

Managing coordination in global projects

- a Case Study at Tetra Pak Processing Systems

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Abstract

- Title:** Managing coordination in global projects
- a Case Study at Tetra Pak Processing Systems
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- Issue of study:** A global company as Tetra Pak Processing Systems works with large and complex projects with several involved people with different knowledge and backgrounds. The globalization has led to more globally run projects and increased competition on the market. The problems regard the globalization and project run geographically distanced from the project team has resulted in several issues:
- Lack of communication and cooperation between the pre project team and the project team.
 - Projects that can't deliver within budget.
 - Misunderstandings between team members.
 - Different relationships to the customer (Sales Project Leader vs. Project Manager).
 - The project team members don't see their contribution to the total outcome of the project and only see their part and sub-optimizing.
 - Conflicts with internal suppliers.
 - Lack of information.
- Purpose:** The purpose of this Master Thesis is determined by the identified problems. The objective of this thesis is to explore current situation of global projects, to highlight important cause-effects relations and generate recommendations for continuous improvements to coordinate global projects successfully.
- Method:** This study is conducted through an iterative process and methodology. Theoretical research and empirical gathering has resulted in qualitative empirical gathering. Based on the initial case analyses a final analysis has been conducted, and similarities and differences of how to run the same kind of projects have been identified across the participated case projects. The outcome of this Master Thesis is ten lessons learned in best practice of how to run and coordinate global projects.
- Conclusion:** Coordinating global projects with resources from all around the world is more dependent of the team members' background, attitude and personality rather than cultural differences. The projects that gave the

apprehension of working in a team instead of a group of people resulted in more successful projects. The projects that were the most complex to manage, with resources from different offices and a customer located in different continent, were the most successful. The projects were managed well because of teamwork, clarified scope and responsibilities. In all the cases the focus is to understand the customer and dependent of which market company, the customer-focus is fluctuating.

Key words: Project, Project Management, Process, Organization, Time zone, Culture, Language, Location, Globalization, Coordination, Communication, Complexity, Team work.

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The process of writing this Master Thesis has been more interesting and stimulating than we ever could imagine. We are two Technology Management master students at Lund University, Sweden. This report is a study of 20 weeks where we decided to combine our different backgrounds. Sebahate is a biotechnical engineer and Pernilla study Business School, both doing their master degree in Technology Management.

This study was made at Tetra Pak Processing Systems, to whom we are forever thankful for providing us with resources and support.

We want to thank Tetra Pak Global Projects, where this amazing journey started, and our company supervisor Karl-Gunnar Axelsson. The outcome of this thesis would not have been the same without the involvement of Tetra Pak market companies. We want to send our regards to the contact persons at the market companies who decided to participate in this study. To start with Ashutosh Manohar (Tetra Pak India), Andy Garotte (Tetra Pak Singapore), Philippe Farrugia (Tetra Pak France) and JensKrag Olesen (Tetra Pak England). We also want to thank more than 80 persons worldwide that in some way were involved in our thesis, for participating in the study and for their time. Also thanks for showing us a good time and making us feel like home no matter what Tetra Pak market company we visited.

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Brazil, May 3, 2010

Sebahate Bunjaku & Pernilla Ewaldh

Definitions of terms and acronyms

Brown field- A brown field project is an existing plant that is going to be reconstructed or to increase the production.

Cluster – Several market companies are gathered to a cluster and respond to cluster leader.

Global Projects- A department at Tetra Pak Processing Systems that are supposed to handle all L3 projects around the world, but recent years the market companies are progressing and runs these projects on their own. Global Projects support the market companies and provide them with the right competencies and resources.

Green field - A new plant.

L2 – Medium size projects, classified by price and complexity.

L3 – Project that are in the highest category of price and complexity.

Market Companies – Tetra Pak offices are in countries around the world to be near the market.

Meeting Place – A software communicating tool (non- physically), but you can see the participants' work and have access to each others documents.

Minutes of Meetings – Notes of the meetings.

Plant solution – Solution for the plant; flow chart, material balance, automation, process design etc.

Pre project – Is the sales phase and includes all the processes for the customer needs until the contract is signed. (UCC- Understand, Create, Convey)

Process – Tetra Pak works in processes to guarantee the quality of the work.

Project – Includes all the processes after the contract is signed, until the project is closed. (Deliver phase)

Project Engineer – Process Engineers do all the engineering work like an automation and process engineer.

Project Leader – The Project Leaders are responsible for the engineering.

Project Manager – Is responsible for the project in general, maintaining good relationship with the customer and keeping the margin, time and quality on track.

Sales Leader- Is responsible for the pre project, including the contract and the budget.

Technical Coordinator- Coordinates all technical issues and resources in the project.

Tetra Pak Plant Master – A Tetra Pak automation platform for the engineers to programme on.

Variation order – An extra order in the project that is outside the contract.

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1 Introduction

This chapter gives an introduction to the thesis, including background, problem identification and purpose. Thereafter, focus and delimitations will be discussed and presented.

1.1 Background

The business environment is becoming more globalized and challenging. These changes force companies to constantly evaluate their competitive position on the market and to search for innovations and new competitive advantages.¹ Companies have to meet customer's expectations, new technologies and the growing global competition.² Lately companies have been more strategically and found more tactical ways for maximal profit in their way of doing business. To respond to competitive pressures, companies need to strengthen their focus and to shorten their cycle times, increase service level, lower their costs, increase quality and other performance measures. Companies have to suit their strategy and become more customer-driven.³

Organizations have started to implement process oriented activities as an overlapping pattern to improve functions, and hopefully be more competitive with their process driven strategy. Business processes can be seen as a set of interrelated tasks flowing throughout the organization leading to value creation for the customer. It has become a popular way of working because of the main focus on the customer.⁴ The concept of business processes has originated in the early 1990s and has achieved popularity amongst businesses in a very short period of time. The concept is based on an overview for the organization in projects, from the conceptual stage to final product. Many of the current business processes were designed for a world which required a different set of competencies than those that are needed today. It is not surprising that old processes no longer fit with today's competitive requirements. Even if companies have access to several of theories about successful business processes, it is hard to implement them successfully in reality. According to Hammer, *"Coming up with the ideas is the easy part, but getting things done is the tough part"*.⁵

To work in project models have received increased attention in recent years as an organizational form to integrate diverse, specialized intellectual resources and expertise. Companies have become more globalized and borrow resources worldwide to acquire the right competencies.⁶ Teamwork is one of the central elements for companies' decentralization, hierarchies are flattened, competencies and responsibilities are shifted down and another type of coordination is required.⁷ Several of researches are done in this subject and the interest of coordination global projects is high. In current studies the situation of global projects is discussed from managers' point a view, this study will go down in the hierarchy and analyze from the team members' perspective.

¹Boudreau, M-C., (1996), *Going Global: Using information technology to advance the competitiveness of the virtual transnational organization*, JSTOR: The Academy of Management Executive, Vol.12, No.4.

²Adesola, S. and Baines, T., (2005), *Developing and evaluating a methodology for business process improvement*, Business Process Management Journal, vol.11, no1, pg. 37-46.

³Kaplan, R. B. Et al., (1991), *Core process design*, The McKinsey Quarterly, published: March 22, 1991.

⁴Tehrani, A. and Darani, E.H., (2009), *Business Process Reengineering: A Holistic Approach*, 2009 International Conference on Information and Financial Engineering, IEEE, pg. 79-82.

⁵Jeston, J. and Nelis, J., (2006), *Business process management: practical guidelines to successful implementations*, Elsevier Ltd, Burlington., pg. 3.

⁶Sydow, J. et al., (2004), *Project-Based Organizations, Embeddedness and Repositories of Knowledge: Editorial*, Organization Studies, vol:25 No9 pg. 1475-1489.

⁷Minssen, H., (2006), *Challenges of Teamwork in Production: Demands of Communication*, Organization Studies, Vol27, No1, pg. 103-124.

1.1.1 Tetra Pak Processing Systems

Tetra Pak Processing Systems has been contacted as Host Company and has provided with information and resources for this study. They are of interest for this study since they are globally established and work worldwide with projects that require global coordination. The involvement is through the entire process from conceptual design to start-up and service. Their goal is to create competitive plant solutions in cooperation with their customers. Tetra Pak Processing Systems' responsibility is to implement every project as agreed and satisfy the customer, and at the same time keep the cost budget and deliver within time.⁸ Tetra Pak is a well established company and one of Tetra Pak's competitive advantages is their mature working processes and brand name. They sell on quality and performance of their solutions. They also have the benefits of the market companies' act on a local market and are near the customer. They become very competitive since their Sales Managers are local and if the market company are not able to handle the project on its own, they can acquire support and resources from other Tetra Pak companies.

1.1.1.1 The Tetra Pak Business Approach

Tetra Pak's internal Business Approach strives to work in process thinking instead of functional. The purpose of Tetra Pak's Business Approach is to secure the quality of the outcome. Tetra Pak has a vision of a global standardization of how to run business and processes to facilitate the work worldwide. The project process is divided into four steps that starts from first contact with the customer until the customer have a new fabric running. The four phases are to understand, create, convey and deliver (UCCD), can be seen in Figure 1.⁹



Figure 1 - Tetra Pak's Business Approach

The three first phases (Understand, Create and Convey) are called the pre-project and/or sales phase while Deliver is called the implementation and/or project phase. During pre-projects, a project plant solution fit with the customer's needs is created. Market companies close to the customer take care of the sales efforts, if the project is out of capabilities to deliver Tetra Pak Global Project will support or take over the project totally. The aim of the three first phases is to sign a contract with the customer. After the contract is signed it is time for the implementation phase. Each of the steps will be described in more detailed below. As mentioned earlier this is Tetra Pak's internal processes, which have been questioned by employees and can be hard to understand and fulfill.¹⁰

Understand – In this phase it is important to understand the customer's needs and objectives. This is the initial contact with the customer and the customer expresses its needs and interest. This process transfers the customer's needs to technical requirements.

Create – In this phase a solution is developed to meet the production performance requirements based on customer's needs. These are initial drawings of what will be the Plant

⁸ Karl-Gunnar Axelsson, Director Global Projects, Tetra Pak, Lund, Sweden 2010-04-16.

⁹ Claes Fahlén, Resource Manager Sales Support, Tetra Pak, Lund, Sweden 2009-10-29.

¹⁰ Tetra Pak (education) 2009-11-03.

Solution for the customer. The overall equipment and functionality should be included. The different alternatives are then simulated and the most suitable solution is suggested for the customer.

Convey –The customer hopefully decides to go ahead with one of the solutions from Tetra Pak and a contract is signed in this phase. In the contract, the solution and different responsibilities between Tetra Pak and the customer are specified, the agreed price and a time plan is included.

Deliver – In this phase, the contract should be delivered according to the agreements. This phase include detailed engineering work, procurement of components, shipping and custom clearance. In the end of the deliver phase, the installation of equipments is done and tested for agreed plant performance.

1.2 Problem identification

A global company as Tetra Pak Processing Systems is working with large and complex projects with resources of different knowledge and backgrounds. The globalization has lead to more multicultural projects and increasing competition on the market. When different backgrounds and competences are mixed in a project team, the project outcome can be affected. It is critical for a project's profit, to manage and coordinate differences successfully among team members. The organizations are working more global, which increase the global spread of resources and increase the affects of different backgrounds. Together with employees from Tetra Pak Processing Systems in Sweden, several of problems have been identified through the initial empirical gathering from interviews, educations and intranet. Several organizations that act on a global market face problems regarding the coordination and communication across geographically spread team members. Culture has become a common focus area when discussing globalization and is also something that is easy to blame when things go wrong in global projects. This study will evaluate globally run projects from a wider perspective and try to find the reason behind in problems to coordinate global projects. The identified problems regarding globalization and coordination worldwide for Tetra Pak Processing Systems can also be identified in other large international companies.

- Lack of communication and cooperation between the sales team and the implementation team.
- Projects that can't fulfil the project objective on time and performance.
- Misunderstandings between the team members.
- Different relationships with the customer (Sales Manager vs. Project Manager)
- The project team members don't see their contribution to the total outcome of the project and only see their part and sub-optimizing.
- Conflicts with internal suppliers.
- Lack of information.

1.3 Purpose

The purpose of this Master Thesis is determined by the identified problems. The objective of this thesis is to explore current situation of global projects, to highlight important cause-

effects relations and generate recommendations for continuous improvements to coordinate global projects successfully.

1.4 Focus and Delimitations

This Master Thesis focus on coordination of team members in the projects and how they interact and communicate internal in the Tetra Pak organization. The customer perspective and thoughts regarding the project team and Tetra Pak in general, will be included. This thesis does not focus on technical complexity in the projects.

The empirical research will be gathered during visits at selected market companies (Sweden, India, Singapore, France, England and Brazil). The goal was to investigate two projects at each market company and the market companies was selected in cooperation with Tetra Pak Processing Systems. Because of time limitations only one project has been evaluated in some of the market companies. The market companies were chosen on the criteria to run large and complex projects, geographically spread and cultural differences. The projects have been selected by managers in each market company of their interests and people available for interviews.

1.5 Outline and Disposition

This Master Thesis is a report of seven chapters including exhibits. The content in each chapter is presented briefly.

Chapter 1: Introduction

This chapter gives an introduction to the thesis, including background, problem identification and purpose. Thereafter, focus and delimitations will be discussed and presented.

Chapter 2: Methodology

This chapter presents the process of the study and choice of selected case studies, theories, and methods. The working process and research methodology will be presented, as well as data generating and methodology of analyze. This chapter will end up with a discussion regarding sources and their reliability and validity.

Chapter 3: Theories

This chapter presents the theoretical framework of this Master Thesis. Each theoretical area is presented further in detail to provide the reader with a greater understanding of the theoretical framework. These theories are chosen to match the empirical gathering and will be the base for the analysis.

Chapter 4: Case Studies

This chapter presents the empirical gathering for the case studies. One case is one project investigated and a brief presentation of the projects is presented. Finally an initial analysis is conducted based on the theories and empirical gathering to analyse the complexity and the outcome of each project.

Chapter 5: Analysis

In this chapter the final analysis will be presented. That includes a summary of all the initial analyses and presentation of the similarities and differences among the projects and market companies of how to run the same kind of projects. This chapter presents also the analysis of the five dimensions Language, Organization, Culture, Time zone and Location and which of these dimensions are most important to consider in project management.

Chapter 6: Reflections and Conclusions

This chapter presents a summary of the analysis and a conclusion regarding the findings. Ten lessons learned from the case studies will be presented as a final summary of how to run global projects more efficient. The whole Master Thesis is focused on the team members' way of working and so is the "best practice" for coordination global projects successfully.

2 Methodology

This chapter presents the process of the study and choice of selected market companies, theories, and methods. The working process and research methodology will be presented, as well as data generating and methodology of analyze. This chapter will end up with a discussion regarding sources and their reliability and validity.

2.1 Working process

To be able to do this study Tetra Pak Processing Systems was contacted as Host Company since they work worldwide with global projects. Initially the scope and purpose of this thesis was developed in cooperation with Tetra Pak Processing Systems. The scope has been changed during the thesis because of new information and insight in what the real problems in the organization are. Since the common factor for the problem areas is the project team the purpose has always been to focus on the team members, their way of working and following Tetra Pak Business Approach (explained in page 9-10). There were directions from Tetra Pak Processing Systems to make the project team members work closer together as in a team, and interact more efficient globally with other market companies. This study is a qualitative study based on first sources where the interviewed persons tell their perspective of the issues. Therefore as many team members as possible that were available were interviewed, to acquire an overall image of the project and at the same time decrease the subjectivity. The purpose with a qualitative study is to acquire a depth in the study. Evaluating nine projects also quantifies the same issues that were common in each study, so that a problem with coordination globally is not unique for a project. The benefits of evaluating different projects are to find different ways of working among the market companies and find best-practises, so each project contributes to new findings, since they have been managed differently.

2.1.1 Initial empirical gathering

The initial empirical research started with meetings with persons at Tetra Pak Global Projects, Sweden, which clarified Tetra Pak Processing Systems' organization. Interviews were held with Tetra Pak Global Projects Director, a Process Project Leader, an Automation Project Leader and a Sales Manager to acquire knowledge of their business. The Tetra Pak Business Approach is relatively new and is still establishing in their routines and daily work. Educations regarding the Business Approach were held and new information was found of relevance for this Master Thesis. In cooperation with Tetra Pak Global Projects, Sweden, a benchmark to other Tetra Pak market companies was of interest to learn from each other, and to acquire best practice how to manage these projects as efficient as possible.

2.2 Theoretical Research Methodology

The research methodology has been an iterative process and can be summarized in the picture below (Figure 2). Initially the theoretical research was based on the initial empirics from the first meetings. This resulted in finding other theories related to the new findings and other focus areas to investigate during the interviews. Initially the Master Thesis was focused on cultural differences and communication in the project team. This is not excluded but has been developed to being a part of the total perspective.

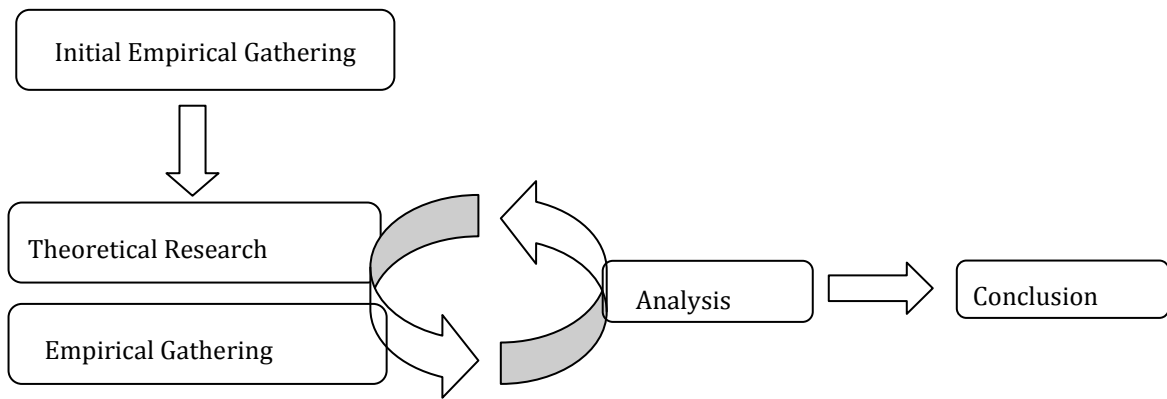


Figure 2 – Research Methodology Process

When participating in Tetra Pak’s internal education, an insight of their internal processes was acquired. These educations were in a form of presentations from the Process Owner in Sweden, who presented the way Tetra Pak Processing Systems should work with their Business Approach in the organization. Their Business Approach is described in this report (Chapter 1), and the education has been a base for the Master Thesis and focus decided to be in this area.

2.2.1 Creating a process for empirical gathering

Before travelling and investigating the market companies some preparations needed to be done. Except from the continuous theoretical studying the documentation relevant for this study was defined. Customer satisfaction, minutes of meeting, project contract, initial budget and updated cost sheet are relevant information for this study. The customer satisfaction is used to give an apprehension of how satisfied the customer is with the project and the cooperation with the project team. In the customer satisfaction comments for improvements regarding the project could be found, from the customers’ perspective. The minutes of meetings are relevant since information, changes regarding the project and agreements with the customer that are outside the contract could be found. The minutes of meeting should be an outcome from every meeting to transfer information to everybody involved. To be able to understand the project, the deliverables, the complexity and the expectations from the customer the contract was of interest. One of the dimensions when clarifying if the project is successful or not is the financial outcome, why the initial budget and the updated cost sheet is relevant to make a judgment. Especially the cost for the hours of the project team members has been focused to see why the initial budget and actual costs differ. This documentation was selected of interest and relevance for this Master Thesis.

Before the actual empirical gathering questions for the interviews was created. The interviews were held more like discussions where the interviewed person told its own story and perspective. In combination with creating the interview questions and selecting the relevant documentation to review, the projects was chosen in coordination with Tetra Pak Processing Systems. Each of the chosen market companies differs in some way from each other and contributes with new finding to this Master Thesis.

2.2.2 Empirical gathering

The market companies was selected based on their geographically placement and their business. Their business needed to manage large and complex projects to be of interest for this study. The chosen market companies have been selected in advice with Tetra Pak Processing Systems, Sweden. All of the market companies run large and complex projects, and can contribute with new findings. Tetra Pak is of interest of this study since they are well established on the global market and face problems with coordination and communication globally daily. The purpose with evaluating nine projects was to see as many similarities as well as differences in each project to find best practise and opportunities for improvements.

The market companies involved in this case study are Tetra Pak India, Tetra Pak Singapore, Tetra Pak France, Tetra Pak United Kingdom and Tetra Pak Brazil. The projects chosen are either run by the market company on its own or in cooperation with another market company. Tetra Pak Global Projects is not considered as a market company since they do not act on a local market. Tetra Pak Global Projects works worldwide and runs projects when the projects become too large and complex for the market companies to manage on their own. Tetra Pak Global Projects also sell their competencies and services to the market companies and hire out their people to other projects. They have in some of the case studies in this thesis had one or several persons involved in the projects managed by the market companies. The size of the projects that are of interest for this study should at least be L2.

