findings indicate that the unfamiliarity with operating solely in a virtual environment becomes most evident amongst older professionals, especially in Sweden. As brought up by all the managers in Sweden, there is an awareness regarding the unfamiliarity of working in global virtual teams amongst the older colleagues, and there is not a simple solution available to this challenge. The most practical advice from the managers seems to be that you have to learn by practice, i.e. not being afraid of utilizing these new ways of working. Furthermore the study, not surprisingly according to me, finds that the younger professionals feel more comfortable working in a virtual environment. These points might not come as surprises, but it does not mean that the findings should be taken with a pinch of salt. The paradox of having experienced older professionals which “struggle” with managing international virtual collaborations, which are becoming more frequent even in small countries like Sweden, whilst you have younger unexperienced professionals which does not even reflect over the fact that the person sits on the other side of the world, should be taken seriously by the management. Surely the younger generation will gain experience by time, but at the moment focus should also be kept on managing the senior colleagues so that they feel comfortable with working in offshoring projects.

5.4 Communication in terms of language and culture

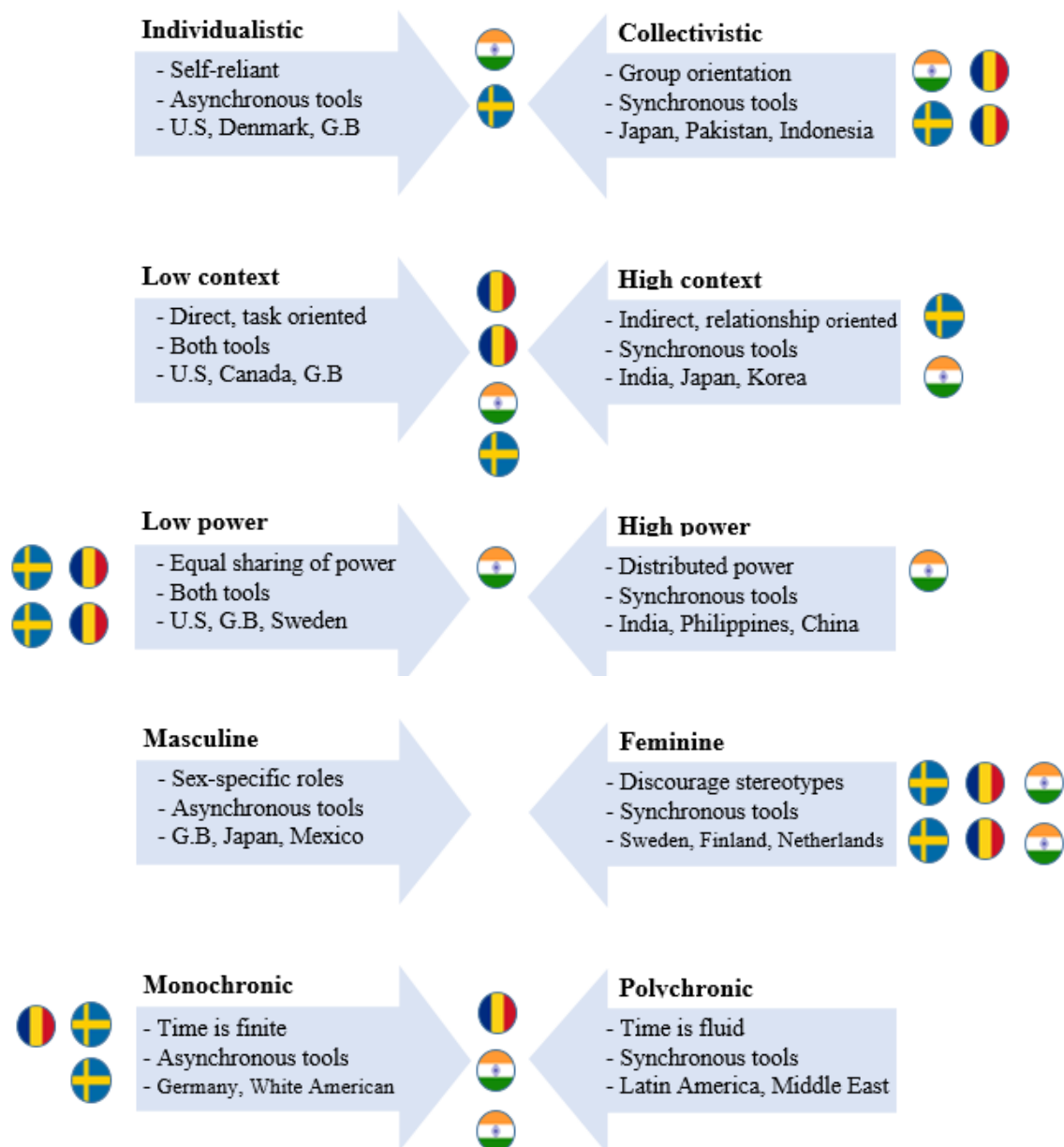
So if the English proficiency in general is on an adequate level in all the countries, as insinuated by me earlier in this chapter, why is it still brought up as a barrier amongst each and every one of the interviewees? It might have to do with the simple fact that even when communicating in our own languages misunderstandings of contexts and