2.2.2.1 Interviews

The main empirical gathering has been based on interviews with the team members in the selected projects. Interviews have also in some of the cases occurred with persons on a higher level in the organization and with the customer. A summary of the interviews with different persons can be seen in Table 1. Under the category Project Leader, all Project Leaders e.g. Automation Project Leader, Process Project Leader and Sales Leader are included. The category other can be customers, Cluster Leader, involved in project board or similar. Before the interviews were held relevant documentation was read and analyzed. In some cases the mail correspondence with the customer has also been read.

Table 1 - Interviewed persons in each case study

	Project Manager	Project Leader	Engineers	Other
Case A	1	5	5	3
Case B	1	2	2	1
Case C	2	3	2	3
Case D	1	2	3	2
Case E	1	4	3	3
Case F	1	4	4	2
Case G	1	3	3	1
Case H	1	3	3	2
Case I	0	3	4	2

The Master Thesis is an outcome of totally 84 interviews. All of the interviews have been recorded and an interview has approximately taken one hour. The interviews reliability and validity will be discussed below. All the interviews for each project have then been transcribed, summarized and finally used for the analysis. The goal has been to hold the interviews and discussions face-to-face and more than 90% of the interviews are face-to-face. Interviewing many persons in each case study with different roles and background has decreased the subjectivity of this study. Travelling to the market companies has except from holding the interviews face- to-face, resulted in observing the person interviewed and the

organization. Some of the interviews have been held by telephone, and this has affected the validity of the interview. It is difficult to hold this kind of interviews by phone, where you can't see the body language and misunderstanding or misjudgements increase rapidly when you can't see the person in the front of you. This has been considered during the analysis.

2.2.2.2 Document studies

Relevant documentation for the study was read. The information that was important was primarily the minutes of meetings, cost control sheets, and customer satisfaction. The minutes of meetings are not always complete or written for every meeting, which should be the case. In some of the cases the customer satisfaction was not done so the mail correspondence between the customer and the Project Manager was read instead. This was to get an apprehension of how satisfied the customer is with the project and the project team. Some of the projects have done several customer satisfactions while some of them have done none. It varies between the market companies.

2.2.3 Tutor meetings

During the Master Thesis continuous tutor meetings with supervisors from Lund University, Sweden, have occurred, as well as with stakeholders from Tetra Pak. These meeting have been value adding for the thesis with guidance and discussions regarding the chosen projects and findings.

2.3 Method of Analysis

The purpose of benchmarking nine projects is to see similarities and differences in the market companies on how to run projects and also to give a total view of how Tetra Pak Processing Systems runs projects. Initially every case will be analyzed on its own based on the empirics and theory researched. Each case will be analyzed from five dimensions, (see chapter 3) to describe and give an apprehension of how complex the project is, how the project team has managed the complexity and finally present the outcome. Later on the case analysis will be compared to each other and end up with best practice of managing coordination in projects for the whole Tetra Pak Organization. One of the difficulties with doing this kind of analysis is to decrease the subjectivity when analyzing.¹¹ Another difficulty has also been to interpret the information from the team members. Most of the interviewed persons has been working in the same organization for a long time and has its own thoughts on what the problems are and what is considered as a successful project. To be able to understand these situations better we needed to be aware of this and see it from an outside perspective.

2.4 Reliability & Validity

In this report, a clear majority of Tetra Pak internal sources are used, interviews with customers have been fewer and the thesis' validity can therefore be discussed. To reduce the subjectivity, persons with different backgrounds, roles and different levels in the organization have been interviewed. To hear different perspectives regarding same case study makes this study more trustworthy and increase the validity.

The research and findings have continuously been discussed to secure the working process and methodology for this study. The information collected as theory is from multiple sources to minimize the risk of using untrue sources and also to give the authors several of insights. The interviews have been recorded and transcript afterwards to not lose any information. During the interviews both authors have participated to decrease misinterpretations and increase the reliability. The interviews have been one-on-one interviews; since the questions

¹¹ Creswell, J. (1998). *Qualitative inquiry and research design: Choosing among five traditions*. Thousand Oaks, California: Sage Publications.

have touch sensitive areas for both an internal and external point of view and group interviews tend to be less open than interviews one-on-one.

To minimize the risk of wrong assumptions the case studies will be focused and analyzed separately based on their different backgrounds. Afterwards an overall analysis with findings and conclusion will be more reliable. The reliability of the documentation can vary since some of the documentation from the market companies was on the local language. Some of the market companies have also recently started working in SAP, which affects the cost sheets and the cost control. Regarding the mail correspondence with the customer the mails that seemed to be most positive was presented, which affects the reliability of the information. To strengthen the reliability of the collected data, the authors will ask questions formulated in different ways in order to make sure that the correct information will be provided. This will also avoid the team members discussing “the right answer”.

3 Theories

This chapter will present the theoretical framework for this Master Thesis. Each theoretical area is presented further in detail to provide the reader with a greater understanding of the theoretical framework. These theories are chosen to match the empirical gathering and will be the base for the analysis.

3.1 Project Theories

A basic definition of a project is suggested from Project Management Institute (PMI) “a temporary endeavour aimed at achieving some unique set of outcomes that meet or exceed the needs and expectations of our key project stakeholders.”¹² This definition differ from ISO 10006 where the description is “Unique process consisting of a set of coordinated and controlled activities with start and finish dates, undertaken to achieve an objective conforming to specific requirements, including constraints of time, cost and resources.” The definition from PMI is more concise and to the point and includes that all projects deliver a product, service or other measurable end result. The ISO 10006 definition focuses on the process getting to it.¹³ These differences can be confusing for those who are working in projects, the organization should be aware of which definition is used and how to achieve it. Worth considering is also different kinds of projects, when the outcome is concrete and the degree of visibility of the project.¹⁴

Projects are often according to traditional theories represented by three main criteria. These criteria are time, cost, and quality and it is common to illustrate these in a triangle (Figure 3). The reason for illustration these criteria as a triangle it is due to the fact that in a project, these three sub-objectives cannot obtain fulfilment at the same time; focus on one or two and the third will be subordinate. These three criteria will affect each other, if the scope changes, then the time and cost will be affected as well. Several factors could affect the project and its time, cost and quality. Factors that have a fundamental affect for the project are organizational politics, involved project team members´ personal objectives, external environment, recession, resource allocating, leadership, and stakeholders.¹⁵

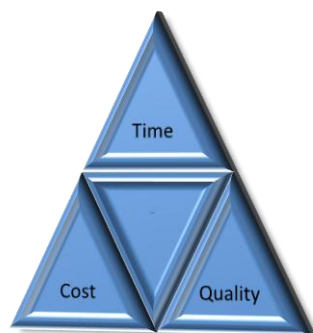


Figure 3 - The project triangle

¹² Moran, R. T. and Youngdahl, W. E., (2008), *Leading global projects*, Butterworth Heinemann, Oxford, United Kingdom, pg. 6.

¹³ Stanleigh, M., (2003), *Combining the ISO 10006 and PMBOK To Ensure Successful Projects, From Crisis to Control: A New Era in Strategic Project Management*, Business Improvement Architects.

¹⁴ Briner, W. et al., (1996), *Project Leadership*, Gower Publishing Ltd, Aldershot. p. 55.

¹⁵ Briner, W. et al., (1996), *Project Leadership*, Gower Publishing Ltd, Aldershot. pg. 4.

The time is determined and measured by a time plan that is created for the project. In the beginning of projects a budget for the cost is estimated and in the end of the project the actual cost can be compared to the budget. The ability to influence costs is greatest in the early stages of the project, which makes an early and clear scope definition critical. After project completion an evaluation is performed to verify the results and also compare the financial results to estimated budget. When measuring the quality of the project's outcome there are several aspect that has to be considered. The most important are the following:¹⁶

- *Customer satisfaction* - The customer requirements must considered by understanding, evaluating, defining and managing the customer's expectations. Customer satisfaction is considered to be one of the most important competitive factors for the future and one of the best indicators of a firm's future profits.
- *Prevention over inspection* - The cost for correcting identified errors increases over project time. Important to have procedures so that errors can be identified and taken care of as early as possible. It is about preventing the errors instead of correcting them first after inspection.

Empirical definitions of project are quite vague and differ from the triangle theory definitions, since it can be hard to fulfil the theoretical expectations. The theory suggests three measurements to evaluate the project success; conducted studies indicate intangibility measures as well. Projects are done by performance and not always an object that can be seen, felt, tasted or touched. Because of intangibility it is difficult to develop desirable, comparable and measureable measurements.¹⁷ Projects as temporary endeavour refer to mixing different specialist competencies in a group, which have to achieve a certain goal or carry out a specific task, within limited resources as cost and time. PMI refer the endeavour to that the project has to have a start and an end.¹⁸

It is proven that working in a project has several of positive outcomes, but often the more negative results are forgotten. Work within a project is highly focused, fast and independent knowledge, which is the same as project work wants to achieve. When evaluating these three affects of project work, these outcomes can be ambiguous. Focused means less care about things outside the project, working fast means little time to reflect and document experiences and being independent means develop knowledge within the project which is not available for the rest of the organization. Much of the project management literatures tend to assume that the project team always is working with clear functional responsibilities and that positive outcome is always achieved through project work. Findings from researches demonstrate three features of project-based organizations; decentralization, short term emphasis on project performance and distributed work practice.¹⁹

Projects are the connection of strategy and reality for companies, therefore in order to connect successful global strategies, it is important to be able to successfully implement projects on a global market. The general purpose of many global projects is to achieve global

¹⁶ Project Management Institute (2004), *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)* – Third Edition. pg. 190-191.

¹⁷ Lievens, A. and Moenaert, R. K., (2000) *Project Team Communication in Financial Service Innovation*, Journal of Management Studies, Blackwell Publishing., vol.37, No5, pg. 733-766.

¹⁸ Stanleigh, M., (2003), *Combining the ISO 10006 and PMBOK To Ensure Successful Projects, From Crisis to Control: A New Era in Strategic Project Management*, Business Improvement Architects.

¹⁹ Bresnen, M. et al., (2004), *Embedding New Management Knowledge in Project-Based Organizations*, Organization Studies, Sage, Vol25, No9, pg. 1535-1555.

strategic outcomes in a local environment. Global organizations are required to manage local rules and regulations and at the same time international standards. A research done by the international revision firm, KPMG has identified a selection of challenges in global projects and recommendation to avoid these, summarized Table 2.²⁰

Table 2 - KPMG's identified challenged and recommended solutions

Challenges	Recommended solution
Logistics, geography, time zone and jurisdiction	Leverage traditional organizational structure and processes, but balance physical, logical, functional and political dimensions for selecting the project team.
Culture and Language	Continuously invest in understand the detail and avoid to generalize or only analyze during early project planning
Stakeholder engagement	Create a formal and strict process to help address stakeholders in all locations and at all organizational levels.
Solution design	Collaborative approach to architecture and solution design, defined what must be standard and where local flexibility can be delivered.
Governance challenges	Consider if the normal corporate processes for funding and performance measurement, comprehensively addresses the complexity introduced by a global project. Establish an objective process to assess performance.

One of the key factors for implement global project successfully is to think global, but act local to align and integrate stakeholders within the project. Three levels of geographical and focus area for each level is described in the list below.²¹

- **Global:** Vision - Clearly establish a connected vision in the organization.
- **Regional:** Leadership and Management - Maintain the global picture and also accommodate local sensitive.
- **Local:** Delivery - Clear accountability and necessary empowerment to deliver right resources

3.1.1 Complexity in Projects

The project-based world is increasing with projects, globally distributed teams, multitasking and at the same time increasingly complexity. This increased complexity could make global projects more difficult than a local project and project planning becomes more important. Effective global projects require project planning to include different locations, languages, time zones, cultures, and organizations. To investigate the complexity of a project these five different dimensions will be used and can be illustrated in Figure 4. In this report the project evaluation will be from the supplier's perspective.

²⁰ Zarrella, E. et al.,(2007), *Managing Global Projects, Observations from the front-line*, IT ADVISORY, KPMG.

²¹ Ibid.

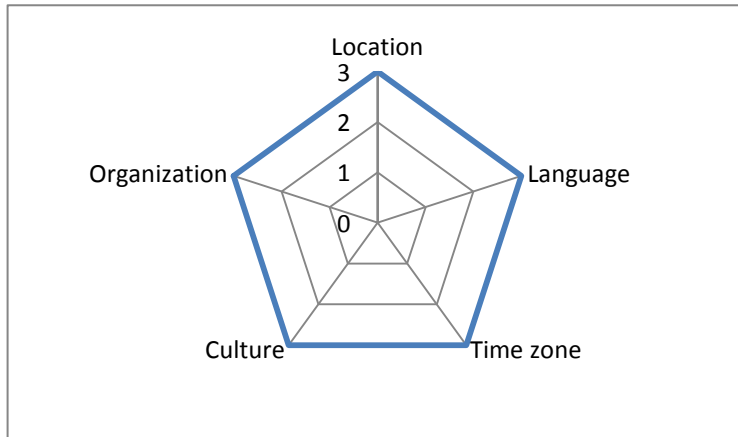


Figure 4 - Five dimensions for evaluating complexity in projects

The dimensions are further explained in this chapter. The dimensions above can be presented by a radial chart where the centre represents the lower complexity level in projects. The chart also shows where the project have their highest complexity and a strategy to handle this is needed.²² In the case analysis later on, three levels, low, medium and high, are used to illustrate the complexity of the project.

3.1.1.1 Locations

When the team is located in the same place, it is easier to communicate and positive effects of the influence of body language and social, informal interaction are achieved. When the distance among the team members is such that travel is required for physical meetings, the use of phone and video conferences becomes essential and a strategy to ensure high level of effectiveness of the communication is needed. To be located in same place has been identified as an important factor for knowledge integration among project team members as well. It is important to develop a common language and understanding to achieve great knowledge sharing, which is more difficult when team members are located in different geographical areas.²³ Studies have been proven the importance of eye contact in work; team members can then quickly come together for short meetings or share information easily.²⁴

In cases where real meetings are necessary, costs and time for travelling are extremely high while jetlags can reduce efficiency. These disadvantages can decrease commitment to the project.²⁵ Travel and accommodation is a rather obvious implication, despite studies it indicates contributors feel as this is poorly planned.²⁶

Lately range of communication medias have been available, common and popular to use for cross functional projects. Still is face-to-face is regarded as the most profitable form of interaction. When interacting face-to-face generally solves problems and completes tasks

²² Binder, J., (2007), *Global project management*, TJ International Ltd., Cornwall, United Kingdom, pg. 2-3.

²³ Scarbrough, H. et al., (2004), *Project-Based Learning and the Role of Learning Boundaries*, Organization Studies, Sage, Vol25, No9, pg. 1579-1600.

²⁴ Minssen, H., (2006), *Challenges of Teamwork in Production: Demands of Communication*, Organization Studies, Sage, Vol27, No1, pg. 103-124.

²⁵ Virtual Project Management (VPModel) – a knoll by Dimitrios Lirsikakis <http://knol.google.com/k/dimitrios-lirsikakis/virtual-project-management-vpmodel/3ib8exvrc87n4/9> (Acc 2010-04-19).

²⁶ Zarrella, E. et al., (2007), *Managing Global Projects, Observations from the front-line*, IT ADVISORY, KPMG.

faster than when communications tools are used.²⁷ It is concluded that the communication tools on market today are just complementary coordination tools and can not replace the importance of face-to-face meetings.²⁸

Previous theories explained in this chapter do not consider involved parts outside the project team. It is not only the location for project team members that affect the project, also the location of the customer and supplier of equipments to the project. The importance of face-to-face should have the same influence as within the team and also the increased cost if travel is required.

3.1.1.2 Languages

International companies usually establish a common language for exchange of information. The way people communicate is highly depended on their own native language and how secure they feel with the established language in the organization. Even when the team members use a common language, each individual has different ways in comprehending and manipulating the common language.²⁹ Within projects it is important to not only think about ethnic language but also technological (in-between different sub-project areas, e.g. automation and process or process and building). Professional translators to facilitate communication and manage language differences are available on the market, but these are not considered as perfect.³⁰

During the two last decades there has been a paradigm shift in the perspective of communication, from this more mechanistic, instrumental perspective to a more humanistic, relationship-based model of communication. The effectiveness of communication is determined and influenced by the overall quality of communications between the involved persons within the project. The quality of communication is described as the degree of relevant and understandable information that reaches the intended source or receiver in time.

Intra-project communication refers to the communication flows between the project team members. Communication and cooperation between team members during a project is essential considering the divided responsibilities for the ultimate customer satisfaction. Results from studies assumes communication to be a vehicle where team members from different departments exchange and share relevant information. Communication should take into account the importance of interaction not only between team members, the interaction with the customer and supplier is important as well, called extra-project communication. Extra-project communication refers to persons who are sources and receivers for information outside the project team. The quality of the interactions with the supplier and customer will be largely determined by the effectiveness of managing external and internal communication flows during the project, a communication strategy is therefore useful. It is very essential that communication is clear and transparent, especially within cross cultural environments. A gap in communication can result in misstatements or preconceptions that could endue conflicts or damages in projects.³¹

A research on decision making shows how important communication is to improve the performance of people. The outcomes from group decisions were clearly higher than

²⁷ Sapsed, J. and Salter, A., (2004), *Postcards from the Edge: Local Communities, Global Programs and Boundary Objects*, Organization Studies, Sage, Vol25, No9, pg. 1515-1534.

²⁸ Sydow, J. et al., (2004), *Project-Based Organizations, Embeddedness and Repositories of Knowledge*: Editorial, Organization Studies, vol:25 No9 pg. 1475-1489.

²⁹ Virtual Project Management (VPMModel) – a knoll by Dimitrios Lirsikakis <http://knol.google.com/k/dimitrios-litsikakis/virtual-project-management-vpmodel/3ib8exvrc87n4/9> (Acc 2010-04-19).

³⁰ Zarrella, E. et al., (2007), *Managing Global Projects, Observations from the front-line*, IT ADVISORY, KPMG.

³¹ Gupta, N L. (1998), *Crosscultural communication: Global Perspective*, Concept Publishing Company, New Delhi, India, pg. 17.

individual decisions.³² The performance of the team is affected positively by using open and effective communication, developing trust among team members, managing conflicts in a constructive manner and encouraging collaborative problem-solving and decision-making. The understanding between the participating in conversations is also very important. A great idea is that the Project Manager tries to encourage people to repeat, in their own words, what they have just told them to make sure that they did understand, and are prepared enough to get on and do it.³³ Communication is associated with office work rather than industrial work, where expressions such as “we are here to work, not for discussions” can be pointed out. Workers are not used to communicating because it was not part of their tasks until the introduction of teamwork.³⁴

3.1.1.3 Time zones

When the project team members are located in different time zones around the world the complexity increases for organizing meeting during office hours.³⁵ Multiple time zones will present special challenges for the project team members and it can also be necessary to increase the length of the working day.³⁶ To manage the different time zones in a project with team members spread all over the world, it is important to have the knowledge about working hours in different places. Even if the Project Manager has the private mobile number to the team members, it is not a very good idea to call people in the middle of the night, unless it is of particularly urgency.³⁷

A significant number of projects fail because of complexities associated with multiple time zones. The time differences caused productivity issues, one site’s team members had to wait for another site’s team members to resolve problem. It is also related to that different countries have different public holidays and can affect the project. In research the project team members have tried to avoid this problem by building expertise locally at each site, reducing dependencies on other sites.

When time differences are too big between project team members, it can be hard to use communication channels such as telephones, video conferences or chats, since people has different working hours. Instead communication usually takes place via e-mails, bulletin boards and/or fax, but these communications tools are more time consuming.³⁸

3.1.1.4 Cultures

The link between values and culture is strong. Values derive from cultural principles and help to shape and maintain the cultural structure of the society. On the other way around the culture is shaped by people with individual values.³⁹

Cultures and styles are typically known as “cultural norms”. These norms contain a common knowledge about how to get the work done, what are acceptable to get the work done and who could facilitate the work being done. Culture is often used as a reason for project

³² Holmes, D., (2005), *Communication Theory*, SAGE Publications, London, United Kingdom, pg. 9.

³³ Virtual Project Management (VPMModel) – a knoll by Dimitrios Lirsikakis <http://knol.google.com/k/dimitrios-litsikakis/virtual-project-management-vpmodel/3ib8exvrc87n4/9> (Acc 2010-04-19).

³⁴ Minssen, H., (2006), *Challenges of Teamwork in Production: Demands of Communication*, Organization Studies, Sage, Vol27, No1, pg. 103-124.

³⁵ Binder, J., (2007), *Global project management*, TJ International Ltd., Cornwall, United Kingdom, pg. 2-3.

³⁶ GlobalProjectManagement.org <http://www.globalprojectmanagement.org/> (acc 2010-04-19).

³⁷ Carcone, P., (2008) *Managing Communication in Projects: How to Maintain Information Sharing Practices in Business*, Business Management, Suite101, Published: August 14, 2008.

³⁸ Garg, R., (2008) *Delivering Multiple Sites and Time Zones Projects: A Case Study in the Telecom Industry*, PM World Today.

³⁹ Gupta, N L. (1998), *Crosscultural communication: Global Perspective*, Concept Publishing Company, New Delhi, India, pg. 68.

difficulties, it requiring minimal explanation or justification and can be translated into “*that is the way we do it here*”.⁴⁰

Culture can be divided into two areas; national culture and organizational culture. The most used definition of culture is formulated by Geert Hofstede; “*Culture consists in patterned ways of thinking, feeling and reacting, acquired and transmitted mainly by symbols, constituting the distinctive achievements of human groups, including their embodiments in artefacts; the essential core of culture consists of traditional ideas and especially their attached values.*” This definition suit for both national and organizational culture, the difference is that Organizational culture is the culture within an organization and the national culture is related to one nation. The organizational culture may reflect the national culture where the organization is located. Within a project the Project Manager has to adopt and influence a matching organizational behaviour in the project team. The cultural hierarchy within the project can be unspoken and less awareness from team members. In recent years, the need to be more culturally aware has increased. The difficulty with the cultural challenge within project is that it is difficult to quantify. Most people can tell if they think and sense the culture to be good or bad, but the environment beyond this is not quantified.⁴¹

The cross-cultural environment could bring both improved motivation and also lead to conflicts and misunderstandings. Many people prefer to work in cross-cultural environments because of the rich information exchange. Experiences and other knowledge will be obtained. Cross-cultural communications can raise the difficulty level, because of differences in cultures, languages and behaviour in communication. For an effective cross cultural communication an elimination of stereotypes is needed. A stereotype is a generalized description for a whole group of members.⁴²

There is a lack of studies on multinational group work, the reached result are consistent and limited. Studies concur that the national culture influences group behaviour, different cultures resulting in different patterns of group interaction and performance of nationally homogeneous workgroups differs if compared to heterogeneous ones. Such differences are acknowledged in terms of individual effectiveness, group productivity, creativity, ability to make decisions, group cohesiveness, etc. Research results are mixed whether diverse cultural composition groups leads to better or worse group performance. Some researches argues that cultural differences in a group brings a variety of values to the group, different perspectives and behaviours that increase the creativity of the group and the problem solving capacity. A homogeneous composition of people has been evaluated as a group with lower creativity, and group thinking is achieved instead of individual thoughts.⁴³

3.1.1.5 Organizations

All companies have an organizational structure which includes issues as hierarchy, authority, control, rules, procedures, formal relationships, for the people involved in the project. This essential element, which is a suitable organization structure, allows effective and efficient communication channels to take place and be capable of adapting to the project environment and changes. It is not only organizations, which have different values, norms, language and coding schemes, these differences also apply to various subunits within an organization.⁴⁴

⁴⁰ Project Management Institute (2004), *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)* – Third Edition, pg. 27.

⁴¹ Zarrella, E. et al., (2007), *Managing Global Projects, Observations from the front-line*, IT ADVISORY, KPMG.

⁴² Bannon, G., and Mattock, J., (2003), *Cross-cultural communication*, Kogan Page Limited, London, United Kingdom, pg. 17.

⁴³ Barinaga, E., (2007), “*Cultural diversity*” at work: “*National culture*” as a discourse organizing an international project group, *Human Relations*, Sage, Vol60, No2, pg. 315-340.

⁴⁴ Lievens, A. and Moenaert, R. K., (2000), *Project Team Communication in Financial Service Innovation*, *Journal of Management Studies*, Blackwell Publishing, vol.37, No5, pg. 733-766.

Criteria such as clear objectives and priorities, policies and procedures, roles and responsibilities, motivational issues, leadership, teamwork, etc need to be properly considered when choosing a suitable organization structure for projects. Also the governance has to be considered and managed, in global projects issues for governance challenges increase.⁴⁵

To work in processes has been popular since it is a great focus on the customer and that processes will help different divisions within an organization to minimize the sub optimizing and see the total outcome and view of the result. Studies have proven the outcome of process-based work, the team members started to think in process chains of cycles instead of optimizes single workflows and this resulted in mixed and several of cycles.⁴⁶

There are as many definitions of process as there are processes. In this report, a process is defined as “*a logical, related, sequential set of activities that takes an input from a supplier, adds value to it, and produces an output to the customer*”. When a company has designed their processes it is common that they are more complex than in this description, but the fundamental principles are the same.⁴⁷

Three key factors have been identified for successful processes:⁴⁸

- Describe the processes in a simply way, make everybody involved understand.
- Clear proprietorship of the process
- Formulate how the process is supposed to be developed, measured and followed up.

The design of the process and the information embedded within the process should be as simple as it could. Often it is not the same people who create the processes as who perform them, which makes misunderstandings appear and more often while the processes is to complex. A critical factor for a company’s success of their processes is the difference between what the actual result and the expected result.⁴⁹ Another important aspect of the process-focused way of thinking is the horizontal cooperation of all participants, i.e. working in concert with the customer process.

The Project Manager plays the important role to lead and manage the project team towards successful project completion. An effective project manager must have the competence to plan, organize, coordinate, monitor and control the project. Project Management is defined as: “*the overall planning, co-ordination and control of a project from inception to completion aimed at meeting a client’s requirements in order to produce a functionally and financially viable project that will be completed on time within authorized cost and to the required quality standards*”. One essential element in effective project management is to have a good understanding of the client, its objectives and priorities for its organization and project.⁵⁰

To select team members is never simple, trade-off between competences, cost, locations etc. The common issues and problems associated with projects are lack of integration and organization of team members. Early involvement and participation of team members is

⁴⁵ Ong, H.T., (2007), *Effective Project Management – Essential Elements For Successful Projects*, Inaugural Construction Conference.

⁴⁶ Muffatto, M. and Panizzolo, R., (1995), *A process-based view for customer satisfaction*, International Journal of Quality & Reliability Management, September 01, Vol.12, Issue:9, pg. 154-169.

⁴⁷ Harrington, H. J. et al., (2007), *Business process improvement workbook: documentation, analysis, design and management of business process improvement*, The McGraw-Hill Companies, Inc., Columbus, USA, pg. 1.

⁴⁸ Karlöf, B., and Helin Lövingsson, F., (2007), *Management begrepp och modeller*, SIS Förlag, Stockholm, Sverige.

⁴⁹ Harmon, P., (2003), *Business Process Change: A Manager's Guide to Improving, Redesigning, and Automating Processes*, Morgan Kaufmann Publishers, San Francisco, pg. 5.

⁵⁰ Ong, H.T., (2007), *Effective Project Management – Essential Elements For Successful Projects*, Inaugural Construction Conference.

positive, because it adds their expertise during the planning process and strengthens their commitment to the project. Teamwork is a critical factor for a project's success. This leads to the importance of the Project Manager creating an environment that facilitates teamwork. Motivation is an important factor and the Project Manager should be aware of this since he can influence the performance of the project. The team members should be provided with challenges and opportunities in their daily work to keep a higher motivation level. Feedback and support are the Project Manager's responsibility, the purpose is to increase the performance of team members and help them with self-development. A face-to-face kick-off with all key stakeholders is desirable and will ensure to help all involved to be aligned and is given the same starting point.⁵¹

Beside the dimensions mentioned above to evaluate how complex a project is, the size of the project needs to be considered as well. A factor that could have major impact on the project is the amount of people involved. The communication channels increase and therefore more risks in the communication way where it could be lack of information or misunderstandings that could affect the outcome of the project. The coordination becomes more demanding, especially when the resources are from different countries and backgrounds. Based on these theories the projects will be evaluated and see if there is any correlation of the project success and project complexity. The five dimensions will be evaluated on each project and how they affect the team members involved.

⁵¹ Zarrella, E. et al., (2007), *Managing Global Projects, Observations from the front-line*, IT ADVISORY, KPMG.

4 Case Studies

This chapter presents the empirical gathering for the case studies. One case is one investigated project and a brief presentation of the projects is presented. Finally an initial analysis is conducted based on the theories and empirical gathering to analyze the complexity and the outcome of each project.

In this Master Thesis, nine case studies will be described. One case study is one project run by Tetra Pak Processing Systems. Normally a project is considered as a project from the initial contact with the customer until it is delivered and the project is closed. The projects at Tetra Pak consist of pre project and project. The projects are expected to be run according to Tetra Pak's internal Business Approach. During the empirical gathering some of the projects are not closed yet, but they are at least in the installation phase. The aim was that every case study should result with new findings, and then further in the analysis be input for recommendations for best practice. An empirical conclusion for each case will be summarized in tables; more information for each case study will be attached in the Appendices. Despite several of different roles within a project, the roles will be categorized as Project Manager, Project Leader, Engineers and other as described in Chapter 2, Methodology (page 11-14). The organization charts will be without names and only show the organization for the project and the geographical location. Citations from team members will be mentioned by Mr. X regardless who said it. It is recommended to read through the more descriptive case chapters placed in the Appendices, for a deeper understanding of the case analysis. In this study it has been decided to focus on the five dimensions mentioned previous since the projects were chosen from the criteria that the size should be similar as well as the amount of people involved. The projects that were chosen from start were supposed to be complex projects, but according to the five dimensions that is not always the case.

4.1 Tetra Pak Business Approach

The goal of the internal Business Approach is to reach an increase productivity and effectively within Tetra Pak Company. This is a long-term orientation to be more competitive and continuous be improved. The results from different sub-processes are to deliver information in a specific format and to facilitate to share information. The output from one sub-process is often input to another. Tetra Pak has also a vision about an improved process worldwide, when everybody is working with the same Business Approach and has the same documents.⁵²

A department of Tetra Pak called Control Business is doing audits and follows ups about how different market companies are following the Business Approach. All market companies have not been evaluated yet and it has been hard to compare audit results between market companies. The recession from 2008 has affected all numbers, and makes it difficult to analyze what the Business Approach has actually resulted in. This department is also working with continuously improvements and started in the end of 2009 to evaluate how Tetra Pak Processing Systems is working when they sell projects. The involved persons in the pre project often want to be flexible in their work and have been complaining about the design and demands of the Business Approach. They need a process who tells what to deliver and

⁵² Inger Nyberg, Process Owner, Tetra Pak, Lund, Sweden, 2010-04-12.

not how to do it. Tetra Pak is using their Business Approach to complete the whole picture and avoid that their employees are sub optimizing.⁵³

Tetra Pak has not evaluate the greatest cost drivers, but are aware of that negligence in beginning of projects get hard consequences later on. Costs for all work on site are higher when the work during the pre project is not well defined and documented. It is easy to see where the cost generates, but it is hard to see why.⁵⁴

After or during a project, customer satisfactions are done by most of the market companies.⁵⁵ Customer satisfaction is a systematic approach on how to listen to the customers and how to proceed in order to improve the degree of their satisfaction.⁵⁶ The documents for customer satisfaction can differ for different market companies.

4.1.1 Tetra Pak's business model

Tetra Pak has several market companies around the world. Normally one country is covered by one market company, and sometimes one market company covers more than one country. Every company in the Tetra Pak Processing Systems are responsible for gaining their own profit and be able to mange themselves. Tetra Pak Processing Systems sells on customer value and their main goal is to do business in a customer focus long term perspective, with quality and innovation, work with freedom, responsibility, build partnerships and have fun.⁵⁷

Projects can sometimes be sold at a very low margin to satisfy the customer and to build a long term relationship with an important customer. This can result in more projects in the future and also profits in components and service of the plant. An opportunity to increase the margin of the total project is to sell Variation Orders to a higher margin. A new negotiation with the customer is required and a new contract for the variation order is conducted. These discussions normally regards the Project Manager and the customer, why Tetra Pak now days focus on educating their Project Managers in sales as well.⁵⁸

4.1.2 Tetra Pak's corporate culture

Tetra Pak has a corporate culture that focus on the customer in a long term perspective. The company shall focus on delivering quality and innovation. The working culture among the employees no matter which market company, is to work for freedom, responsibility, build partnerships and have fun. This corporate culture vision is well established in the Tetra Pak organization and can be recognized in all the market companies. What differs though is the front-office and back-office attitude. The front-office means all the market companies that are near the customers while the back-office is the support from the head office. The front-offices are developing faster and are more dynamic, and this is required because of the market demands. The back-office though is not as dynamic and develops slower. The last ten years the market companies are managing more on their own which leaves the back-office in a situation where they being left behind of the market and need to catch up with the market to be able to be competitive.⁵⁹

Before analyzing the complexity of the cases the dimensions need to be defined. These are illustrated in Table 3. A grade system has been used to define the project complexity. The grades will be summarised and are used to define if the project complexity is low (0-8p),

⁵³ Inger Nyberg, Process Owner, Tetra Pak, Lund, Sweden, 2010-04-12.

⁵⁴ Ibid.

⁵⁵ Karl-Gunnar Axelsson, Director Global Projects, Tetra Pak, Lund, Sweden, 2010-04-16.

⁵⁶ Tetra Pak (intranet), 2010-04-19.

⁵⁷ Ibid.

⁵⁸ Karl-Gunnar Axelsson, Director Global Projects, Tetra Pak, Lund, Sweden, 2010-04-16.

⁵⁹ Ibid.

medium (9-12p) or high (13-15p). These limits are defined based on the interviews and the apprehensions of how complex the project is. The complexity regards the complexity of the managing the coordination of the team members.

Table 3 - Project Grading Systems

Point	Location	Language	Time zone	Culture	Organization
1	Team members located in same office or local project.	Team and customer speaks the same language	Differ 1 hour	Customer and team same national culture	Many kick-off meetings, experienced team members, well aware of Tetra Pak's Business Approach
2	Two market companies involved or customer and market company in different countries.	One of the parties speak its mother tongue	Differ 2-4 hours	Team and customer different national cultures	Medium
3	More than two market companies involved	Both the team and customer speaks on their second language	Differ more than 4 hours	Different national cultures within the team as well as with the customer	No kick-off meetings, new responsibilities, different organizational behaviour.

4.2 Case A

The contract is signed between Tetra Pak Greater Middle East and the customer is located in Sudan. The project is categorized as a L3 project. Global Projects in Lund, Sweden has run this project in cooperation with the market company Tetra Pak Greater Middle East.⁶⁰ All project team members are from Global Projects in Sweden. The objectives from the project team were to deliver the project within time and during the time of the project increase the margin.⁶¹

Several of the team members had new roles and responsibilities in this project. For examples the Project Manager runs his first project ever. The pre project team left the project directly after the contract was signed, which is earlier than what is common. This has affected the project negatively, since all needed information was not forwarded to involved project team members and all activities that should have been done was not completed. The project team has been working with activities that should have been done before the contract was signed according to Tetra Pak's Business Approach, which has affected the time plan negatively.⁶² Team members have been pointing out problems with the team spirit. An unsatisfied person left the company, since he felt the motivation was decreasing.⁶³

The customer expected more clear directions from Tetra Pak and would prefer more guiding into decisions. He feels as he sometimes took decision that was over his competences and placed him in an uncomfortable situation.⁶⁴ The customer did not always know what he needed and changed his mind several of times. Project team members think it is harder to get paid for variation orders in the Arabic culture and 15 variation orders have been made, which has affected the budget.⁶⁵

The customer prefers to make business with the same person who implements the project, and has reacted to how the change was between the Sales Manager and the Project Manager. Persons involved in the implementation team has also shown interested to be involved earlier and in that way get a greater understanding for the customer's need.⁶⁶

The total project is still below budget and the main reason is cheaper equipment than expected. The reasons for cheaper equipments are changes in currency and the recession during the project. During a recession it is easier to pressure the price from the suppliers. The automation engineering part has been more expensive than expected due to that project team from Tetra Pak and the customer had different expectations on the solution.⁶⁷

The customer has given the project team from Tetra Pak 3,8 out of 5 points in the customer satisfaction, for this project. The highest score is given for professionalism in the solution with the explanation that Tetra Pak presented the most comprehensive solution but at the same time also most expensive. Others competitors start with an attractive price and then add on; the customer prefer Tetra Pak's approach. The lowest score is for long term profitability for the customer, the customer would have appreciated a more active discussion regarding to this.⁶⁸ A summary of Case A can be illustrated in Table 4.

⁶⁰ Tetra Pak Internal documents.

⁶¹ Project Manager Case A, Tetra Pak.

⁶² Project Leader Case A, Tetra Pak.

⁶³ Engineer Case A, Tetra Pak.

⁶⁴ Tetra Pak Internal documents.

⁶⁵ Project Leader Case A, Tetra Pak.

⁶⁶ Tetra Pak Internal documents.

⁶⁷ Project Leader Case A, Tetra Pak.

⁶⁸ Tetra Pak Internal documents.

Table 4 - Overview Case A

Factors	Case A
Background	<ul style="list-style-type: none"> • Tetra Pak Middle East sold the project • Tetra Pak Global Projects, Sweden run the project
Location	<ul style="list-style-type: none"> • Team members located in Sweden • Customer and site located in Sudan
Language	<ul style="list-style-type: none"> • Swedish within the project team members • English with customer • Arabic is the customer's native language • Lack of communication and cooperation with internal suppliers
Time zones	<ul style="list-style-type: none"> • 2 hours difference in office and site
Culture	<ul style="list-style-type: none"> • Arabic culture • Swedish culture • Tetra Pak culture • Customer organizational culture
Organization	<ul style="list-style-type: none"> • New roles and responsibilities • Conflicts between the sales team and the implementation team • Lack of motivation among team members
Result	<ul style="list-style-type: none"> • 3 % saved budget • Customer satisfaction: 3,8 out of 5 points

4.3 Case A - Analysis

The project's complexity will be evaluated according to the five dimensions. The complexity can be evaluated as low (8p), see Figure 5.

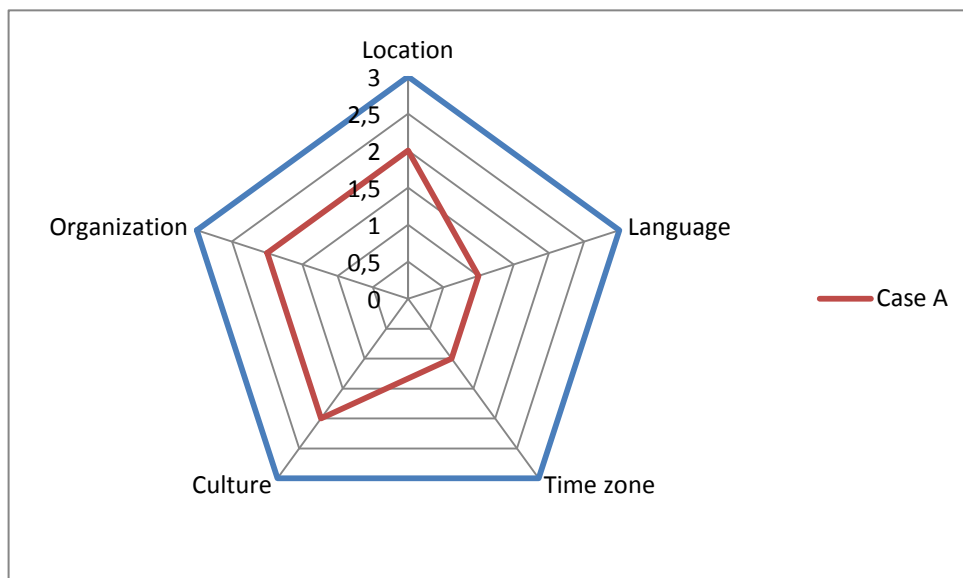


Figure 5 – Complexity Case A.

4.3.1 Location

The project team is located in Sweden and the site is in Sudan, which increases the complexity, (2 points). In this case, despite the team members being located in same office several of problems have occurred in the project. Some of the main problems have been misunderstanding, internal conflicts and sub optimizing. The team gives an apprehension of not taking advantage of working near in the same office.

4.3.2 Language

During the project, the project team members have used their native language in communicating internal in the team (1 point). All communication with the customer has been in a second language, English. Despite lack of complicated language issues in the team, deficit of communication and cooperation have appeared. Different working behaviour, routines and unclear responsibilities have been identified. An explanation could be some of the team members being new in their roles and with lack of experience with the new responsibility. Lack of information has been identified, the team members comprehending and manipulating the information in their own way. One team member is pointing out that the role description can be read in different ways. As a summary, the intra-project communication has not been working well, despite low complexity. As the theory describes lack of communication could cause damage in projects. This project would have a decreased margin if it wasn't for the cheaper equipments.

4.3.3 Time zones

In this case, there have not been any differences in time between the project team members, (1point). The difference in time between the office and the site has not affected the project.

4.3.4 Culture

The heterogeneous in a group contributes according to the theory "group think". This project team proves self dependence and individual work. The different national culture compared to the customer has been managed without any remarkable happenings, (2points). Despite same national culture within the team, there has been lack of understanding and different working behaviours.