difficulties in understanding the underlying message is occurring. As mentioned by Zakaria, Amelinckx & Wilemon (2004), everyone can agree upon the fact that a word does not mean the same to everyone even in our own language. And there is more to it, communication is a complex matter which is dependent on so much more than the actual words. As stressed by Rad & Levin (2003) some other aspects which need to be considered when communicating are for example the tone style, sociolinguistic variations, usage of slang, facial expressions, body language and gestures. These factors are partly dependent and limited to the medium in hand. This case study reveals that most of the communication is being made via mails or phone calls. Regarding having video calls, all the interviewees confirmed that they were pretty much non-existing. This poses an interesting question. As stressed by most of the interviewed engineers, they are recalling difficulties with understanding emails etc. due to the language barriers, but surely it can not only be due to the unfamiliarity with using English. When only using phone calls and emails, so many important communication parameters are left out. To further underline this reasoning, Verma (1996) states that communication is composed of 55% body language, 38% tone and inflections, and 7% of words only. I think we all can adhere to this very fact, i.e. that a picture (or person) says more than a thousand words. With this being said, I do not suggest that all of the communication in the collaborations should be made via video calls, that is not possible and not necessary. However, a practical suggestion would be to at least have a video conference call in the beginning of each and every project to introduce the team members. To put it straight, building relations and bonding with other people, might be the only thing that separates us from robots. Several of the engineers claimed that it sometimes felt like working with a robot considering the fact that they had never actually seen the other person. When being asked about why they didn't initiate a video call, the answers were *"I don't know who should take the initiative"* or *"no one in the organization does it, so then I haven't done it either"*. There appears to be a shyness from both sides, and if no one takes the initiative, well, than you might have to accept the fact that it feels like working with a robot.

An interesting reflection by myself was, that when I conducted the interviews and asked why they didn't at least have one video call in the beginning, or that all it would take if you had difficulties in interpreting a mail would be to push a button on your computer to initiate a video call, most of them started to reflect over the very "simple point" of it all. With "simple point" I mean that it almost sounded ridiculous when I asked why no one did it, since it obviously would be so easy to do. What I mean with this statement is that there seemed to be a kind of silent agreement from respective country that video calls weren't needed. And since there was no requirement from the management to have them, no one seemed to bother. But considering the fact that all of them agreed upon the facts that words only correspond to a small piece of information, and that body language says so much more, it came as a surprise to me that video calls weren't used in certain situations. Maybe one video call is all it would take to eliminate the feeling of working with a robot located somewhere in the world. Another personal reflection and connection to these very facts, is that when I conducted the interviews it was via video calls when possible, and it was very appreciated by all. Not only could I quickly see if they didn't quite understand a question based on their body language, but we also created a bond after a while and I could adapt my formulations and words in the questions. So why not put a requirement on a mandatory video call in the beginning of every project? And if the persons want to uphold some sporadic calls during the projects, it's up to them.

5.4.1 Hofstede's cultural dimensions

Furthermore the aspect of culture should also be considered when elaborating upon communication challenges. In this study a framework developed by Gerard Hofstede have formed the basis for this matter. The framework establishes 6 dimensions which have been identified to influence communication. The dimensions of culture are the following; individualistic vs collectivistic, low- vs high context, low power- vs high power distance, masculine vs feminine, monochronic vs polychronic and low uncertainty- vs high uncertainty avoidance. Considering the fact that only two engineers from respective country were interviewed, the data gathered is to be interpreted as very subjective. The aim is not to confirm the country specific traits, it is rather to see how these traits influence and impact the collaborations in the global virtual teams in this particular case study. In the figure below the answers from the two engineers from respective country have been inserted in order to give a hint of the differences. Although the small amount of data, there ought to be some findings of interest, and a brief analysis will be conducted below.