4.3.5 Organization

The Project Manager has been working with motivating the involved team members. There have been several opportunities for team working, like kick-off meetings and other activities outside the office as an attempt to increase the team spirit, (2points). Despite these activities the team members interviewed feel that they are a part of a working group instead of a team. The project team has been divided into sub groups. The planned project cost is achieved but as mentioned above there are other factors that decide of a project is successful or not. It depends on the expectations from the beginning. That is why it is important to go further down into detail to evaluate the project outcome, both in costs and other factors. Motivated team members generate higher profit, which also this project indicates. A project team member left the organization and the cost will increase for his part of the project. Project team members have pointed out lack of feedback which has decreased the motivation.

The quality of this project can be considered as medium, with 3,8 points in customer satisfaction and high cost for correcting identified errors. The customer has also pointed out critics against the project team, and expected this well known organization to act more professional. These remarks need to be considered since customer satisfaction is valued as the most important competitive factor. Since the customer satisfaction declares weak parts of customer involvement during the project, lack of a process mindset within the project team is described.

The team members seem to be well aware of the processes of Tetra Pak and their own responsibilities. They have though more problems with knowing what to deliver to next process. The pre project team and the project team have different ideas about what the outcome of the pre project would be. They have different goals, sub optimize their work and do not work as a jointly team. In this case the project team spend time trying to understand

customer needs, which should have been clarified in the pre project. The identification of the customer needs and wants is a value adding activity. If the customer does not know what they want, the Sales Manager is suppose to support the customer and suggest ideas.

After the contract was signed and information was forwarded from the pre project to the project team, there was lack of information. The two teams did not spend enough time together to make this hand over smoothly. Interview with involved team members indicates a wish to be involved earlier, which according to the theory is a good idea.

4.4 Case B

The project is sold by Tetra Pak Thailand and the site is situated in Thailand. Tetra Pak Singapore supports the market company in Thailand, since Tetra Pak Thailand had lack of resources. The project is categorized as a L2 project. The plant is a Greenfield project and is using both new equipments and existing equipment from an old plant.⁶⁹ During the pre project it was hard competition about the customer and Tetra Pak Singapore decided to start with a lower margin than usual and their objectives was to increase the margin by variation orders during time.⁷⁰

The Project Manager and the Site Manager is the same person and is situated in Thailand. Except from the Automation Engineers, the rest of the team is located in Singapore. The automation part is outsourced to a company in Thailand, since Tetra Pak Singapore and Thailand do not have enough of automation resources. Team members in Singapore pointed out the positive outcome of having a small office, the informal information was distributed easily.⁷¹

Misunderstandings between people from Singapore and people from Thailand have occurred in the email correspondence, the English language is different despite the geographical closeness. The information from the Project Manager is spread by email to concerned project team members. Emails are used to clarify and have also the benefit to be committed. The Project Manager does the time plan and has the relation to the customer, and the project is monitored and developed by the project team in Singapore. The distance between the team members has not been disturbed and one of the team members declare that the office in Thailand is seen as the office next door. Team members declare that the Project Manager has the overview of the project and they only see their own part of the project.⁷²

Three persons have done the process engineering, one from Singapore, one from Thailand and one from China. Together they coordinate three plants with both new and old machines, which make this plant to a complex one. Despite these difficulties, no misunderstandings between the three Process Engineers have occurred.⁷³ The outsourced Automation Engineers were selected by the customer, who has done business with them before. A difficulty has been that the Automation Engineers have reported directly to the customer, without to tell the Project Leader or Manager.⁷⁴

The project took seven month from signed contract to deliver the project and is managed in time, despite shortage of time. To succeed within time, clarified milestones and awareness of when different part of the project team will deliver their part have been clear and predetermined. The project is seen as a successful project with an increase margin of 8 %. Tetra Pak Singapore's strategy to increase the margin by variation orders has been successful. The customer is also satisfied with this project and has given the overall project four points out of five. A summary of Case B can be illustrated in Table 5.

⁶⁹ Project Leader Case B, Tetra Pak

⁷⁰ Other Case B

⁷¹ Project Leader Case B, Tetra Pak

⁷² Project Leader Case B, Tetra Pak

⁷³ Engineer Case B, Tetra Pak

⁷⁴ Project Leader Case B, Tetra Pak

Table 5 - Overview Case B

Factors	Case	B
Background		<ul style="list-style-type: none"> Tetra Pak Thailand sold the project with support from Singapore Tetra Pak Singapore run the project
Location		<ul style="list-style-type: none"> Project Manager and Site Manager situated in Thailand Team members located in Singapore Automation Engineers outsourced in Thailand Customer and site located in Thailand Three Process Engineers located in Singapore, Thailand and China
Language		<ul style="list-style-type: none"> English and Malay within the project team members situated in Singapore Thai with customer English between the project manager and project team members Bad communication and cooperation with internal suppliers in Sweden
Time zones		<ul style="list-style-type: none"> 1 hour difference in office (Singapore) and site
Culture		<ul style="list-style-type: none"> Singaporean culture Thai culture Chinese culture Tetra Pak culture
Organization		<ul style="list-style-type: none"> New roles and responsibilities Lack of resources in Thailand office Open-plan in office (Singapore) Different selling strategy compare to Tetra Pak recommendations
Result		<ul style="list-style-type: none"> Increased margin by 8% Customer satisfaction: 4 out of 5 points

4.5 Case B - Analysis

Case B is considered as a project with low complexity (7 points), illustrated in Figure 6. The Project Manager and the project team members are located in different offices and countries.

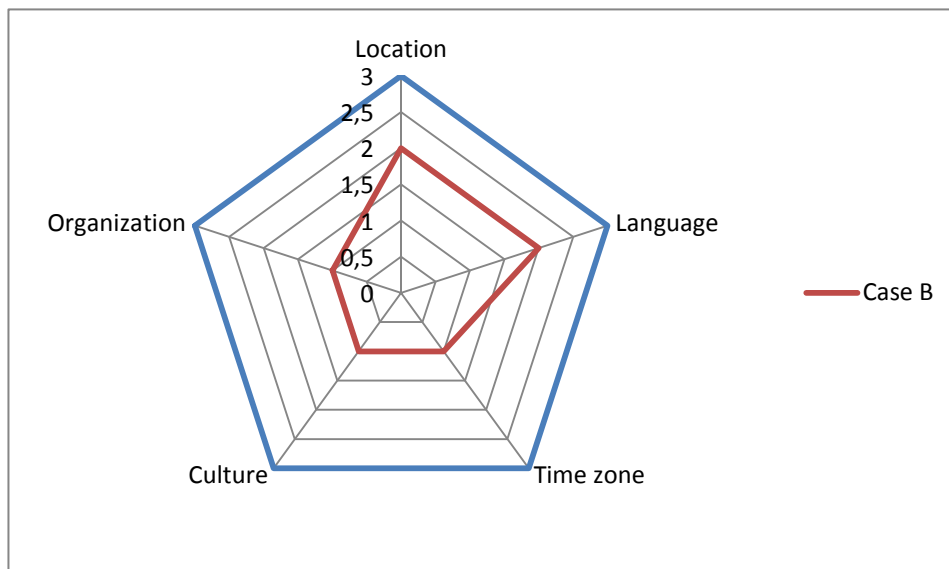


Figure 6 – Complexity Case B.

4.5.1 Location

The Project Manager is situated near the customer but not near to the project team (2 points). This could affect the team spirit negatively. The Project Manager is responsible for communicating to the customer, while the team members forward the information to the Project Manager. Information can get lost through the different communication channels, and this could be an increased problem since the Project Manager is not located in the same place as the team members. Technical information can be hard to describe in word since body language and gesture simplify the descriptions. In this case the relationship with the customer is affected positively by the project manager being near the site.

It is impressing that three persons located in three different geographical places, speaking three different languages have done final drawings. Based on the interviews there has not occurred any misunderstandings. The scope being well defined could impact this part of the project, as well as clear roles and responsibilities. The technical language is truly elaborated as well.

4.5.2 Language

English is Tetra Pak's international language, but the knowledge of English differs around the world. Singapore and Thailand are geographically close to each other, and employees from Tetra Pak Thailand and Tetra Pak Singapore points out differences in the English language which can cause misunderstandings. The communication with the customer is in Thai and both the Project Manager and the customer use their native language (2 points), which will create a secure and easy communication between these two.

4.5.3 Time zone

One hour in difference between the team members and the Project Manager has not affected the project, (1 point).

4.5.4 Culture

The affect of culture differences is seen as low (1 point), since these three countries involved are in Asia. The team members have only pointed out problems with the language and not cultural differences. They do not seem to reflect if they are working with Singaporean, Thai or Chinese, as one team member points out the office in Thailand is seem like the office next door. The impression that is given from the office in Singapore is that the Project Manager has not adopted and influenced a matching organizational behaviour in the project team.

4.5.5 Organization

The Project Manager has not worked with his employees' motivation (1 point) and the interviews gave the impression of a working group who only reports to the Project Manager. No social activities to increase the team spirit were held. In office an open communication is used between the team members, but harder to involve the Project Manager. The Project Manager seems to be using pull communication, since all information needed is available on the server.

The customer satisfaction shows a satisfied customer. An advantage in this project is that the people involved in the pre project are also involved in the project team, which increases the understanding of the customer needs.

The outsourced automation puts the Automation Project Leader in a strange position. He is no leader for anyone, since the Automation Engineers report directly to the customer. The motivation for the Automation Project Leader could be a problem, since the role as the Automation Project Leader is not seemed as important in this project.

4.6 Case C

This project is driven by Tetra Pak France and is categorized as a L3 project. The project is divided into two parts; cheese and pre-treatment. From the beginning it was meant that the contract would be two different, but it was decided to do it as one contract.⁷⁵ Instead the Project Director decided to have two Project Managers and two teams, one for cheese and one for pre-treatment. The objective of the project was to deliver the project successfully, make the project profitable and achieve new knowledge.⁷⁶

Several of challenges were identified in the beginning of the pre project. Normally Tetra Pak France does not run L3 projects and the decision to run this project was taken by managers within the office in France. Four reasons to run this project by its own and not involve Tetra Pak Global Projects were described; language issues, resource available, familiar with the pre-treatment part and good support available for the cheese part. It was the first time for Tetra Pak France to work with Tetra Pak Plant Master and has not worked with cheese plant solutions for several of years.⁷⁷

The site is located in France and close to Tetra Pak's office. This simplified for the relation with the customer. The customer has great relationship with both of the Project Managers. The relation between the two Project Managers has worked out well and the reason is their well clarified scope and responsibilities.⁷⁸

When the project was handed over from the pre project team to the project team no misunderstandings appear and the customer was satisfied with how it was managed.⁷⁹ The project team was defined before the contract was signed; during the negotiation the time is critical and the planning need to be under control. Changes are done quickly and the project team need to be prepared for a start as soon as the contract is signed to not lose time and cost. It is also important for Tetra Pak France to be sure of that the resources needed are available. The Automation Engineers consists of only a few people at Tetra Pak France and it can be hard to find the right persons for the project within the organization.⁸⁰

From the beginning when the implementation started 80% of the information were clarified and the remaining 20 % more detailed information came from the pre project team or the customer later on. All information needed was documented and the project team is satisfied with how the pre project was managed. It has occurred some technical problems with the customer, the customer expected something else than what the project team did.⁸¹ The contract contained between 10-20 different things that were unclear both for the customer and the project team. The Project Managers needed help from involved people in the project board to solve it out, since the project board was involved even in the pre project. This has affected the project negatively by extra working hours, increased cost and some extra modifications for the solution. It has also been difficult to get paid for these changes, because the customer expected it and don't want to pay extra for something who was not clear in the contract.⁸²

⁷⁵ Project Manager Case C, Tetra Pak

⁷⁶ Other Case C

⁷⁷ Ibid.

⁷⁸ Project Manager Case C, Tetra Pak

⁷⁹ Project Leader Case C, Tetra Pak

⁸⁰ Other Case C

⁸¹ Project Manager Case C, Tetra Pak

⁸² Other Case C

One of the Project Managers is not situated in Tetra Pak’s office, and is working from home instead. The site is closer to his home and he prefers to work from home. The communication tools used in this project are email, phone and meetings at site. In the beginning of the project no social kick-off meetings for the team members were arranged and the Project Managers have not arranged something during time.⁸³

Many people were involved during installation at site, and some clarification problems with the customer made the time longer than expected. The project team was dependent on the customer, because they can not test the solution without the customer’s production.⁸⁴

The customer is satisfied according to the involved people. Tetra Pak sold the project by using performance guarantees and have success to reach over the level. The customer told them that they reach the level, but don’t want to tell them how much over they passed. The customer doesn’t want Tetra Pak France to use the great number as a selling point to competitors of the customer.⁸⁵ The margin is still good; it has decreased but under acceptable levels, most of it depends on the budget for automation.⁸⁶ A summary of Case C can be illustrated in Table 6.

Table 6 - Overview Case C

Factors	Case	C
Background		<ul style="list-style-type: none"> • Tetra Pak France sold the project • Tetra Pak France run the project
Location		<ul style="list-style-type: none"> • Project Manager and team members located in France • Customer and site located in France • Outsourced automation in France
Language		<ul style="list-style-type: none"> • French within the project team • French with customer • English with internal suppliers • Some documentation in English
Time zones		<ul style="list-style-type: none"> • No difference
Culture		<ul style="list-style-type: none"> • French culture • Tetra Pak culture
Organization		<ul style="list-style-type: none"> • Two Project Managers • Two project teams • Outsourced automation • Great planning and documentation • Tetra Pak network world • Clearly responsibilities
Result		<ul style="list-style-type: none"> • Decreased margin • Satisfied customer • New knowledge and experience

⁸³ Project Manager Case C, Tetra Pak

⁸⁴ Project Leader Case C, Tetra Pak

⁸⁵ Project Manager Case C, Tetra Pak

⁸⁶ Other, Case C

4.7 Case C - Analysis

The complexity of this project is considered as low (6 points), illustrated in Figure 7. According to the team members this is a complex and big project.

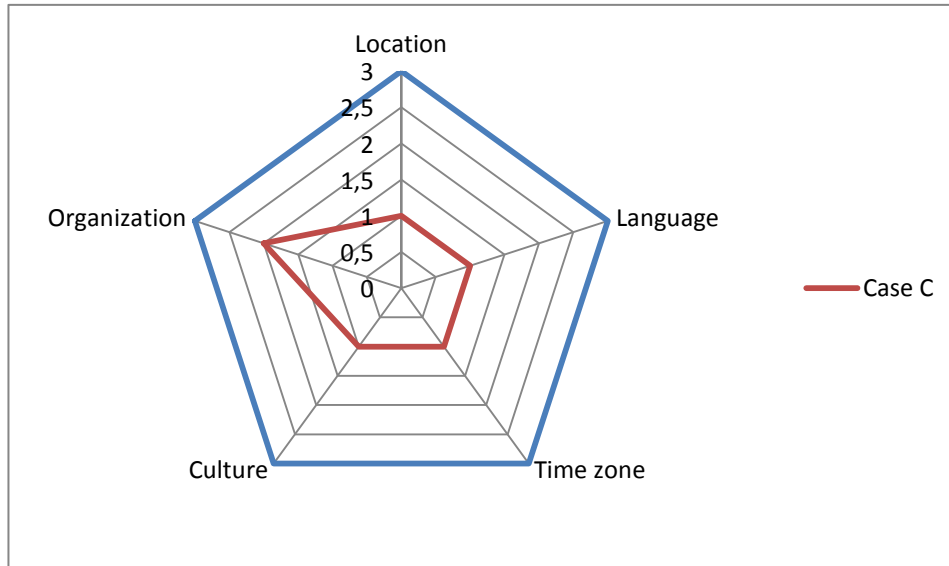


Figure 7 – Complexity Case C.

4.7.1 Locations

The project team are located in the same office and the customer site is near (1 point). Some of the team members work from home which could affect the project outcome, but has in this case not been any problem. The reason that the team members call this project complex is the unfamiliarity for them running this size of a project, as well as the unfamiliarity with cheese plant solutions. The conditions for this project were good from start. If Tetra Pak France would use resources from other market companies or Global Projects, the complexity would increase, since the cultural, language and location would affect the project complexity.

4.7.2 Language

The project team members seems happy to work only with french people, since they can communicate in their native language, (1 point). The theory points out, when doing work it is important for team members to feel secure in their communication.

The relation between the two Project Managers is well; they have clear responsibilities and a close relationship. This project is seen as one project at the office of Tetra Pak France, but is actually divided into two projects with clear boundaries and two Project Managers. One of the Project Managers works from home, which is not the most optimal way when dealing with a team. The Project Manager is supposed to be available and to simplify the communication, face-to-face communication is important.

The project team members used the network within Tetra Pak frequently and a team member points out the importance of the network. Tetra Pak France is great in networking and documentation, even if there were some grey zones in the contract to the customer. The documentation is structured and all the team members are aware of how and where to find right information. However, they spend more time than expected at site and the costs increased. This could be explained by lack of information in the contract. When there were

discussions with the customer regarding the grey zones in the contract the management decided to put the customer satisfaction first, and then solve internal problems. The small changes in the contract indicate well managed Business Approach.

4.7.3 Time zone

The project has positive affects all involved particpies are in the same time zone, (1point).

4.7.4 Culture

Both team members and the customer have the same national culture (1 point). Employees of Tetra Pak's office in France, act as they think the French culture is something different and special. They also point out that it is hard to understand the culture from outside. This could be a preconception and a reason for Tetra Pak France to take this big and profitable project by its own.

4.7.5 Organization

In this project risks has been taken and everything has not been done by the book (2 points). Tetra Pak France plan their resources well, the implementation team was pointed out before the contract was signed. Time and cost were saved and the project team had also time to get to know each other. Unfortunately the project team did not have a social kick-off to get to know each other more. This office has a great focus on costs and this could be a reason to not to have social activities for the team members. To remember is that the theory says that the work will be more effective when the people involved feel the team spirit.

4.8 Case D

The project was sold in Singapore by Tetra Pak Singapore and is categorized as a L2 project. The site is located in Singapore as well and is close to the office. Tetra Pak is one of five companies, which delivered this project to the customer and this project was ended in 2009. Tetra Pak Singapore's strategy was to sell the project to minimum base and then increase the margin by variation orders. In this project 16 variation orders have been made and increased the margin. The customer is aware of if the scope changes, then a variation order is made and would be paid for; this is accurately described in the contract.⁸⁷

It took 3-6 months to understand and create a design and engineering solution for this project and until the customer decided to go with this solution. During this project the Project Manager were changed because of personal reasons and the new Project Manager entered the project in October 2008 just before the work on site started and the first shut down of the customer's production.⁸⁸ The time was critical, since the planning is an important factor and the cost will increase if the project team is not enabling to manage the shut down in time.⁸⁹ When changing the Project Manager, the first Project Manager provided the second Project Manager with documents and the change process took about a month. This was the first project to run for the second Project Manager who has been working with process engineering before.⁹⁰

All information is supposed to be spread by the Project Manager. The team members think it is important to continue to spread all information by the Project Manager, which gives the Project Manager control over the project.⁹¹ The Project Manager had monthly meetings with the customer, and then the information is distributed to concerned team members by email. If further explanations are needed, a face-to-face meeting is arranged.⁹² The minutes of meetings are highly documented and explains what have happened, Tetra Pak's and the customer's commitments and in the end a decision about when and where the next meeting will take place.⁹³ According to involved team members, the project was completed by team work and all team members who were willing to cooperate. The team members have been working together before and know every person's particular responsibility. In this project the communication has been more informal than generally, since all the team members is located in same office.⁹⁴

The passed project management budget by 163 % is explained by more time spend with the customer. The customer expected more direct communication and meetings than was budgeted. In common the market company manages the customer, now when the customer and site are near the project manager meet the customer at site. The change of Project Manager did also affect the project management budget negatively.⁹⁵ The total result is better than expected in the budget. Tetra Pak Singapore has not done any customer satisfaction for this project, but they think the customer is content with their work.⁹⁶ A summary of Case D is illustrated in Table 7.

⁸⁷ Other Case D

⁸⁸ Project manager Case D, Tetra Pak

⁸⁹ Other Case D

⁹⁰ Project manager Case D, Tetra Pak

⁹¹ Project leader Case D, Tetra Pak

⁹² Project manager Case D, Tetra Pak

⁹³ Tetra Pak Internal document

⁹⁴ Project leader Case D, Tetra Pak

⁹⁵ Project manager Case D, Tetra Pak

⁹⁶ Other Case D

Table 7 - Overview Case D

Factors	Case D
Background	<ul style="list-style-type: none"> • Tetra Pak Singapore sold the project • Tetra Pak Singapore run the project
Location	<ul style="list-style-type: none"> • Project manager and team members located in Singapore • Customer and site located in Singapore
Language	<ul style="list-style-type: none"> • English and Malay within the project team • English and Malay with customer • English with internal suppliers • Some documentation in English
Time zones	<ul style="list-style-type: none"> • No difference
Culture	<ul style="list-style-type: none"> • Singaporean culture • Tetra Pak culture
Organization	<ul style="list-style-type: none"> • Cooperation with four other companies in this project • Small project (L2) • Changed Project Manager • All information is spread by the Project Manager • Lack of communication and cooperation with internal suppliers • Another price strategy than Tetra Pak's recommendations
Result	<ul style="list-style-type: none"> • Increased margin • No customer satisfaction is completed

4.9 Case D - Analysis

The complexity of this project can be considered as low (6 points), and can be seen in Figure 8 below. The team members have not pointed out any internal team problems. The main problem has been the cooperation with Tetra Pak's internal suppliers Dairy & Beverage.