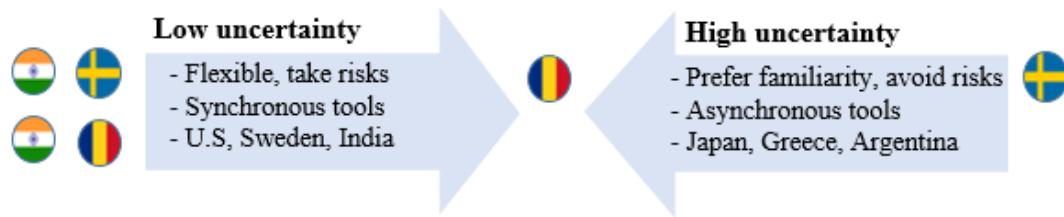


Figure 5 The answers from the interviewed engineers regarding how they perceive themselves and their country in regards to Hofstede's dimensions

In an **individualistic** culture self-reliance and personal growth/development is valued although not having to be selfish, whereas a **collectivistic** culture is characterized by individuals which care more about the needs of the group (Lee 2014). In the figure one can see that for example Denmark is characterized as an individualistic country, and therefore it might be reasonable to believe that the Swedes are similar due to the proximity of the countries. However, the interviewees from Sweden considered themselves to be quite collectivistic in most situations, although being very individualistic at times when working. One Indian engineer however, felt quite clearly that the Swedes he had worked with were more individualistic than collectivistic. The Romanians perception of the Swedes was that it was very person to person specific. So there might be some truth to the fact that Swedes are more self-oriented if you like. The Indians perceived themselves to be more collectivistic in general, one of the engineer stressed that when it came to work however, he was more individualistic than in the personal life. The Romanian engineers also felt that they would characterize themselves and their colleagues as more collectivistic. So how does these differences affect the offshoring collaboration? My reflection is that this dimensions does not affect the collaboration in a significant way. Surely the Swedes might be more self-oriented in general, but this does not seem to apply when working in these global virtual teams.

The second dimension concerns being **low context** or **high context**. Low text cultures is characterized by being task oriented, using direct and straightforward communication. High context cultures on the other hand is more relationship oriented and recognized by employees speaking more indirectly and ambiguous, furthermore having a reluctance to speaking negatively or saying "no" (Lee2014). The interviews with the Indians indicate that the Swedes correlates to being very low context in most cases in terms of being task-oriented in favor of building relations. The Romanians however, consider the Swedes to be somewhere in between. This seems reasonable considering the fact that the strategy from Sweden is that Romania should function as an equivalent partner in terms of engineering tasks, whilst the tasks being offshored to India are limited to some specifics. In the figure India is characterized as being in between or high context, and this fact is acknowledged in this study as well. The impact these differences have on the collaboration is most often in terms of misunderstandings between Sweden and India. It was highlighted by the Swedish engineers that the Indian engineers are very competent, but sometimes they can say that they have understood everything even though that might not be the case. The Swedes stress that they would want the Indians to pose more questions in some cases to make sure everything is clear, however, the Swedish engineers and managers also acknowledge the fact that this cultural difference has been approved during the years.

Low power- vs **high power distance** is the next dimension, where the differences are found in terms of equality, hierarchies and distribution of power. Low power cultures does not assert an exclusive power to certain individuals in the team. In high power cultures the power is distributed unequally and directed to certain individuals based on their position or role (Lee 2014). Regarding having hierarchies and clear distributions of power within the organization, the answer from all the engineers were quite unison, claiming to have a flat organization with short communication routes. The Swedes perception however was that they had the flattest organization of the three countries, whereas Indians still have more hierarchies and distributed roles. Although being classified as high power in general, the Indians at this particular company have, based on their long experience of working with western countries, been influenced by the different ways of organizing hierarchies to some extents. My reflection is that all of the three countries are striving towards having flat organizations were the title is not the most important parameter, and I further get the impression that all the countries have acknowledge the global company culture in this sense, i.e. being very modern in terms of hierarchies. It is difficult to tell whether the differences between the countries affect the collaboration in any significant way.