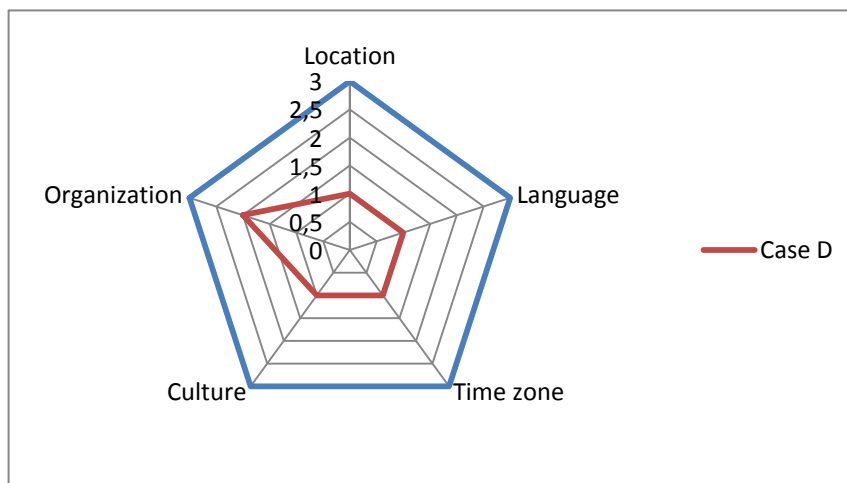


Figure 8 – Complexity Case D.

4.9.1 Location

All the team members are located in the same office, and the customer's site is near (1point). The site is so near that is almost like a second office for some of the team members. The work environment in the office is open and calm; it is remarkable how well the employees know each other and also their clear responsibilities. The relation to the customer has surely been affected by the geographical distance and this has probably affected the smoothly change of Project Manager during the project.

4.9.2 Language

No problems with language issues or misunderstandings between team members have appeared (1 point). The reason is surely the size of the project (L2) and not many people involved. Instead misunderstandings and lack of communication have appeared in contact with their internal suppliers Tetra Pak Dairy and Beverage. The order handling and shipping have affected the project negatively. The responsible person for Order and Shipping has felt a need to control D&B instead of to trust them in their work.

4.9.3 Time zone

The time zone has not affected the project. In this project, team members worked individually, (1 point).

4.9.4 Cultures

The individual work has avoided cultural differences if something would emerge, (1 point).

4.9.5 Organization

The change of Project Manager has affected the budget negatively, one month over lapping, (2 points). The new Project Manager was not able to explain the numbers in the budget, which gives a weak impression. The reason could be that the Project Manager not was involved during the first processes and has not received all information.

Tetra Pak Singapore has been using another sales strategy than what Tetra Pak usually does. They benchmark their own strategy to other competitors. Important is to remember the Tetra Pak strategy and all market companies are supposed to follow that strategy, with some exceptions of course. In this case exception resulted in a project and profit. One market company can not sell minimum base and then other sell by best quality, it is important that Tetra Pak have the same reputation worldwide. No customer satisfaction is done in this project, which is surprisingly, since the satisfaction of the customer is important both for future profit and the quality of the project. Customer satisfaction can also help the organization to develop and get even better in the future.

4.10 Case E

The project is sold in India and is managed by Tetra Pak India and the site is located less than one hour drive from the office. This project is categorized as a L2 project. The project is an integrated project, which means that both process and packaging engineering is involved. Two contracts were signed, one for the process and one for the filling equipment. These both sides were to be managed by one Project Manager and one project team. The integrated project team were pressured to manage the customer with one integrated approach, since the customer only knows Tetra Pak as one company. It is a brown field project, and includes two shut downs of ongoing production at site. When this case study is analyzed the project is in the commission phase, with four months left to closure.⁹⁷

The Sales Leader is normally located in New Delhi, India but was under the pre project transferred to Pune, India, and closer to the customer and the rest of the pre project team. In this project the understand phase was well done. Before any calculations and work were done, the pre project team found out what the customer required and helped him to decide. The scope was well clarified, also the deliverables and which resources needed.⁹⁸ The aim from the beginning was to involve the customer and work very closely with him as a team member.⁹⁹ Persons involved in the calculations are also involved in the implementation. The market company in India doesn't have any persons who is just doing the calculations during pre project and not involved in the project team. There are persons who are only involved in the project team and never do any calculations. In the beginning of the project everyone involved in the project had three days of meetings to understand the scope of the project, customer demands and expectations.¹⁰⁰

A Project Manager was appointed during the pre project, but had to be replaced by another Project Manager that could be hundred percent committed to the project, since the first Project Manager had other projects as well. The second Project Manager was hired from Tetra Pak Global Projects, Sweden and because of governance restrictions was not able to fulfil the project. This resulted in the Project Manager during the implementation being replaced the third time.¹⁰¹

The meetings at site have also been simplified by closeness to the office, which also has affected the relation to the customer. To complete the project successfully, the project team was depended on customer to deliver his part of the project. To be sure of the customer's deliverables in right time, the project team has a close collaboration with the customer; the customer was involved and considered as a team player. During one period in the project, the project team suspected that the customer did not read the documents sent to him, the Project Manager and the customer did sit down and go through all the documentations. In the beginning it was demanding but they appreciate it after a while.¹⁰²

One of the team members points out the importance of understanding the two way communication. The communication can not be effective if only one way communication exists. To make sure that the receiver information has understood the information questions like; "tell me what you understood?" is asked and also to let the receiver retell what have been understood.¹⁰³ It is typical Indian culture to answer yes even if the understanding is not

⁹⁷ Project Manager Case E, Tetra Pak

⁹⁸ Project Leader Case E, Tetra Pak

⁹⁹ Project Manager Case E, Tetra Pak

¹⁰⁰ Project Leader Case E, Tetra Pak

¹⁰¹ Project Manager Case E, Tetra Pak

¹⁰² Ibid.

¹⁰³ Project Leader Case E, Tetra Pak

clear and correct. The project team has been working with the expression “*put the fish on the table*”, which are supposed to create an open atmosphere in the office. The expression refers to communicate problems within the team, and then the problem can be solved with help from other team members.¹⁰⁴

In this integrated project, the Project Manager had knowledge about processing since before and less knowledge about packaging and had a greater focus to understand the packaging processes. This was the first time for Tetra Pak India to deliver an integrated project with equally involvements from both processing and packaging. The project is not closed yet, but is one week ahead the time schedule and considered as a successful project.¹⁰⁵ A summary of Case E can be illustrated in Table 8.

Table 8 - Overview Case E

Factors	Case E
Background	<ul style="list-style-type: none"> • Tetra Pak India sold the project • Tetra Pak India run the project
Location	<ul style="list-style-type: none"> • Project Manager and team members located in India • Customer and site located in India
Language	<ul style="list-style-type: none"> • English and Hindi within the project team • English and Hindi with customer • English with internal suppliers • Some documentation in English
Time zones	<ul style="list-style-type: none"> • No difference
Culture	<ul style="list-style-type: none"> • Indian culture • Tetra Pak culture
Organization	<ul style="list-style-type: none"> • Changed Project Manager three times • Project Managers from Tetra Pak Global Projects, Sweden, Tetra Pak Global Projects, India and Tetra Pak India • Mixed team (Global Projects India and Tetra Pak India) • Integrated project • The customer involved in the project team • “Put the fish on the table” – atmosphere in office
Result	<ul style="list-style-type: none"> • Considered as a successful project

4.11 Case E - Analysis

The complexity of this project is considered as low (6 points) and is illustrated in Figure 9. Awareness of other dimensions can make this project to a complex one.

¹⁰⁴ Project Manager Case E, Tetra Pak

¹⁰⁵ Project Manager Case E, Tetra Pak

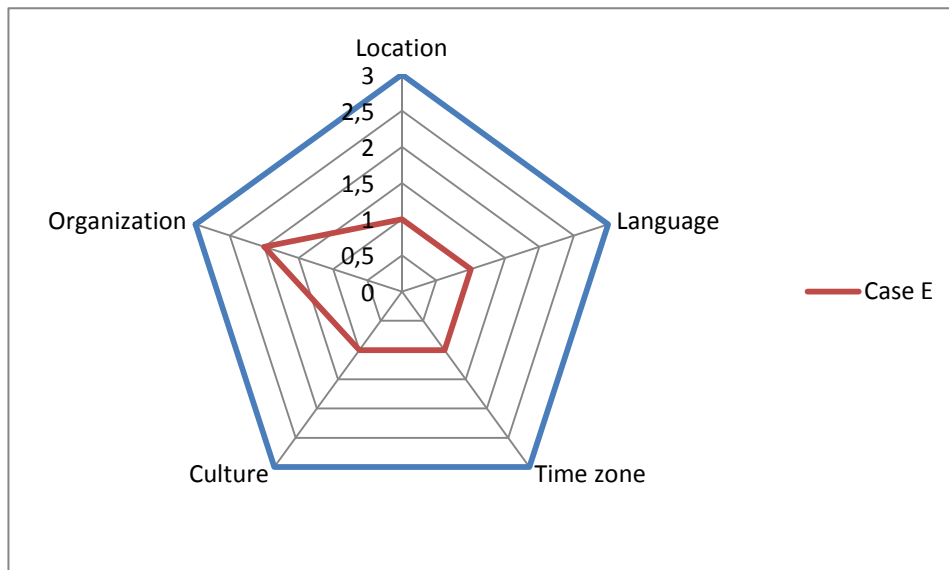


Figure 9 – Complexity Case E.

4.11.1 Location

Team members verify the positive outcome to be located near each other, (1 point). Eye-contact facilitates impulsive meetings, and team members do not have to wait for information or directions during the project. The Sales Manager did also notice the positive affect to be located near the team members and decided to move to the same office. The Sales Leader does also have information and a relation to the customer which can be hard to share without face-to-face meetings.

4.11.2 Language

The “*two way communication*” – expression indicates of a deeper understanding the complexity of communication. The two way communication can be a result of the communication paradigm shift. In this project the communication can be seen as a key success factor, since the communication and involvement of the customer has increased the customer satisfaction and profit. The site being near has made it possible to visit the customer more frequently and the face-to-face meetings seem to develop an informal relation to the customer as well.

4.11.3 Time zone

All team members worked in same time zone, and the affects are positive, (1point).

4.11.4 Cultures

Within the project team, no cultural differences have appeared, (1 point).

4.11.5 Organization

Tetra Pak India has a great focus to understand the customer needs and in the contract scope was well clarified, (2 points), which indicates a well completed pre project (UCC). The customer was deeply involved in the project and seen as a team member. This can be considered as a result of Tetra Pak India to implement their processes well. The involvement of the Sales Manager even after the contract is signed help the process oriented team members to complete the project with a total view of the project.

4.12 Case F

This is a L3 project managed by Tetra Pak Global Projects Sweden and Tetra Pak Global Projects India. The site is in Syria and the Project Manager and the Project Leaders are located in Sweden and the rest of the team in India.¹⁰⁶ Some of project team members have been involved in the calculations in the pre project. To be both involved in the pre project and the project is seen as positive; while it gives a greater understanding of the total project and also direct feedback of your work from the pre project when then implement it.¹⁰⁷

The project team uses project meeting place since they are located in different countries to present their weekly work. The Project Leader uses this tool to make sure everything is completed successfully. It is also explained that lack of control occur when not working in same office and also worries of competences. The communication within the team has gone well despite the distance; structured work has managed the complexity. The team members is aware of the communication plan and know who they should talk and report to. Team members situated in Lund using informal communication, but have difficulties to forward informal decisions to the rest of the team in India. The geographical distance makes it harder as well; it is more difficult to explain to another person in telephone, mail or meeting place than in reality.¹⁰⁸

There is a close link between the Process Engineers and the Automation Engineers and it has been simplified when all of them are situated in India. To split these two teams would not be an alternative, it would make it much harder to communicate and illustrate the solution. The project team members also think it would have simplified the communication within the team if the whole project team were situated in same place. Now they send email to the Project Leaders and Project Manager in Sweden and then have to wait for answer because of different reasons, one could be different time zones. The cooperation between the team members in India and Sweden has been close, but more difficult then when the team is situated in same office.¹⁰⁹

The most interesting number is the difference for the system design, by passing the budget by 323 %. The difference is explained by using another plant solution than was supposed from the beginning. From the beginning it was meant to use a platform developed for another project in Lund, Sweden.¹¹⁰

The customer is satisfied with the overall project, but is complaining about his involvement in the project. He would prefer to be more involved and participating into more meetings. He also points out the negatively affect of doing business with one person and then see another person implement the project. Several of discussions he had with the Sales Manager, he had to discuss over again with the new project team and recommend Tetra Pak to use a uniform approach against the customers.¹¹¹ A summary is illustrated in Table 9.

¹⁰⁶ Project Manager Case F, Tetra Pak

¹⁰⁷ Project Leader Case F, Tetra Pak

¹⁰⁸ Ibid.

¹⁰⁹ Engineer Case F, Tetra Pak

¹¹⁰ Project Manager Case F, Tetra Pak

¹¹¹ Other Case F

Table 9 - Overview Case F

Factors	Case F
Background	<ul style="list-style-type: none"> • Tetra Pak Dubai sold the project • Tetra Pak Global Projects in Sweden and India run the project in cooperation
Location	<ul style="list-style-type: none"> • Project Manager and Project Leaders in Sweden • Project team members located in India • Customer and site located in Syria
Language	<ul style="list-style-type: none"> • Swedish between Project Manager and Project Leaders in Sweden • English and Hindi within the project team in India • English between Project Manager/Project Leader and project team members • English with customer • English and Swedish with internal suppliers • Documentation in English
Time zones	<ul style="list-style-type: none"> • 4,5 hours difference between Sweden and India • 1 hour difference between office in Sweden and site in Syria • 3,5 hours difference between office in India and site in Syria
Culture	<ul style="list-style-type: none"> • Swedish culture • Indian culture • Arabic culture • Tetra Pak culture
Organization	<ul style="list-style-type: none"> • Some of the team members involved both in pre project and project.
Result	<ul style="list-style-type: none"> • Increase the margin by 11% • Satisfied customer with only a few complaining

4.13 Case F - Analysis

The complexity of this project is considered to be high, (14 points) and is illustrated in Figure 10. The project has been managed well despite the geographical distance, language differences and cultural differences.

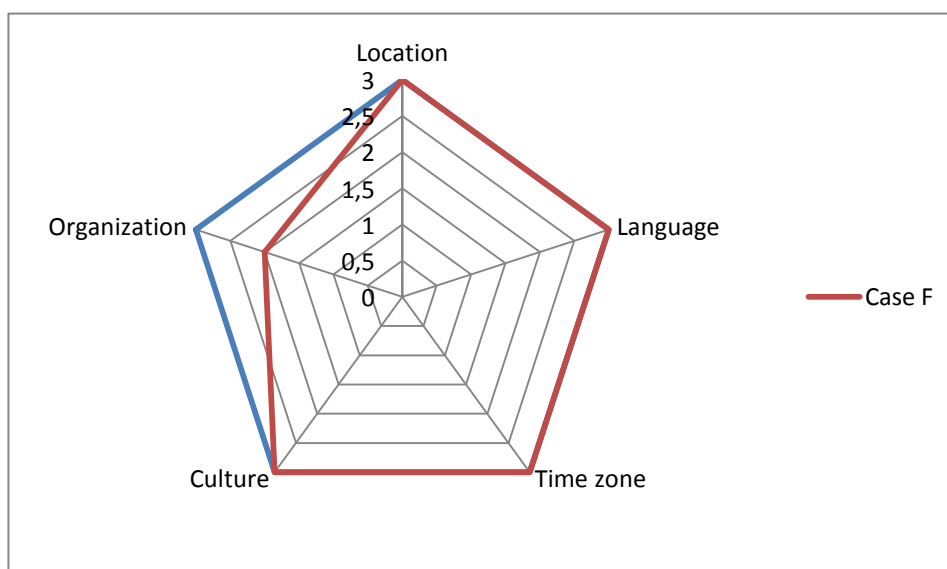


Figure 10 – Complexity Case F.

4.13.1 Location

The location is identified as the most difficult part in this project, (3 points). Several of the technical issues can be hard to describe over phone. Meetingplace has made the

communication easier, but it seems as the tool has been more used as a control tool than a communication tool. Meetingplace do not create cooperation, it is more for engineers to show their work for Project Leaders.

4.13.2 Language

Today when information is spread over the world in real time, it makes it easier to do cross countries project like this. Despite great tools and techniques, all information can not be forwarded, (3 points). The Project Leaders turned out to be more like a controller than an actually leader in this case. Remarkable is also when working apart, the loss of the body language. It gets harder to develop an informal relation, which can affect the team member's motivation. But in this case the team members seem to have good relationship with each other and do not care so much about their relation to the leader.

4.13.3 Time zone

Different time zones have caused waiting time for respond on emails, (3 points). People in the Indian office have also commented that swedish employees are hard to contact after working hours. The theory is describing difficulties to organize meetings during office hours and increased length of the working day. These issues have not been the case during this project. The Project Manager has taken into account the differences and planned to fit with different time zones. This has result in possibility to still use the common communication channels such as telephones, video conferences or chats.

4.13.4 Culture

The project team has been open minded to cultural differences and sometimes gives the impression of doing the cultural aspect bigger than it is (3points). Team members generalize the stereotypes of Indians and Swedes, which result in ineffective cross cultural communication according to theories.

4.13.5 Organization

In this project only a few persons have the overview of the project, (2 points). The Project Manager got involved in the project after several of processes already were realized. Even if the documentation was good, it was hard to figure out everything that happened in the early stages. According to the theory early involvement adds early commitment and greater understanding of what is the expected outcome of the project. The Project Manager in this case seems to be committed to the project, but miss information of the total process.

The customer would like to be more involved. The most strategically would be to have the customer in the Business Approach and create all solutions in cooperation. These two points shows lack of process orientation. The Sales Leader left directly after the contract was signed and the customer would prefer to have the same person selling the project as implementing it. The overlapping between pre project team and project team was short and information was missing.

4.14 Case G

The project is run by the Tetra Pak Denmark. The project is categorized as an L2 project and is a green field project.¹¹² There were many discussions back and forth with the customer regarding the price. The customer had a very limited amount of money and there were no space for selling variation orders. The project was sold in purpose to maintain good relationship with a key customer and sold to a cheap price. During this study the project is in the installation phase and will start commission phase in one month. The project team involves two persons from Tetra Pak England as well, the Project Manager and the Technical Coordinator. The rest of team is situated in Denmark, and Automation Engineers from Sweden and Ireland.¹¹³

There were many persons involved in the pre project which affected the project negatively. Nobody took responsibility for what was discussed, the overall agreement and discussions with the customer. Everything that was agreed was not written down in the contract. None of the team members in the pre project continued to actually run the project.¹¹⁴ There were some lack of communication and information when handed over the project to the project team. This resulted in some difficulties since it was quite diffuse what was expected to be delivered. The time plan and the budget were found as unrealistic from the beginning and the Project Manager had to do priorities and resource allocations.¹¹⁵

After the contract was signed discussions regarding the competence of the Project Manager in Denmark were challenged, in this way Tetra Pak England was involved and a Project Manager from the office in England was appointed. The Project Manager had some lack of resources and difficulties to find the right persons with the right experience and knowledge.¹¹⁶

During software development, Tetra Pak Sweden and Tetra Pak Ireland were involved. The automation engineering of the project is done by a mixture of persons working in different market companies, like Sweden, Denmark and Ireland. The Swedish persons involved are from Tetra Pak Global Projects and discontent to their commitment in the project is negatively pointed out. The Swedish people do not have the same responsibility and pressure to deliver; they do not have the responsibility to the customer. In this project people have been sub optimizing and it have been hard to see the total view of the project.¹¹⁷

In the beginning of the project the customer demanded to have all information in Danish, all email conversations is in Danish, despite the English Project Manager. Luckily there is a Norwegian person in the office in England involved in the project team that can translate the Danish conversation, but this is ineffective and frustrating. Despite this the communication between Project Manager and the project team works out well.¹¹⁸ The communication, the teamwork and the relationship between the project team and the customer is so far so good.¹¹⁹ The relation between the Project Manager and the customer has been affected by different language; it has been hard to have informal discussions. The team spirit is still there even if they are located in the different countries, but could have been better.¹²⁰

¹¹² Tetra Pak Internal documentation

¹¹³ Project Manager Case G, Tetra Pak

¹¹⁴ Project Leader Case G, Tetra Pak

¹¹⁵ Project Manager Case G, Tetra Pak

¹¹⁶ Ibid.

¹¹⁷ Project Leader Case G, Tetra Pak

¹¹⁸ Ibid.

¹¹⁹ Engineer Case G, Tetra Pak

¹²⁰ Project Manager Case G, Tetra Pak

During the project, two delays emerged, but it was because of the customer didn't like the initial design. The initial design was not good enough and the project team had to reconstruct the design. This cost Tetra Pak around 250 hours more to do the design to a level that the customer could accept.¹²¹ The margin has decreased since the project team had to do a lot more extra work because the pre project was not well done. No variation orders have been made in this case, since the customer does not have any extra money.¹²² A summary of Case G can be illustrated in Table 10.

Table 10 - Overview Case G

Factors	Case G
Background	<ul style="list-style-type: none"> • Tetra Pak Denmark sold the project • Tetra Pak Great Britain and Tetra Pak Denmark run the project in cooperation
Location	<ul style="list-style-type: none"> • Project Manager and Technical Coordinator located in Great Britain • Project team members located in Denmark • Customer and site located in Denmark • Automation Engineers in Sweden and Ireland
Language	<ul style="list-style-type: none"> • English between Project Manager and Technical Coordinator • Danish between all team members except the Project Manager • Danish with customer • Documentation in Danish
Time zones	<ul style="list-style-type: none"> • 1 hour difference between office in Great Brittan and office in Denmark • 1 hour difference between project manager's office and customer's site • No difference between office in Denmark and customer's site
Culture	<ul style="list-style-type: none"> • Danish culture • English culture • Tetra Pak culture
Organization	<ul style="list-style-type: none"> • The customer chose team members • Too many persons involved in pre project • Lately involved Project Manager
Result	<ul style="list-style-type: none"> • The project is called toxic • Decreased margin

4.15 Case G - Analysis

To achieve a greater understanding it is important to evaluate how complex this project is according to the five dimensions. The complexity can be evaluated as medium (9 points) and seen in Figure 11.

¹²¹ Project Leader Case G, Tetra Pak

¹²² Project Manager Case G, Tetra Pak

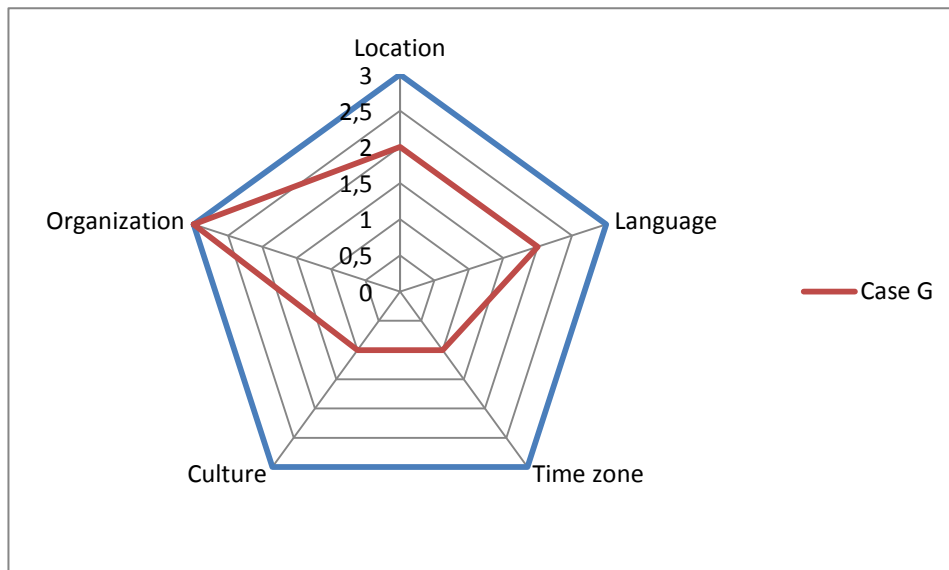


Figure 11 – Complexity Case G.

4.15.1 Location

The Project Manager and project team is divided into two different offices and the Project Manager is not located close to the customer, (2 points). To be located in same place has been identified as an important factor for knowledge integration among project team members. But when sharing knowledge, a common language and understanding is needed, which is not the case in Case G.

4.15.2 Language

All email correspondence with the customer is written in Danish. Since the Project Manager is English, he has to send it to another person within the project team, who translate the email and then send it back, (2 point). This extra communication channel can cause negative consequences. Tetra Pak has English as their international establish language, but since the customer demanded to use Danish during the project, English will be use less. Most of the documentation is in Danish, which can result in problems later on, when evaluating lessons learn or similar. The knowledge is supposed to be shared worldwide within the organization.

4.15.3 Time zone

The project has not been affected by the one hour difference, (1 point).

4.15.4 Culture

In this case, problem with the organizational culture of the customer has occurred, (1 point). This well known large international company is demanding and an important customer. Employees from the head office Tetra Pak Global Projects in Lund are using another organizational culture according to involved team members in Case G. The employees from Sweden are using a negative attitude and think they are better than other market companies. They give the impression of being sure of their work and think they are irreplaceable. Instead the team members in Case G think they are expensive and do not always deliver what is expected. Conclusion from the interviews, from a cultural aspect is the biggest problem with the Swedes having big brother attitude.

4.15.5 Organization

The pre project was the weakest link in this project, and since the first processes affect the following, the project has resulted in decreased margin and satisfaction from the employees, (2 points).

The involvement of several of market companies could be successful, but in this case the persons involved did not feel responsible to deliver. Too many people were involved and it was difficult to get the total overview. The project manager entered the project late and missed information from the beginning. The process during pre project was long, since the customer had difficulties to decide and no one of the team member pushed the customer to decide either. It seems as none of the team member did really care about the project. Different persons participated during different meetings, resulting in lack of information and low commitment to the project.

The customer seems as demanding, selecting team members on its own, but it was determined to satisfy the customer and use the resources wanted. The customer's organization is a well known international, and not to have the business in English is hard to understand. The communication level increases, when not having a Project Manager that manages the Danish language. The Technical Coordinator's knowledge in Danish is irreplaceable and this project would not have been managed as smoothly by the English Project Manager otherwise.

4.16 Case H

The project is run by Tetra Pak Brazil. The project is categorized as an L2 project and is a brown field project.¹²³ There were many discussions back and forth with the customer regarding the price, since the customer is a large and important customer so the margin was decreased under the negotiations. The project was sold in purpose to maintain good relationship with a key customer and sold to a cheap price. During this study the project is in commission phase. The project team members are located in Tetra Pak Brazil in the office in Campinas.¹²⁴

There were few persons involved in the pre project and there were not any team members that continued in the project. This has affected the project negatively since there was some lack of information and communication when handed over the project to the project team.¹²⁵ This resulted in some difficulties since it was quite diffuse what was expected to be delivered. The time plan and the budget were found as unrealistic, from the beginning and the project manager had to do priorities and resource allocations.¹²⁶ Some of the team members got involved in other project by the end of the project and were stressed. The project manager had to work hard to motivate the team members and find solutions to help them allocating their time. The team members that are engineers do not like documentation and administration so they were helped by trainees and interns to manage and focus on engineering.¹²⁷

Since the turn over is very high in Brazil (7%) there are some difficulties in the project because everybody works different. The team members are maybe not always aware of how to work and what is expected from them since there are not any role descriptions.

During the project, there were some shutdowns. A summary of Case H can be illustrated in Table 11.

Table 11 - Overview Case H

Factors	Case H
Background	<ul style="list-style-type: none"> • Tetra Pak Brazil sold the project • Tetra Pak Brazil run the project in cooperation
Location	<ul style="list-style-type: none"> • Pre project team and project team located in TP Brazil • Customer and site located in Brazil
Language	<ul style="list-style-type: none"> • Portuguese between project team members. • Portuguese with customer. • Some documentation in Portuguese and some in English.
Time zones	<ul style="list-style-type: none"> • No time difference between office in Campinas, Brazil and customer's site.
Culture	<ul style="list-style-type: none"> • Brazilian culture • Tetra Pak culture
Organization	<ul style="list-style-type: none"> • New project manager and new roles among the team members. • One kick-off meeting initially •
Result	<ul style="list-style-type: none"> • Increased margin

¹²³ Tetra Pak Internal documentation

¹²⁴ Project Manager Case H, Tetra Pak

¹²⁵ Project Leader Case H, Tetra Pak

¹²⁶ Project Manager Case H, Tetra Pak

¹²⁷ Ibid.

4.17 Case H - Analysis

To achieve a greater understanding it is important to evaluate how complex this project is according to the five dimensions. The complexity can be evaluated as medium (6 points) and seen in Figure 12.

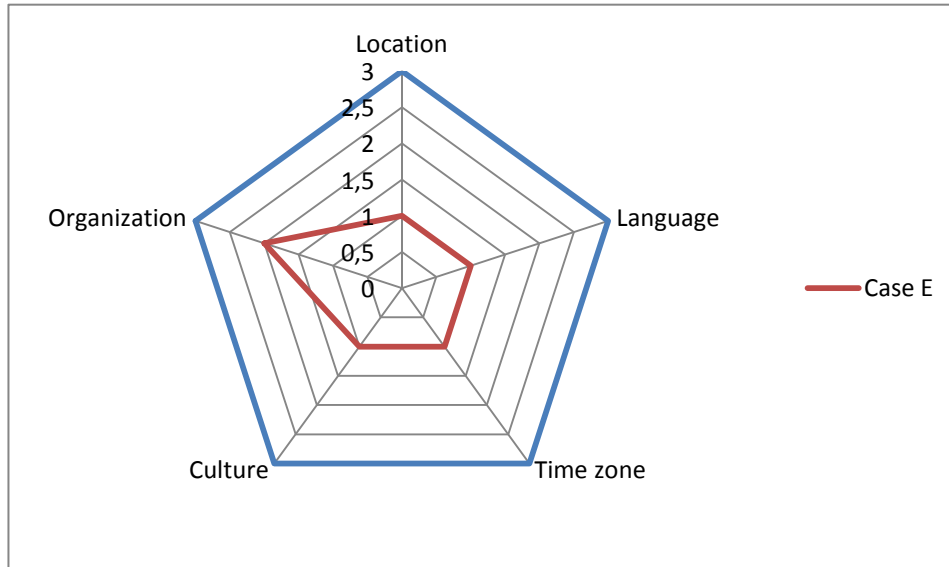


Figure 12 – Complexity Case H.

4.17.1 Location

The Project Manager and project team is located in the same office so there is a lot of informal communication. (1point). This has been very value adding for the project since there is no time loss in booking formal meetings and everything is discussed very easily and fast.

4.17.2 Language

All email correspondence with the customer is written in portuguese and all communication internal in the team is also in portuguese (1 point). This extra communication channel can cause negative consequences. Tetra Pak has English as their international establish language, but since the customer demanded to use portuguese eand the office runs the business is run in portuguese most of the documentation is in the local language. Some documentation though is in english.

4.17.3 Time zone

There is not any time zone difference (1 point).

4.17.4 Culture

In this case, problem with the organizational culture has occurred internal since there is a high turnover on the employees and there is a huge amount of young engineers in the team (1 point). This well known large international company is demanding and an important customer and the projct team need to act experienced.

4.17.5 Organization

The delivery time was the most difficult part to manage in this project. By the end of the project some of the project team members got involved in other projects, which affected this project negatively. The project team got very stressed and had to work on the weekends and public holidays. The project team members are not fans of administration and document

necessary information regarding the project so they took help from trainees and interns. They had one kick off meeting in the beginning of the project and the buyers participated on this one so that critical equipments with long delivery time could be ordered (2 points).

4.18 Case I

The contract is signed between Tetra Pak Brazil and the customer is located in Brazil. The project is categorized as a L2 project. The objectives from the project team were to deliver the project within time and during the time of the project increase the margin.¹²⁸ This project was of interest for Tetra Pak Brazil since it was their first cheese plant. In this market cheese is an important category and Tetra Pak Brazil really wanted this project. It has affected the margin and the project was sold to a lower margin in the beginning. Another explanation to the lower margin is the competition on the market at that time. Their competitors' solutions are cheaper but have not as high quality as Tetra Pak Brazil's solution.¹²⁹

At the same time Tetra Pak Brazil had a similar project, and their purpose was to deliver this project smoothly and use similar solutions in these two projects. The calculations from the other similar project was copied and used in this project. They only changed the calculation into the prices of today. In this project, the pre project was short because less time for calculations. After the contract was signed, the pre project team left the project and the project team continued.¹³⁰ One person who was both involved in the pre project and in the project team explains the advantages of being involved in both parts and suggests everyone to be that.¹³¹

The pre project took about 2 month before the contract was signed. No details were discussed and an old technical solution was used. No technical issues were discussed, since the customer did not have enough of knowledge in that area. The customer was well involved during the planning and well aware of different happenings during the project time. When the contract was signed a kick off day started the process for this project. In the kick off meeting, the customer participated and a long-term planning was made.

The role description for all the team members are well defined, but are not read in detail. Lately organization changes have been done and for some persons the responsibilities have been changed. Most of the team members are located in the same office. Now when the project is in installation phase, the Project Manager is located at site and can be hard to reach by phone, since the telephone network is weak.¹³²

The documentation in this project has been in Portuguese, since the customer does not speak English. It happened often that team members from other market companies are involved in the project team, for example when an expert knowledge is missing. But team members do not think it is an obstacle that they can't speak Portuguese or do not understand the documentation in Portuguese.¹³³

One team member explains something called knowledge base that is available on Tetra Pak's intranet. It is a place where engineers can put information and make it available worldwide. The purpose of this tool is to spread the knowledge worldwide and use same kind of solution for a similar problem.¹³⁴

¹²⁸ Engineer Case I, Tetra Pak

¹²⁹ Project Leader Case I, Tetra Pak

¹³⁰ Ibid

¹³¹ Engineer Case I, Tetra Pak

¹³² Other Case I

¹³³ Project Leader Case I, Tetra Pak

¹³⁴ Engineer Case I, Tetra Pak

The team members have different opinions if they have achieved the objective or not. They have different views of what the objective was. The objective is fulfilled in their attempt to strategic implement a new cheese plant and this project have result in lessons learned for the future. But at the same time, the margin has decreased by 16 percentage points and is now at minus.¹³⁵

The lessons learned from this project are to be more customer-oriented. In future Tetra Pak Brazil will discuss more deeply with the customer and involve the customer more than they did at this time. During the project, they will involve the customer more and explain every important step in the process. In the pre project the customer management was fully involved but not in the project, Tetra Pak Brazil would like to have the customer involved during the total process. The project was sold to a director of the customer and then is the plant used by a manager, so buyer and user is not the same person. This has lead to misinterpretations within the customer’s team. Tetra Pak Brazil would also like to have more integrated project teams, today there is a clear line between pre project team members and project team members. This would facilitate for the customer to understand Tetra Pak’s business approach even more.¹³⁶

The margin decrease because of more service to the customer during start-up, and the project team had to order more material, tools and more time to the project. The contract was quite diffuse and the customer refuses to pay for variation order, since he expected to get it free, when the contract was not clear enough. The customer has claimed on the delivered solution twice and is still not satisfied. This project has still not received the performance guarantees demands. Tetra Pak Brazil is afraid that the margin will decrease even more and think this will also be the case.¹³⁷ A summary of the case is attached in Table 12 below.

Table 12 - Overview Case I

Factors	Case 1
Background	<ul style="list-style-type: none"> • Tetra Pak Brazil sold the project • Tetra Pak Brazil run the project
Location	<ul style="list-style-type: none"> • Team members located in Brazil • Customer and site located in Brazil
Language	<ul style="list-style-type: none"> • Portuguese and English within the project team members • Portuguese with customer
Time zones	<ul style="list-style-type: none"> • No time difference in office and site
Culture	<ul style="list-style-type: none"> • Brazilian culture • Tetra Pak culture • Customer organizational culture
Organization	<ul style="list-style-type: none"> • New roles and responsibilities • Lack of cooperation between the sales team and the implementation team
Result	<ul style="list-style-type: none"> • A minus margin • Lessons learned • Customer is not as satisfied as desirable

¹³⁵ Project Leader Case I, Tetra Pak

¹³⁶ Ibid

¹³⁷ Ibid

4.19 Case I - Analysis

The project's complexity will be evaluated according to the five dimensions. The complexity can be evaluated as low (6p), see Figure 13.

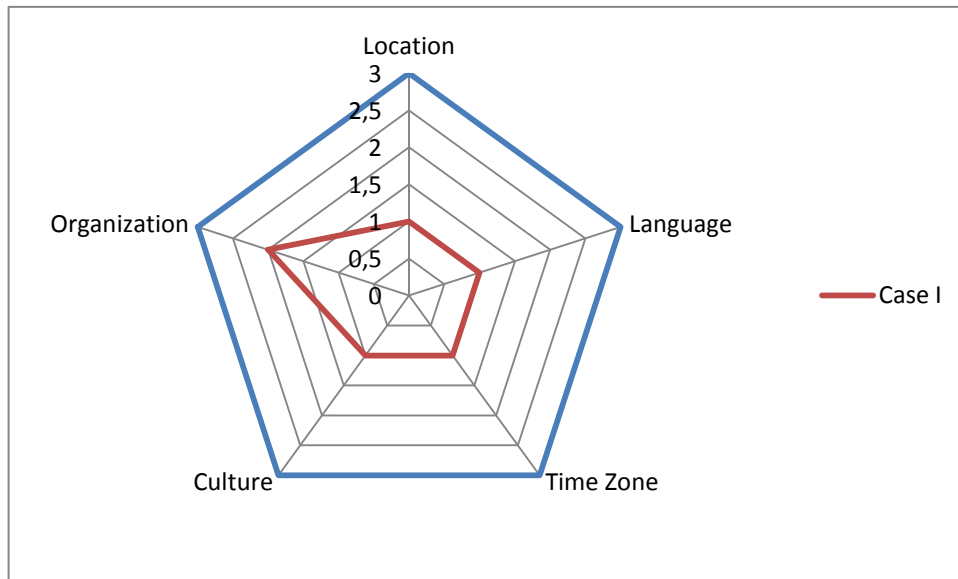


Figure 13 - Complexity Case I.

4.19.1 Location

Both the project team and the customer's site are located in Brazil (1 point). Despite that the involved persons have been located in the same office. The problem has been with the telephone network and the Project Manager can be hard to get in touch with.

4.19.2 Language

The project team members seems happy to work in Portugues, but do not have a problem to work in English. In this project all involved team members and the customer have communicated in their native language, (1 point). The theory points out, when doing work it is important for team members to feel secure in their communcation. No problems with language issues or misunderstandings between team members have appeared. The reason is surely the size of the project (L2) and not many people involved. Instead misunderstandings and lack of communication have appeared in contact with their internal suppliers

4.19.3 Time zones

In this case, there have not been any differences in time between the project team members or between the project team and the customer (1point).

4.19.4 Culture

Both team members and the customer have the same national culture (1 point). None of the interviewed persons talk about a Brazilian culture and do not think there are any cultural differences between Tetra Pak and the customer.

4.19.5 Organization

Tetra Pak Brazil gives the apprehension to be a rather new organization and have much to learn and implement. The way they have done their pre project in this case is negative. They forgot that every project is unique and to understand what the customer really wanted. Tetra

Pak Brazil seems to have the greatest focus on the deliver phase and forgot Understand, Create and Convey (UCC). The first three steps is critical to deliver the last one successfully.

After the contract was signed and information was forwarded from the pre-project to the project team, there was lack of information. The two teams did not spend enough time together to make this hand over smoothly. Interview with involved team members indicates a wish to be involved earlier, which according to the theory is a good idea. The lacks of cooperation between the two teams cause lack of effectiveness.

5 Analysis

In this chapter the final analysis will be presented. It includes a summary of all the initial analyses and presentation of the similarities and differences among the projects and market companies of how to run the same kind of projects. This chapter presents also the analysis of the five dimensions Language, Organization, Culture, Time zone and Location and which of these dimensions are most important to consider in project management.

Influences from each dimension will now be analyzed compared to both profit result and organizational result. Table 13 below summarizes the judge complexity from the previous case analysis.

Table 13 - Summary of the complexity of the case studies

Factors	Case	A	B	C	D	E	F	G	H	I
Location		2	2	1	1	1	3	2	1	1
Language		1	2	1	1	1	3	2	1	1
Time zones		1	1	1	1	1	3	1	1	1
Culture		2	1	1	1	1	3	1	1	1
Organization		2	1	2	2	2	2	3	2	2
Complexity		Medium	Low	Low	Low	Low	High	Medium	Low	Low

In this thesis nine cases have been studied and only one of the cases is judged to have high complexity. The nine cases score to have the highest complexity in the organization dimension. In comparison by these five dimensions, time zones are affecting the project least. In following discussion the cases will be discussed and compared according to the five dimensions.