The difference between **masculine** and **feminine** cultures is as the name suggests, concerned with gender aspects (Lee 2014). This involves elements like sex-specific roles, wage gaps, decision making and stereotypes to name a few. In a masculine culture it is natural to assign certain tasks and trades to men, whereas discourage of stereotypes is advocated in feminine cultures. All of the interviewees highlighted the fact that the company culture is advocating equal rights no matter your gender, and that sex specific roles belongs to the past. Although the actual distribution or mix of men and women varies between the countries, which is a result of many variables, equality was stressed as important for all the interviewees, and that it is also incorporated in the global organizations values. In the past the construction industry/engineering jobs have traditionally been men dominated in all of the world, but now there seems to be a transition towards having more women in the organizations, which holds true for this particular company as well. Being a very large global company employing highly qualified staff, it clearly becomes evident that sex-specific roles and similar ideas belongs to the past.

The dimension of **monochronic** or **polychronic** culture is almost completely concerned with the perception of time (Lee 2014). In the monochronic culture time is tangible and finite, whereas in a polychronic time is considered to be fluid, holistic and never ending. Here the Swedes and Romanians were clear about being very time-oriented in general. Especially the Romanians in regards to being more used to working overtime and even during weekends if necessary. In general the Indians perceived that the country is more polychronic, i.e. that time is a bit fluid, but when it comes to work they stressed that this wasn't the case to that extent. An important aspect connected to this reasoning, as mentioned by engineers in all countries, is the fact that construction projects can be quite fluid in their nature, and therefore the design process can also be fluid at times, i.e. that deadlines are adjusted and moved back and forward several times. My reflection is that this dimension has no impact on the collaboration in hand. All the interviewees highlight that how you are in your personal life is one thing, but when it comes to work, everyone are professionals and being on time is of high importance.

The last dimension is related to the openness and extent of acceptance for new ideas, situations and opportunities. **Low uncertainty** avoidance cultures are open minded for taking risks in order to gain rewards, and to encourage innovation, whereas **high uncertainty** cultures tend to take fewer risks, instead preferring to stay in familiar situations (Lee 2014). The Indians themselves perceived them as low uncertainty, i.e. being very flexible and innovative, and therefore open for taking risks. Both the Swedes and Romanians had more trouble in defining themselves regarding this matter, they thought that it was very person to person specific and that in general they are probably a bit of both. However, both the Indians and Romanians claimed that the Swedes were more high uncertainty considering the fact that they prominently want to avoid risk and stay with solutions that the client expects. As one can see, one of the Swedes considered Sweden to be conservative and risk avoiding, whilst the other thought the opposite. Here it seems that the Swedes are not correlating to the Hofstede figure where Sweden is characterized as low uncertainty. I think this has to do with the fact that Sweden is responsible for the projects in the very end, and to meet the requirements from the client is of the highest importance. With this being said, I don't think that the Swedes want to stick to old familiar solutions, it is rather that they want Romania and India to understand the Swedish way of working, and therefore might appear as risk avoiding even though the proposed solutions might be better.

5.5 E-leadership and the ARCS model

As mentioned in the result chapter, no one of the interviewees were familiar with the concept of E-leadership. However, the different parts which encompasses the so called E-leadership, are highly connected to other normal practices associated with project management and leadership, hence, everyone could understand the concept quite quickly. Lee (2014) states that strong leadership and management qualities does not necessarily transfer to the virtual environment. Both the managers and engineers from respective country had interesting reflections regarding this fact and thought that it was interesting and relevant. Most of them agreed that one cannot necessarily assume that a good project manager/leader in domestic Swedish projects, will have those qualities transferred to a solely virtual environment, working with people from different countries with different cultural backgrounds. However, some of them also imposed that there ought to be some correlation, i.e. that if you are a good project leader at home, that most certainly will facilitate and contribute to the management of offshoring projects, as long as the person feels comfortable with their professional English proficiency and to build virtual relationships. It's difficult to tell, but my reflection is, adhering to my previous reasoning's about Swedes unfamiliarity to act as project managers (if you are an engineer), that if Sweden wants to improve the quality and widespread collaborations, the engineers must enhance their project management skills.

Furthermore, considering the fact that working in global virtual teams adds new means of working, i.e. exclusively communicating via technology, my reflection is that E-leadership is something which needs further attention. One can also reflect whether it would be valuable to have some sort of introduction course on how to manage offshoring projects. The middle manager in Sweden thought that this was a great idea, one which also had been adopted by one of the other business areas at the company, and was considered to be used at this particular business area also ahead. So how can one organize and structure the E-leadership? Lee (2014) suggests that the usage of the so called ARCS model (developed by Keller 2008) is a good foundation. In the figure

below a combination of Kellers ARCS model and hands on suggestions by Lee is inserted. A discussion regarding the different aspects will be held below.

Attention

- Use novel, surprising, and interesting communications to get the team involved; help the team members get to know each other personally; share stories about virtual project work
- Pose questions and generate problem solving; nurture thinking; encourage conversation
- Vary the types of communications to the team (e-mail, virtual meetings, documents, teleconferences, personal phone calls, etc.); encourage relationships within the team

Relevance

- Use templates and standardized forms; provide e-databases and knowledge-sharing technology; use a common methodology; acknowledge team members' experience and expertise
- Communicate clear goals and objectives; determine accountability for tasks; visualize success for the project
- Adapt a leadership style that matches the situations that arise and individuals on the team; provide cooperative activities; lead as a positive role model

Confidence

- Provide clear requirements for accountability and responsibility for each team member
- Provide training and challenges for team members; set standards for success; encourage skill and competency building
- Include frequent feedback and support to motivate the virtual team

Satisfaction

- Place value on team relationships and provide opportunities to build virtual relationships; encourage personal development and growth
- Provide incentives, rewards, and kudos; provide opportunities for the project work to be presented to appropriate audiences
- Maintain consistent standards and consequences for task accomplishment; complete a Lessons Learned session for the project

Figure 6 The ARCS model with suggestions by Lee (2014). Same as in the theoretical framework.

ATTENTION.

Both the managers and engineers from respective country mentioned the fact that many of the colleagues in the Swedish organization are skeptical or not interested in working with offshoring projects. It might have to do with the fact that they are afraid that it will affect the Swedish jobs ahead, or simply because they feel insecure with adapting this new means of workings. This was mentioned as a significant challenge by the managers in Sweden. Both the engineers and managers in Sweden stressed that it's a large hurdle to actually take the step to try this new tool available, i.e. utilizing resources from India or Romania. Connecting this to the "Attention" aspects, I think an improvement in the organization would be to "spread the word" more in the Swedish organization. To lift

up positive experiences from successful projects. Have workshops where people can socialize and discuss how the offshoring projects work. Have lunch seminars every now and then in order to normalize the usage of resources from the other countries. If you get people involved and make them more familiar with the concept, then I think you will also get their attention. The collaborations at hand seem to lack the team-building aspect in several cases, according to the interviewees. Some claim that the Swedes are almost exclusively focused on the task achievement in favor for building relations. To have at least a video-call in the beginning of each project, where all the members are being introduced briefly, could be something to consider.

RELEVANCE.

Throughout the years there has been a development of more and more routines and standardized work processes, and as stressed by the engineers, there was a common methodology on how to execute the collaborations. This aspect is surely an ongoing development, but there seemed to be a common agreement that the work process was relevant and effective adhering to different templates and routines. What possibly could be improved according to the engineers in Romania and India is that the Swedes ought to actually involve themselves more in the development of standardized templates which applies for all offices in Sweden. Regarding communicating clear goals and objectives, this could be improved in many projects according to the engineers in India and Romania. This connects to the perceived lack of sufficient project management from the Swedish side, which have been brought up several times earlier in the result- and discussion chapter. Furthermore the aspect of actually leading a cross-cultural team located in different countries, could be given more consideration, i.e. not assuming that it's just to work as you do in domestic projects. An understanding of each other countries values and ways of doing things, should not be underestimated. I believe that, independently on business, a humble approach and willingness to understand core values are extremely important when engaging in global multicultural collaborations.

CONFIDENCE.

Here I think the most important aspect elaborated upon in this case study is the one regarding feedback. Both the engineers in Romania and India highlighted the fact that they would appreciate more feedback from the colleagues in Sweden. Although having approved the feedback during the years, the Swedes could increase the continuous feedback throughout the projects, i.e. not only limiting it to the very end. *“If there are things that the Swedes wants us to improve in a project, than it's better they tell us straight away instead of waiting till it's too late”*, says one Indian engineer. The study indicates that both the employees in India and Romania are used too cultures where feedback is more frequent than in Sweden. Certainly the feedback should go both ways in the collaboration. When a team creates an environment where the different members can give both positive and constructive feedback to each other, an environment where you can mix personal and professional feedback, I believe that there are many gains. It was further stressed by the Indian engineers especially, that a combination of written feedback regarding technical execution and an oral conversation regarding personal aspects would be a good approach.

SATISFACTION.