The case that is considered to have high complexity has shown great results both in profit and organizational. Case A and case G can be evaluated to have the lowest profit result in these case studies. These two cases are evaluated to have medium complexity. When the cases are determined to have low complexity, the profit result is great, but great organizational result can be missing. This give the apprehension of to have medium complexity in project will both miss profit and organizational result. A reason for this can be it is a project “in between”, it is not so complex that you try harder but it not so easy so you can do as you always have done.

The process thinking is established in different levels around the Tetra Pak world. According to the theory three key factors for successful processes would be fulfilled, which is not the case for Tetra Pak yet. Everybody is aware of the processes, but the expected outcome is shattered. The proprietorship and responsibility is not as establish as demanded to succeed with the business processes, but Tetra Pak think it will take some time. Recommendations for Tetra Pak is to determine how to evaluate, develop and measure the processes even if recession. Tetra Pak confirms Hammer’s expression about the though part is to get it done

and not to get the idea. Tetra Pak has a well detailed process strategy, but it is not fully implemented yet. Market companies indicate different levels of understanding of the process and implemented Business Approach.

5.1 Location

Five of the cases (C, D, E,H and I) have low points for Location and all participants in the projects are located in the same place. The closeness to the customer has affected the relationship positively. The margin for four of these five projects has increase as well. Case F was judge to 3 points for Location and has still increased the margin; however it has been difficult to involve the customer as much as desirable.

Case C, D, and E verify the importance of the team being located in same office and close to the customer. Eye contact facilitates impulsive meetings and share information easily. In Case E, the Sales Manager was transferred to be in the same office as the other team members and achieved positive outcome. The Sales Manager has information and a relation to the customer which can be hard to share without face-to-face meetings. Case E was special to this point, in other cases the Sales Manager disappears after the contract is signed.

In Case B, F and G, the Project Manager and/or Project Leaders are not located in the same office as their team members. According to this study, it has affected the project and has increased the complexity of the project. This is in line with the theory, but it should also be mentioned that the case that was the most geographically shattered succeeded. They were aware of the geographical differences and found ways to manage the project despite the distances. Howsoever communication tools have been used, this study confirm previous studies. Face-to-face is still regarded as the most valuable form of interaction and the communication tools are just complementary and cannot replace the importance of face-to-face meeting. In Case F, they are using the communication tool Meeting Place as a control tool and did not increase the feeling of being a team despite distance. In Case B, the Project Manager has been located close to the customer instead of the team members, which has decreased the costs for visits on site. To be near the customer has positive outcome both in form of profit and relation. In Case I, the Project Manager were located in the same office as the team members, but spent a lot of time at site. The problem with the site was the bad telephone network.

Location may not be important for the profit according to these cases, but more important for positive organizational result. It is easier to involve the customer, which this study proves to increase the customer satisfaction. To conclude positive outcomes are achieved by team members being located near each other. It is important to take advantage of it. In Case A, all the team members are located in the same office and still problems with coordination are affecting the project negatively. The team members only see their own part and do not see the total view of the project. They do not understand how their part affects other team members. Case C did not have any social kick-off to increase the motivation of the team members. It would be easy to stiffen up because all involved person are located in same geographical area.

5.2 Language

Only Case F is evaluated as high complexity in this dimension and different language within the team and with the customer is used. Case A, C, D, E, H and I are considered to have low complexity for Language. Case A is found to have most problems with misunderstandings and coordination problems despite the low complexity.

Even if Tetra Pak has established an international company language, i.e. English, other languages are used to run projects. Other languages are used to serve the customer and also for convenience and security for the team members. In Case B it is pointed out the differences in the English language between team members and also misunderstandings that have appeared. In Case G, native language is used for all team members except for the Project Manager. The Project Manager has not been able to build a relationship as good as the other team members with the customer because of the language issues.

In Case C, the expression about Tetra Pak Network is pointed out. This is also the only case that has remarked the positive and great network Tetra Pak has. Communication and cooperation between actors during a project is essential considering the divided responsibilities for the ultimate customer satisfaction. In this project, information and knowledge was shared also from people not involved in the project. Case C is not used to run large project like this one and needed to find information from outside the office, succeeded and the customer became satisfied.

In Case C, where French was used both within the team and with the customer, it has facilitate to run the project in native language. The customer does not feel secure with English, which could influence the relationship. If Tetra Pak Global Project had been involved or support this project, the language complexity would increased marginally and probably affect the project negatively. The same would happened in Case H and I.

Even when the team members use a common language, each individual has different ways in comprehending and manipulating the common language. In Case E, the “two way communication” – expression indicates of a deeper understanding the complexity of communication. In this project the communication can be seen as a key success factor, since the communication and involvement of the customer has increase the customer satisfaction and profit. It is harder to develop an informal relation, when the team members have different native language and do not feel secure with the English language. In Case F, when describing communication problems, stereotype description is used, exactly what the theory says not to do.

The most important conclusions of this dimension are that the communication with the customer should function and the internal communication and understanding among the team members. This is in line with the theories and studies made on this area, and a gap in communication can result in misstatements or preconceptions that could endue conflicts. To understand what the customer needs and wants, the communication is essential. Also if the customer changes his mind during time, it is important to understand these changes to be able to change directions as fast as possible, to save money. The intra-project communication is important for organizational results as team spirit, motivation and smoothly processes.

5.3 Time zones

The dimension Time Zones has been evaluated to affect the projects least. Most common is that the time zones do not affect the project. In Case F, three difference time zones were managed with great result. No one of the team members or the customer did complain about complexity to manage the different time zones, despite what the theory says. The theory is also pointing out that different time zones can cause productivity issues, one site's team members had to wait for another site's team members to resolve a problem. In Case F, this is denied, with the explanation of having other things to do.

Theories for time zones also describe a need for increase working hours. In Case F, it is hard to evaluate if this is true. The team members from India works, when it is necessary to work and do not have any specific working hours. In the Swedish team, they still have their ordinary working hours, since it is not allowed to do overtime because of savings.

A conclusion from this dimension is that time zones have a low impact on the projects. The problems that could occur according to the theory are handled well within Tetra Pak. It is more about the availability. Time zones are also hard to influence, more important is to know how to manage the differences. Tetra Pak is used to time differences and manage it without any remarkable problems.

5.4 Culture

Only two out of seven cases were judged to high complexity in the culture-dimension. Case F was valued as high and Case A as medium. The lack of studies on multinational group work makes it hard to evaluate the result against theories.

In Case F the project team has been open minded to cultural differences and sometimes gives the impression of doing the cultural aspect bigger than it is. During the interviews of people from Sweden, they points out the difference in cultures with the Indians. The Indians though do not indicate national cultural issues. In Case B the team members do not seem to reflect if they are working with different national cultures and the work is coordinated well. In Case C, the project team members act as they think that the French culture is something different and special. Remarkable is the preconception in Case F and Case C of how the national culture differs between countries. Case F is also the most profitable project in this case study despite highest complexity.

When concluding the influence culture has on the project, it seems more as people's mentality and thought is the obstacles. National cultural differences do not have any impact on the profit in these case studies and no negative organizational result has been discovered. The organizational culture differences are more the way the employees see their own work and responsibilities. In India, the employees are happy for their jobs and do work overtime without compensation. In Sweden, it is hard to make the employees work over time despite compensation. Several of market companies are pointing out the employees from the head office's behaviour, is too expensive, do not always deliver expected result, are not committed to the project and act as they still are preeminent in knowledge. Remarkable is also that employees from the head office in Lund, Sweden, seems to see the market companies as competitors, but at the same time not aware of their increased knowledge.

Identified differences in mentality have been observed during the interviews. In India and Singapore the answers were more reserved and it was difficult to achieve negative information about the project and in involved persons. In Sweden, the employees told their opinion and did also talk outside the questions. Several studies have been conducted on the cultural aspect in global projects, and the affects of having different cultures in a project team. People could sometimes use culture as an excuse when dealing with people worldwide and projects become difficult. The importance from this study shows that no matter what cultural differences there is in both the project team and the customers organization, it s more related to the individuals in the teams. It is all about the business, keeping margins, delivering to the customer, maintain good relationship to the customer in a long term perspective, where ever you are in the world.

5.5 Organization

The dimension Organization seems to be the highest complexity reason in Tetra Pak Processing Systems' projects. Only Case B got 1 point for the organizational complexity.

A critical factor for a project's success seems to be the pre project in Tetra Pak's Business Approach. Case A had problems, when handing over the project from pre project team to project team. The two teams did not spend enough of time to share and understand the information. In Case C, the pre project was the weakest link, and the project team started to do activities that should be done during the pre project. In these two cases, since the processes affect the following, the projects have resulted in decreased margin for cost items affected by lack in pre project and satisfaction from the employees. In Case C and Case E the pre project was well done before the project started and has helped to increase the margin.

Tetra Pak's processes seem to be implemented at all the different market companies but with different understandings of them. In Case A, the team members act well aware of the processes, but have difficulties about what to deliver after each sub process. The fact that the customer was deeply involved as a team member in the project team, can be a result of Case E is suing their processes and have implemented them well. Also the involvement of the Sales Leader after the contract is signed help the process oriented team members to complete the project with a total view of the project. Case E is the only case where the Sales Manager has been involved even after contract. In Case F, the team members had problems with the total overview of the project and the Project Manager had hard to figure out what happened before he got involved. Only one of the cases has succeeded with the main goal of process-think, the customer focus. Only Case E involved the customer in the project team and succeeded with the horizontal cooperation. In case I, the project team gives the apprehension to be a new organization and have to work with the organizational structure.

In Case F, persons were involved both in the pre project and the project, which saved time when starting the project. In Case A, involved team members indicate a wish of being involved earlier, according to the theory it would be a good idea as well. Case A did have coordination and communication problems between the pre project team and the project team. The Sales Leader left the project directly after the contract were signed and all the team members agree about the negative affect for the project because of that.

The view of variation orders seems to differ between market companies. In some cases are variation orders an advantage and a strategy to increase the margin. In other cases is it hard to get paid for variation orders and the margin decreases. According to the triangle theory will the three criteria influence each other; i.e. if the scope is changed, then the time and/or cost would be changed as well.

The reason for Organization achieves the highest complexity number is several of factors influence the organizational complexity. Process thinking generates higher result, both in profit and in organizational results. Tetra Pak Processing System has to implement their processes deeper in the organization. Another finding is to have some people involved both in pre project and project to save time, money and relationship with the customer, when the contract is signed. It would facilitate the handing over process as well and the lack of information would decrease. There have also been some governance problems, and there are differences of handling shipments in different countries. This problems needs to be considered as it can result in delays for the project.

The projects being evaluated in the triangle cost, quality and time is not optimal for every project. There are several factors that could evaluate a projects success and should be added to the triangle. This study shows some new critical factors to evaluate the project success. What is considered as a successful project or not depends on the objectives and goals initially in the project. Teamwork is the most affecting factor according to this study and has greatest impact on the project.

6 Discussion

This chapter presents and discusses findings of the analysis. Ten lessons learned from the case studies will be presented as a final summary of how to run projects more efficient. These ten lessons learned will then be evaluated according to the complexity model. In the end of this chapter a new dimension to the complexity model will be added.

6.1 Ten Lessons Learned

Ten lessons learned will be concluded from the analysis and further explained below. These ten lessons learned can be used for all types of projects and organizations to achieve a greater coordination in global projects.

- **Involve the customer as a part of the project team and be close to the customer**

Customer satisfaction will increase and facilitate the relation and communication with the customer. When a great relationship with the customer is achieved, the profit could increase as well. This study shows that it is not necessary to be near the customer physically. It is more important to keep the customer informed and involve him in the project team. The customer will increase the understanding for the projects teams work and understand the value of delivering his part of the deal. It is important to sync the two parties. When the customer have an insight in the project teams´ work it also becomes easier to take charge for variation orders. It is less expensive to correlate problems if they are found early in the project. Involving the customer increases the possibilities to find and predict the problems earlier.

- **Keep the person who sold the project in the project team or at least in the project organization.**

The customer prefers to do business with the same person who implements the project. The Sales Leader has also information that can be lost to share with the project team. The Sales Leader shall not run the project but should be available and participate in discussions when necessary. It should be included in the role description as a Sales Leader to step in when there in are misunderstanding between the customer and the project team, since the Sales Leader has the information and knows what agreements were made from the beginning. The Sales Leader is responsible for understanding the customer and forwarding this information as much as possible. In best case the Sales Leader is located near the project team that is going to implement the project and can communicate in office. Even if there isn't a project team appointed yet people talk and catch up informal information in the office. The Sales Leader should be in the organization chart and should have responsibility for the project until the project is closed. This will increase the pressure for the sales people to really understand the customer and sell projects they believe in. From the Sales Leaders perspective he/she wants to continue selling other projects and be involved as little as possible in the implementation project. Therefore it is up to the Sales Leader to forward as much information as possible to the project team, like frequent meetings initially after the contract is signed. It should be unacceptable for the Sales Leader to not participate in the initial meetings of the project. It is one organization and the attitude needs to change, and no camps between sales and engineers should be allowed.

- **Understand the overview of the project and how each team member's part affect the total outcome**

The team members should increase their understanding of areas they are unfamiliar with. They need to understand how their work affect the next person and which persons that is dependent of which information so that lack of information will decrease. This will also result in increased team work and greater understanding for each other. The sub-optimization will decrease and an overall image of the project will be necessary. The team members should have the same vision of the project and be aware of what processes that needs to be done. They need to understand their role in the project and be aware of their deliverables to the next process, and how this will affect the total outcome of the project. If there are any delays in one sub-process they need to inform persons that will be affected, so that they can help each other out and make the work easier for everyone. The key is to communicate and understand each other.

- **Use the company network**

Great global organizations, like Tetra Pak in this case, have knowledge and experienced people around the world. Well established companies have advantages of having these core competencies within the organization, and needs to take advantage of this. When organizations start searching for knowledge outside the organization they do not use the resources that are internal and available. Lessons learned and developed new knowledge can be lost for the organization if they outsource the same knowledge all the time, They should instead develop internal knowledge. From a short term perspective it is cheaper to outsource in some cases but from a long term perspective, experience will be lost within the organization.

- **Do not think of cultural differences as an obstacle, then it become an obstacle.**

In this Master Thesis, the cultural differences have low influence on the projects. Even if the team was a mix of two offices located in different continents and the customer was located in a third continent, they achieved the greatest results. It is important that the team members in the organization remember that when being a part of the same kind of projects, they should not see any boundaries working with other offices. Even if the persons are located in different areas around the world, they have according to the findings of this thesis the same mentality regarding the projects. Although it can differ how well established processes and strategies within the organization are implemented in the market companies. Also the way of seeing the customer and the way they work towards the customer could be different among the market companies. But in general the differences are few and not worth paying any greater attention. Differences that should be considered though are individual ones like knowledge, different background, personalities, and attitudes. These differences among the project team could affect the project team and the team spirit. Again the focus is on the team and the attitudes in the team. The outcome of the projects investigated in this case has not been affected by cultural differences.

- **Use mutual worldwide documentation**

The documentation should be in the company's international established language to facilitate resource allocation from different offices around the world. In the cases where there is documented in local language it will become difficult for a person that does not speak the local language to understand. Translating can increase the possibilities for misunderstandings and non efficient of achieving information this way. The possibility to shear knowledge between the market companies will be lost if only a few amounts of people can understand the documentation. The same type of documentation should be

used at all market companies to ease the understanding and way of working. It becomes more complicated when a person from another market company starts working with the project and also needs to learn new methods and sheets for documenting.

- **Keep a great relationship with internal suppliers**

Problems with internal supplier should be smoothly and not decrease the margin. The internal suppliers have a special position since they do not have any competition when they sell internal. This could result in bad approach and attitude toward their own colleagues. The internal suppliers do not have any direct contact with the customer and are not really affected by the pressure from the customer. This could result in internal irritations and conflicts. To decrease this misunderstands and different ways of seeing a project the project team members should maintain a good relationship with the internal suppliers and make them understand the importance of their deliverables.

- **Put the fish on the table**

It is an Indian expression that indicates to communicate the problems in the project and find solutions internal among the rest of the team. It is OK to not to have all the answers and ask for help. This results in supporting each other and increases the teamwork. It will also cost less if problems are indicated in early stages. The attitude among the team members should be open without judging anybody and it should be accepted to ask for help, whether it is about new knowledge or just not managing to deliver in time and needs support. The sooner the problems are identified and communicated to the rest of the project team the cheaper it will become to solve the problems early.

- **Understand what the customer wants, needs and expects from the beginning**

The pre project is even more important than the project. The pre project affects the total outcome since a well done pre project decreases unnecessary costs in the project. A well done pre project can increase the sales rate since the customer will feel more understood and satisfied with the solution presented. Having a well done project can save money and the budget in the project. But this is a balance between the sales team and the implementation team. The sales team should not put too much effort and resources in offering the customer a too detailed solution, in case the contract would not be signed. This time and resources will in that case be lost.

- **Be flexible**

It is important that the roles description and responsibilities are well defined. Significant is also to be flexible in the role description. The different roles are often depended of each other and the utilization rate of the role can differ during time. It is important to help each other out when someone is loaded with too much work. Sometimes there can be activities that will not fit in under a role description, but have to be done anyway. The team members should be aware of their responsibilities and make sure that they deliver what is expected from them. Everybody is first of all responsible for reading their role description.

6.2 Relation between ten lessons learned and complexity in projects

According to the analysis, five of the ten lessons learned have been selected for further investigation and to explore the relation to the five dimensions for complexity in projects. The lessons learned are decreased to five since these are the ones that affect the project the most and where the project management should focus on. Some of the ten lessons learned are

linked together and related to each other, why only the main lessons are developed further. The five most important lessons are chosen to be:

- Involve the customer as a part of the project team and be close to the customer
- Keep the person who sold the project in the project team or at least in the project organization.
- Put the fish on the table
- Do not think of cultural differences as an obstacle, then it become an obstacle.
- Understand the overview of the project and how each team member's part affect the total outcome

These five lessons are the ones that affect the result of a project the most, in either profit result or organizational result according to the previous analysis. In Table 14 below the five lessons will be evaluated in how they are influenced by the five dimensions to evaluate the complexity in projects.

Table 114 - Five lessons learned vs. complexity dimensions

Lesson	Involvement of the customer...	Keep the person who sold the project...	Put the fish on the table	Do not think of cultural differences...	Understand the overview of the project...
Dimension					
Location	X	X			
Language	X	X			
Time Zone					
Culture			X	X	
Organization	X	X	X	X	X

Organization is the most affected dimension according to the complexity model, this result in a greater focus to manage organizational difficulties. When companies run projects, the organizational behaviour should be clear and rehearsed to avoid these kinds of problems. It is proven during the case analysis in this report that organizational behaviour affects the result of projects. The dimension, organization is wide and spread over the total organization and can be hard to figure out where the problem for the project is. For a project's success, it is important to have clear organizational behaviour and strategies, team members should be aware of what is expected to be delivered and how to manage a project according to the companies' strategies. To involve the customer and seller will help to link different departments for a total view, this will also help to avoid sub-optimizing and create a greater relation between all involved participants in the project. Put the fish on the table and to not think about cultural differences as an obstacle will help the organization to create an open atmosphere, which will result in discover problems earlier and save costs according to theories.

Language can be hard to manage, use the establish company language, but if the customer refuses, have the communication with the customer in his/her native language, but do all the

documentation for the company in the company language. This will make it easier for resource allocation and to use resources worldwide. Two kinds of culture have been discussed in this thesis; both of the cultures can be managed in similar ways. It becomes a problem, when the team members do a problem of it. Instead take advantage of differences and learn from each other.

Time zone is not affected by any of these five lessons. In this report time zone has been evaluated to have a strong connection to location. If the location is the most critical dimension, then the time zone will be that as well. This dimension is also hard to affect without affect someone of the other dimensions.

6.3 New dimension to the complexity model

In this thesis it is proposed to add a new dimension to the complexity model and erase the time zone dimension. Time zone is replaced because of less affect in the ten lessons learned. As discussed, time zone is always affected by the location dimension. The new dimension that is suggested is the amount of team members in the project. The reason is because of case studies that have shown negative outcome when less people are involved but also when too many people are involved. The amount of team members will also affect the amount of communication channels and increase the necessary of a communication plan. Figure 14 shows the complexity model with a new dimension.

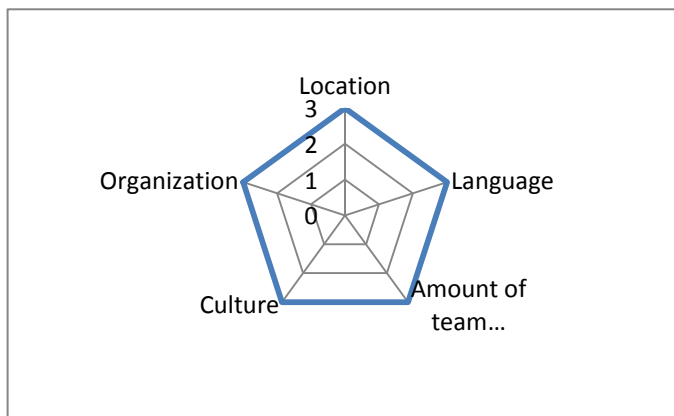


Figure 14 - The complexity model with a new dimension

This new dimension would have great affect on projects with too many involved team members or when the team members are few. In projects where the team members are overrepresent, can result in lack of responsibility. No one take responsibility against the customer and the proejct. It can also be hard to organize meetings or will everybody involved even attend to the meetings. Table 13 below shows which of the ten lessons learned that this new dimension affect.