This aspect is also highly connected to the feedback in the teams. Feedback is extremely valuable, but to get the most out of it, and to be able to spread the word in the organization, it should also be put into writing, i.e. in terms of a lessons learned

document. Not only will it be valuable for the team members which have been involved in the particular project, but it can also be shared with other colleagues in the organization, as stressed by the managers. At the moment the engineers did not compile any lessons learned as it seemed, only at some cases, but it was mostly limited to personal reflections. Furthermore, which I think is the case in all projects, people are very much constrained by time. But my question than is, are people really that busy that they can't take a day, or at least a few hours, to reflect over the past project together with team members? I think that many benefits would be gained if experience feedback was valued higher.

6 Conclusion

In this study the goal was to investigate how the strategy of offshoring construction engineering services takes place in practice in a large global consultancy company in Sweden in terms of work processes and the collaboration in global virtual teams. The goal was furthermore to give practical suggestions on how the collaboration and communication could be improved between the engineers in the global virtual teams. Offshoring itself has been subject to much research, however, when it comes to offshoring of construction engineering services, there is an apparent gap, hence advocating the need for further studies like this one. In order to get a broad insight into the different stages present when embracing an offshoring strategy, the aim was to not only be limited to the strategy itself, but furthermore investigate how the top strategy is translated into work processes in the organization, and in the end elaborate upon the practical challenges arising in the global virtual teams' collaborations. To get an as heterogenic picture as possible of the offshoring collaboration, the study set out to get a two-way perspective by interviewing both managers and engineers from Sweden, India and Romania. The findings and implications of this study, as well as recommendations to the company in hand, will follow below.

The theoretical framework suggests that there are several different strategies to why companies start with offshoring. Historically cost reductions was the primary driver, but lately the shift has been towards the search for resources in terms of competent persons which cannot be found in the home country. This study confirms that this was also the case for this particular company, i.e. that the most important driver was to find resources which were not accessible in Sweden. The cost reductions was of course seen as a great bonus, but it was not the primary reason for initiating the collaborations with India and Romania. Previous research connected to offshoring, and especially global virtual teams, highlights that there are several challenges which needs attention in order to manage the projects properly, namely communication, culture and trust. In this study the focus was kept on communication and culture based on the data from the interviews, trust was however elaborated upon indirectly some times. Certainly the study confirms the fact that these parameters are key to manage in the collaborations, and that they furthermore impose everyday challenges in the shape of misunderstandings due to language barriers. None of the countries engaging in this particular offshoring collaboration has English as their native language. Based upon this rudimentary fact, it was concluded by the managers and engineers from respective country that communicating in English is one of the great sources to challenges arising. A point being made in connection to this statement which should be considered, is that it is the professional usage of English which needs the most improvement, i.e being able to formulate yourself both orally and in writing in an adequate manner.

However, it is not only the language itself which imposes challenges, as stressed by most of the engineers, there is also a certain influence from the cultural background of the different countries. This takes the shape of differences in hierarchies, preferred communication mediums, amount of personal decisions being taken, being more task- or relationship oriented etc. Although partly influencing the work indirectly, the cultural background of the Swedish, Romanian and Indian engineers seems to have minor impacts on the collaboration. All of the engineers represent a global leading company where values, governance and organization seems to be decoupled from national cultures. It can be concluded from the study that the English proficiency is the most

influential one in terms of communication. As stressed by both of the Indian engineers, the colleagues in Sweden generally have a high English proficiency, but one must also distinguish between everyday English and professional English. According to the interviewees small misunderstandings due to language barriers could be resolved quite easily, but if the lack of English proficiency was too profound, it would affect the whole project negatively. The study also concludes, maybe not surprisingly, that the lack of English skills is mostly associated with older employees in Sweden.

In terms of work processes, the company has continuously developed routines and standardized templates throughout the years. The processes seem to have been adopted widely by the organizations in respective country, however, considering the fact that the Swedes have only worked with offshoring for roughly five years, whilst the Indians have worked with offshoring towards other countries for decades, a lot is still to be improved and learned. The clearly most mentioned challenge regarding the work processes, was the ever shifting expectations and requirements from the Swedish project leaders, according to the Indian and Romanian engineers. Furthermore the offshoring engineers in Romania and India highlighted the fact that there was a lack of project management from the Swedish side in terms of project planning, -time scheduling, -governance and feedback loops. This point was also acknowledged from the Swedish side, confirming that the engineers in Sweden normally want to avoid management tasks in favor for engineering tasks.

In most of the offshoring collaborations it seemed that the above mentioned challenges in terms of communication, cultures influence and lack of project management, were relatively small. Representing a well-known company, the competence and experience among the employees are paramount. The aim with addressing the issues is not to claim that there are alarming faults, this study rather confirms that there are obvious challenges associated with offshoring collaborations which ought to be considered by the management. If doing so, the offshoring strategy should very much put the company in hand at a forefront position on the domestic market, separating themselves from the competitors. Currently there is a clear boom in the construction market in Sweden, which according to the managers in Sweden is seen as a perfect time to start up the offshoring apparatus since it's quite easy to find projects. In alignment with this situation it can be understood that the search for qualified staff is the primary goal, however, one can also question what will be the most important aspect when a downturn starts or a recession strikes?

Although the current study is based on a relatively small sample of participants, this work offers valuable insights into how the offshoring element is adopted within a company. Furthermore this study suggests that the main challenges might not necessarily only be associated with the differences in cultural background or English proficiency, but rather that the most important aspects are connected to the uniformity of work processes and project management skills. On the following pages recommendations will be given to the company in hand, and furthermore suggestions for further studies are given.

7 Recommendations

Based on the case study conducted in this master thesis some practical recommendations will be given by me to the company in hand, and possibly other companies engaging in offshoring collaborations, on how they could improve their work according to me. The recommendations takes their standpoint from the theoretical framework, the result from the qualitative interview study and the discussion.

1, Educate engineers in project management

Although having the same foundation of courses and methodologies at the universities in most countries, it's obvious that there are some significant differences. This case study reveals the fact that Swedish engineers lack project management skills, which might be taken for granted in other countries such as the U.S, U.K and India. Even though your primary work as an engineer concerns engineering tasks, project management in terms of resource planning, time-scheduling, governance, feedback loops and economical aspects are further considered to be normal in those countries. This does not appear to be the case in Sweden. In Sweden the engineers rather want to avoid these tasks and stick to the pure engineering according to the interviewees. However, since Sweden clearly have established a strategy where offshoring is seen as important now and ahead, my recommendation is that the organization in Sweden acknowledges the fact that when leading offshoring collaborations, the engineers must also embrace further project management skills, since it's expected and required by the Indian and Romanian engineers according to this study.

2, Inspire and coach senior engineers

Growing up with technology, global virtual platforms and friends worldwide is almost taken by granted by persons growing up in the 90's and later. These people have just, or are about to begin their professional careers. To them there is nothing strange with communicating with a person on the other side of the globe, to speak English, or to build virtual relations. But what about the generations which didn't grow up with technology and globalization around the corner? The people which might not be as comfortable with using technology and speaking English? If a company wants successful offshoring collaborations, certainly they need to involve the experienced employees which have been in the business for a long time. The younger generation will surely take over gradually, but until that happens, my advice, based on the fact that senior employees most usually struggle more with the usage of English and solely working in a virtual environment than younger persons, is that the company acknowledges this fact and coaches these individuals so that they can lead offshoring collaborations with their great knowledge and experience.

3, Standardize the Swedish expectations

There was a unison agreement among both the engineers and managers in respective country that the largest challenge associated with the offshoring collaborations, probably was that the expectations and requirements from the Swedes differed between each and every person and project. Which implies new learning curves and efforts to understand the new requirements when the engineers in Romania and India start with new projects. Surely, to adopt the Swedish regulations and standards uniformly in the whole of Sweden is one step, but the next step, which has to do with different expectations from each and every person, is a more difficult task. I do not have a concrete suggestion on how to solve this matter, which I think has to do with the fact

that the underlying reason probably is the shifting demands from all the final clients in Sweden. Maybe the Swedish requirements and the expectations are so different due to the simple fact that the final clients in Sweden differ in their requirements. If that's the case, the challenge is even larger for the company in Sweden regarding how to standardize the expectations. With prefabrication and modular construction increasing in popularity in Sweden, this might be one step towards unifying the requirements. Apart from this, my advice would be that frequent feedback is high on the agenda within the organization in order to spread an awareness, and therefore possibly find a solution in the long run.

4, Encourage video calls

To have some kind of relationship with the other persons in the team is important according to the interviewed engineers from all countries. If there are many team members or a short project it might not be possible or necessary to “build relations”, apart from the person you are most frequently collaborating and communicating with. Several of the engineers stated that it sometimes felt like working with a robot considering the fact that they had never engaged in a video call, therefore all they had to go with was a picture and their voice. It is probably not necessary to sit with video calls every time communication is present, in the same way as it is not necessary in domestic projects. However, drawing from the fact that these people sit in different countries in the world, with totally different backgrounds and norms, I think, that everyone would benefit from having had at least one video call where you can introduce yourself. Communication is so much more than only words (which stands for ca 7%), and as stressed by the interviewees it can be very difficult to interpret the tone or understanding when you only hear a voice. Why not just make a video call? Certainly it should be up to each and every team to decide if they want to have video calls or not during the project collaboration, but my concrete advice would be that the company sets a standard where a video conference/call should be held at the beginning of each and every new project. Whatever the agenda is, we are still humans and an introductory video call seems legitimate to me.

5, Set of time for compiling lessons learned

Time is always a constraint, which was stressed as a reason for not compiling enough lessons learned and feedback in this case study. But how is progress and improvements going to be made if no compilations are being made? Than the learnings are limited to each and every individual, at least for some while until our brain gets full of new information and experiences. I think it is especially important to compile lessons learned now during the early years of using offshoring as a strategy. My advice is therefore to consider this very rudimentary fact, i.e. to take some day or hours to reflect over the finalized project and compile lessons learned. Furthermore to value two-way feedback and set of time for that.

6, Be curious, embrace new research material regarding relevant subjects

In a world which is becoming more and more competitive and globalized for each and every year, continuous learning is key. This case study indicates that the company in hand is acknowledging this fact in the shape of having offshoring as a part of the company strategy in order to be relevant in the future ahead. New research areas and case studies are great sources for inspiration and should always be valued within an organization. My advice is therefore to keep staying updated regarding new offshoring

research, where adviceful information could be found. An example of an area which is highly connected to global virtual teams, is that of E-leadership.

7, Spread the word, get people to understand why offshoring is set as a top strategy

Changes often take long time, some people will always be the early adopters which in this case happens to already embrace the offshoring possibilities to India and Romania. But the crucial part is to reach that famous tipping point, were not only the few early adopters, but also the larger mass will start to understand the concept. So how can the organization spread the word among the skeptical and unaware employees? My advice would be to make the strategy as visible as possible. Spread the word on workshops, initiate lunch presentations, have information published on the company website (or at least the internal one), lift up positive projects. Get people to talk about it, engage those people which are skeptical. My reflection based on this particular case study is that the organization is still in their early years, but they are aware of this fact and are gradually increasing the awareness among the many employees.

8 Further studies

“The pursuit of knowledge is never-ending. The day you stop seeking knowledge is the day you stop growing” -Brandon Travis Ciaccio

This master thesis encompasses 30 credits, i.e. one semester of full time university studies. Having performed 11 interviews in total with representatives from Sweden, India and Romania, the thesis have gathered a good amount of data which was relevant for the endeavors of this particular report. With that being said, the road is open for the ones who wish to explore more within this area. Although there are large amounts of studies having been performed in general research areas such as operations-, international- and strategic management, there appears to be a relatively small amount of research having been performed connected to offshoring and global virtual teams, at least when it comes to the construction engineering industry. I think that there is a broad need for more studies being connected to construction engineering firms utilizing, or thinking about utilizing offshoring or outsourcing as a strategy. This case study have focused on one company, and furthermore only on one of the business areas within the company. It would be interesting to know if the characteristics differ between the different business areas, i.e. if some of them are more successful than others, and in that case why. It might also be interesting to interview employees which have been involved in the same particular projects, as this case has been one of a more holistic nature. Furthermore the area of E-leadership is something which I became very interested in during my thesis writing, i.e. relating to the fact that a whole “new” area is growing out of the traditional leadership theories in parallel with the development of a more and more globalized and digitalized world. Therefore it would be interesting with a study which focuses more on these aspects, i.e. what differs E-leadership from traditional leadership? And how can it be applied in an organization? The amount of interviews in this study was constrained to the time period, in order to get a more generalized view it would be desirable to interview more people, especially more engineers in my opinion. Or possibly just focusing on one country instead of two. Another advice for further studies would be to investigate the economic model behind offshoring strategies. Furthermore it could be interesting to conduct a survey involving several companies in a particular city or country to get an overview of the current situation, for example in Gothenburg or in Sweden.

Feel free to contact me on LinkedIn if you found this study to be of interest, or if just being curious about the area of offshoring and want to discuss ideas with me.

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