Table 12 - The new dimension's affect on ten lessons learned

Ten lessons learned	Amount of team members
Involve the customer as a part of the project team and be close to the customer	X
Keep the person who sold the project in the project team or at least in the project organization.	X
Understand the overview of the project and how each team member's part affect the total outcome	X

Use the company network	
Do not think of cultural differences as an obstacle, then it become an obstacle.	
Use mutual worldwide documentation	
Keep a great relationship with internal suppliers	
Put the fish on the table	X
Understand what the customer wants, needs and expects from the beginning	X
Be flexible	

The amount of team members will affect the relationship with the customer and will also influence the process of involve the customer in the project team. The customer can only be involved as a team member if he/she knows all the team members, which is not possible if too many team members are involved. If too many people are involved during the pre project, it is impossible to keep all the persons in the project team. It is also important to not have too much people involved during pre project; it is much easier to understand what the customer actually wants, expects and needs in a smaller group. Team members will easier get an overview of the project and the total outcome, when the amount of team members is realistic and suited. When too many persons are involved it is hard to understand what everybody is doing and how this influences the total outcome. In a project team with many team members, it can be hard to get an open atmosphere and it gets easier to hide problems.

7 Reflections and Conclusions

This chapter presents a conclusion regarding to the findings. The whole Master Thesis is focused on the team members' way of working and so is the "best practice" for coordination global projects successfully. Interesting future studies will also be discussed.

7.1 Conclusion

As a summary all the conclusions and findings of this Master Thesis is related to team work and attitude internally as well as towards the customer. Having a good team spirit and attitude in a project team you can overcome and manage the most complex projects. The project team should not focus on cultural differences or individual conflicts among the team members. It is important to keep focus on the project and the customer and deliver what is expected. Important to see that what is measured and is relevant is the project outcome, no matter of whom did what and whose fault it is. Team members should have a global mindset in their daily work. Globalization changes have forced team members to work Glocal, a mix of Local and Global.

The model to evaluate a project's complexity can be beneficial used in beginning of project, when the team is created to identify where the highest complexity is. Then can ten lessons learned be used to avoid problems that are related to the negative outcome of the complexity. It is preferable that companies have an implementation strategy to manage ten lessons learned. The model and the lessons can be used for any projects, it is not connected to a specialized project instead it is to manage coordination between team members.

Compared to KPMG study, companies have to suit their strategy into three levels. The team members will act local, but with a regional and global mindset. KPMG's identified challenges and recommended solutions for global projects have some similarities with the result from this study. Their challenges are connected to the total project, while this outcome is focused on team members. Their recommended solution is more preventing than during time. The ten lessons learned in this report are more meant to be used during the project. In the study of KPMG, culture and language are assembled and in this report language and culture is considered to not be managed in the same way. Culture has less affect on the project than language. Challenges with time zones are identified by KPMG, the result from this study are that Time zones do not affect the project; it is more about the availability of people involved.

Future studies

Future studies on this report should investigate how this complexity model can be used to evaluate the project complexity before project start. This can be useful for project management to allocate resources and focus on complexity areas to predict problems in the project team. This study is of interest see if the model is useful to work proactive with projects that are complex.

References

Literature

- Adesola, Sola - Baines, Tim (2005), *Developing and evaluating a methodology for business process improvement*, Business Process Management Journal, vol.11, no1, pg. 37-46.
- Bannon, Gerard – Mattock, John (2003), *Cross-cultural communication*, Kogan Page Limited, London, United Kingdom.
- Barinaga, Ester (2007), "Cultural diversity" at work: "National culture" as a discourse organizing an international project group, *Human Relations*, Sage, Vol60, No2, pg. 315-340.
- Binder, Jean (2007), *Global project management*, TJ International Ltd., Cornwall, United Kingdom.
- Boudreau, Marie-Claude – Loch, Karen D. – Robey, Daniel – Straud, Detmar (1996), *Going Global: Using information technology to advance the competitiveness of the virtual transnational organization*, JSTOR: The Academy of Management Executive, Vol.12, No.4.
- Bresnen, Mike (2004), *Embedding New Management Knowledge in Project-Based Organizations*, *Organization Studies*, Sage, Vol25, No9, pg. 1535-1555.
- Briner, Wendy – Geddes, Michael – Hastings, Colin (1996), *Project Leadership*, Gower Publishing Ltd , Aldershot.
- Carcone, Paul (2008) *Managing Communication in Projects: How to Maintain Information Sharing Practices in Business*, Business Management, Suite101, Published: August 14, 2008.
- Creswell, John W. (1998), *Qualitative inquiry and research design: Choosing among five traditions*. Thousand Oaks, California: Sage Publications.
- Garg, Ram (2008) *Delivering Multiple Sites and Time Zones Projects: A Case Study in the Telecom Industry*, PM World Today.
- Gupta, N L. (1998), *Crosscultural communication: Global Perspective*, Concept Publishing Company, New Delhi, India.
- Harmon, Paul (2003), *Business Process Change: A Manager's Guide to Improving, Redesigning, and Automating Processes*, Morgan Kaufmann Publishers, San Francisco.
- Harrington, H. James - Esseling, Erik K. C. - Van Nimwegen, Harm (1997), *Business process improvement workbook: documentation, analysis, design and management of business process improvement*, The McGraw-Hill Companies, Inc., Columbus, USA.
- Holmes, David (2005), *Communication Theory*, SAGE Publications, London, United Kingdom.
- Jeston, John - Nelis, Johan (2006), *Business process management: practical guidelines to successful implementations*, Elsevier Ltd, Burlington.
- Kaplan, Robert B. – Murdock, Laura – Ostoff, Frank (1991), *Core process design*, The McKinsey Quarterly, published: March 22, 1991.
- Karlöf, Bengt - Helin Lövingsson, Fredrik (2007) *Management begrepp och modeller*, SIS Förlag, Stockholm, Sverige.
- Lievens, Annouk - Moenaert, Rudy K (2000), *Project Team Communication in Financial Service Innovation*, *Journal of Management Studies*, Blackwell Publishing., vol.37, No5, pg. 733-766.
- Minssen, Heiner (2006), *Challenges of Teamwork in Production: Demands of Communication*, *Organization Studies*, Vol27, No1, pg. 103-124.
- Moran, Robert T. – Youngdahl, William E. (2008), *Leading global projects*, Butterworth Heinemann, Oxford, United Kingdom.

Muffatto, Moreno – Panizzolo, Roberto (1995), *A process-based view for customer satisfaction*, International Journal of Quality & Reliability Management, September 01, Vol.12, Issue:9, pg. 154-169.

Ong, Hock.Tek. (2007), *Effective Project Management – Essential Elements For Successful Projects*, Inaugural Construction Conference, CIOB Singapore and National University of Singapore.

Project Management Institute (2004), *A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Third Edition*.

Sapsed, Jonathan - Salter, Ammon (2004), *Postcards from the Edge: Local Communities, Global Programs and Boundary Objects*, Organization Studies, Sage, Vol25, No9, pg. 1515-1534.

Scarbrough, Harry – Swan, Jacky – Laurent, Stéphane – Bresnen, Mike – Edelman, Linda – Newell, Sue (2004), *Project-Based Learning and the Role of Learning Boundaries*, Organization Studies, Sage, Vol25, No9, pg. 1579-1600.

Stanleigh, Michael (2003), *Combining the ISO 10006 and PMBOK To Ensure Successful Projects*, From Crisis to Control: A New Era in Strategic Project Management, Business Improvement Architects.

Sydow, Jörg – Lindkvist, Lars – DeFillippi, Robert (2004), *Project-Based Organizations, Embeddedness and Repositories of Knowledge: Editorial*, Organization Studies, vol:25 No9 pg. 1475-1489.

Tehrinasr, Ali - Darani, Edris-Heidari (2009) *Business Process Reengineering: A Holistic Approach*, 2009 International Conference on Information and Financial Engineering, IEEE, pg. 79-82.

Zarella, Egidor – Gumn, Christopher – Tom, Jeffrey – Wright, Ning – Tsavlakidis, Ioannis (2007), *Managing Global Projects, Observations from the front-line*, IT ADVISORY, KPMG.

Company internal documentation

Cost Control

Customer Satisfaction

Minutes of Meetings

Project Status Report

Tetra Pak (intranet)

Tetra Pak (education)

Interviews

Karl-Gunnar Axelsson, Director Global Projects, Tetra Pak, Lund, Sweden.

Claes Fahlén, Resource Manager Sales Support, Tetra Pak, Lund, Sweden.

Inger Nyberg, Process Owner, Tetra Pak, Lund, Sweden.

67 persons interviewed.

Internet sources

GlobalProjectManagement.org (acc 2010-04-19) <http://www.globalprojectmanagement.org/>

Virtual Project Management (VPMModel) – a knoll by Dimitrios Lirsikakis (Acc 2010-04-19) [19http://knol.google.com/k/dimitrios-litsikakis/virtual-project-management-vpmodel/3ib8exvrc87n4/9](http://knol.google.com/k/dimitrios-litsikakis/virtual-project-management-vpmodel/3ib8exvrc87n4/9)

Appendices

Appendix Case A

Background

The contract is signed 20th October 2008 between Tetra Pak Middle East and the customer in Sudan. Global Projects in Lund has run this project in cooperation with the market company Tetra Pak Middle East. In Figure 1. below the organization chart for this project is demonstrated.¹³⁸ Several of people involved had new roles and responsibilities in this project.¹³⁹ Usually when selling projects, the Sales Leader is from the market company, but in this project the Sales Leader and Solution Leader is the same person and is situated in Tetra Pak Global Projects, Sweden. The communication and cooperation between the market company and the customer did not work out and it was decided to exclude the first Sales Manager. This resulted in one less communication channel and was positive according to the person who was both Sales Leader and Solution Leader.¹⁴⁰

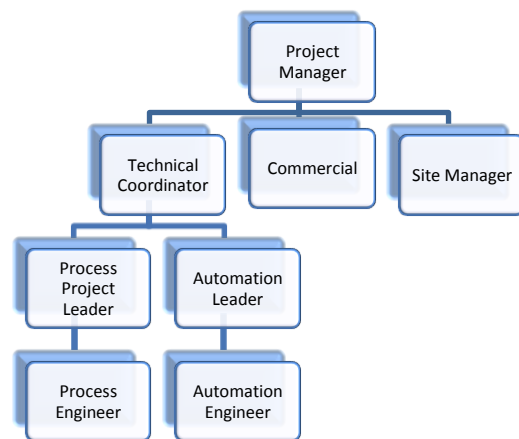


Figure 2 - Organization chart Case A

Process

Pre project

The contact with the customer started long time before the contract was signed and at first the customer decided to do business with a competitor's solution. The reason for not selecting Tetra Pak the first time was the high price, later on the customer came back to Tetra Pak because of discontent with the competitor.¹⁴¹ Then the customer gave Tetra Pak the contract from their competitor, which described exactly what they wanted, despite this Tetra Pak deliver something totally different and something that the customer did not wanted.¹⁴²

¹³⁸ Tetra Pak Internal Document

¹³⁹ Project Manager Case A, Tetra Pak

¹⁴⁰ Project Leader Case A, Tetra Pak

¹⁴¹ Project Leader Case A, Tetra Pak

¹⁴² Tetra Pak Internal Document

Always when selling projects a dispute according to the price within the Tetra Pak Organization starts. The price has to be both competitive and consist to determined margins at Tetra Pak Global Projects, Sweden. The Project Manager wants enough of resources to implement the project successfully and want to sale the project more expensive, while the seller wants to win the contract in hard competition. This results in different goals between the sales team and the implementation team despite they are within the same company.¹⁴³

Project

When the contract was signed the pre project team handed over the project and the project team was involved. The pre project team left earlier than what is common, which affected the project negatively, since all needed information was not forwarded to involved project team members. To hand over the project, the two teams met during one meeting, where information about the contract, technique and role responsibilities was spread. The project manager arrange a social kick-off for involved project team members as well, everybody did not participating and team members have been pointing out problems with the team spirit. An unsatisfied person left the company, since he felt the motivation was decreasing. The project team is complaining about how the Sales Manager has worked with this project, they think the understanding about what the customer wants is missing. The project team has been working with activities that should have been done before the contract was signed according to Tetra Pak's business approach, which has affected the time plan negatively.¹⁴⁴

The customer expected more clear directions from Tetra Pak Global Projects and would prefer more guiding into decisions, which has not always been the case and this puts the customer into an uncomfortable seat, making decisions sometimes above their experience and competence.¹⁴⁵ The customer did not always know what he wanted and changed his mind several of times. It is harder to get paid for variation orders in this culture and 15 variation orders have been made. These changes have affected the budget, since not all of the changes become variation order.¹⁴⁶ The customer wanted a more manual technique than Tetra Pak Global Projects is used to deliver and this has been hard to solve and has affected the budget negatively.¹⁴⁷

Another wish from the customer is to have one person leading the project from the first day to final delivery and closure. The customer prefers to make business with the same person who implements it, and has reacted to how the change was between the Sales Manager and the Project Manager.¹⁴⁸ Persons involved in the implementation team has also shown interested to be involved earlier and in that way get a greater understanding for the customer's need.¹⁴⁹

¹⁴³ Project Leader Case A, Tetra Pak

¹⁴⁴ Project Leader Case A, Tetra Pak

¹⁴⁵ Tetra Pak Internal Document

¹⁴⁶ Tetra Pak Internal Document

¹⁴⁷ Engineer Case A, Tetra Pak

¹⁴⁸ Tetra Pak Internal Document

¹⁴⁹ Project Manager Case A, Tetra Pak

The cooperation and communication with Tetra Pak's internal suppliers Dairy and Beverage (D&B) did not work out well and has influenced the process engineering budget. Team members involved in this project think that D&B have treated them beneath contempt and have been telling employees at D&B their disappointments. If Tetra Pak Global Projects would treat their customers in the same way, they would not have any business left and that would result in less business for D&B as well. D&B is in a unique situation because of the competition situation, Tetra Pak Global Projects has to buy from Tetra Pak's internal suppliers.¹⁵⁰

The teamwork between Processing and Packaging is not a competitive advantage for Tetra Pak according to the customer. A stronger understanding and cooperation between these two and present one complete solution to the customer is more comparative.¹⁵¹

Result

The table below (Table 1) shows relation between budget and forecasted project result.¹⁵² Total project is still below budget and the main reason is cheaper equipment than expected. The reasons for cheaper equipments are the currency and the recession. During a recession it is easier to pressure the price to the suppliers. The automation engineering part has been more expensive then expected due to that Tetra Pak and the customer had different expectation on the solution.¹⁵³

Table 1 - Differences in cost items (Case A)

Cost Item	Difference
Management (total)	+26%
Process Engineering (total)	+35%
Automation Engineering (total)	+127%
Service Engineering (total)	+61%
Equipment (total)	-12%

The customer has given Tetra Pak 3,8 out of 5 point for this project. The highest score is given for professionalism in the solution with the explanation that Tetra Pak was presenting the most comprehensive solution but at the same time also most expensive. Others competitors start with an attractive price and then add on; the customer prefer Tetra Pak's approach. The lowest score is for long term profitability for the customer, the customer would have appreciated a more active discussion regarding to this.¹⁵⁴

¹⁵⁰ Project Manager Case A, Tetra Pak

¹⁵¹ Tetra Pak Internal Document

¹⁵² Tetra Pak Internal Document

¹⁵³ Project Leader Case A, Tetra Pak

¹⁵⁴ Tetra Pak Internal Document

Appendix Case B

Inputs

The project is sold by Tetra Pak Thailand and the site is situated in Thailand. Tetra Pak Singapore supports the market company in Thailand, since Tetra Pak Thailand had lack of resources. The project is categorized as a L2 project and the plant is judged as a big plant by involved team members. The plant is a Greenfield project and is using both new equipments and existing equipment from an old plant.¹⁵⁵ During the pre project it was hard competition about the customer and Tetra Pak Singapore decided to start with a lower margin and their objectives was to increase the margin by variation orders during time.¹⁵⁶

The Project Manager and the Site Manager is the same person and is situated in Thailand. Except from the automation team, the rest of the team is located in Singapore. The organization chart is illustrated in Figure 3 and also shows different locations of the team members. The automation part in this project is outsourced to a company in Thailand, since Tetra Pak Singapore and Thailand do not have enough of automation resources.¹⁵⁷

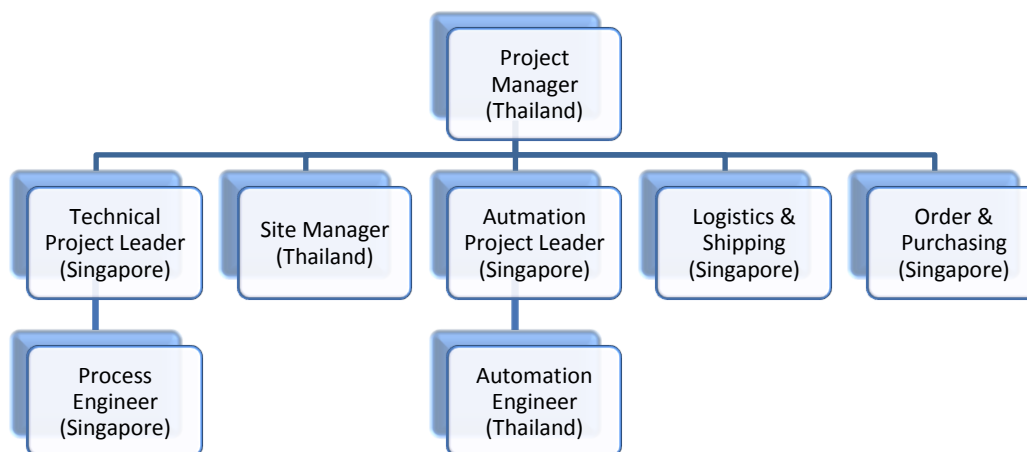


Figure 2 - Organization chart Case B

Process

Pre project

It was hard competition for Tetra Pak Singapore to win this contract; several of other contractors are operating in the same market. The market in Asia has been more popular lately and more and more companies are doing business there. During the negotiation, the customer met every contractor to see their offer for one day. Finally Tetra Pak got the contract and started to implement the project.¹⁵⁸

Project

¹⁵⁵ Project Leader Case B, Tetra Pak

¹⁵⁶ Other Case B

¹⁵⁷ Project Leader Case B, Tetra Pak

¹⁵⁸ Other Case B

The team members situated in Singapore have been working together before and none of the team members pointed out any communication problems. Team members in Singapore pointed out the positive outcome of having a small office, the informal information was spread easily.¹⁵⁹The small office also facilitate the informal information that is spread and the team members points out how easy it is to achieve the needed information, just go over to the next desk, like five steps away. Communication tools that are used are email, telephone conferences and sometimes visiting the site.¹⁶⁰

The Technical Project Leader has a close relationship with the Project Manager despite distance, they sending email to each other almost everyday. These emails are just a summary and not well detailed. Misunderstandings have occurred in the email correspondence, the English language is different despite the geographical closeness. All team members have access to the project documents like budget, minutes of meetings etc. through the server. The information from the Project Manager is spread by email to concerned project team members. Emails are used to clarify and have also the benefit to be committed.¹⁶¹ The Project Manager in Thailand does the timing and has the relation to the customer, and the project is monitored and developed by the project team in Singapore.¹⁶² The distance between the team members has not been disturbed and one of the team members declare that the office in Thailand is seen as the office next door. The team members are also aware of the benefits of visiting site and Project Manager in Thailand, but don't do it very often. To prepare the travel for Thailand is estimated up to 2 days. Team members declare that the Project Manager has the overview of the project and they only see their own part of the project.¹⁶³

Three persons have done the process engineering, one from Singapore, one from Thailand and one from China. Together they coordinate three plants with both new and old machines, which make this plant to a complex one. The plant is too big to manage by only one person, even if that would be preferred. Communication about this process solution is done by sending over drawings and then a discussion over phone. Despite these difficulties, no misunderstandings between the three process engineers have occurred. The three process engineers met once during the FAT test in Thailand and then went to their respective office and continue working.¹⁶⁴

The outsourced automation team was selected by the customer, who has done business with them before. A difficulty has been that the automation team has reported directly to the customer, without to tell the Project Leader or Manager. The Automation Project Leader is still located in Tetra Pak Singapore and has not faced any problems with outsourcing and is making sure the work fulfill Tetra Pak standard. The Automation Project Leader did the calculations for automation engineering, but during the project lack of resources appeared in the office of Singapore and a person from Sweden was hired to continue the coordination of automation. After a while the person from Singapore was back as Automation Project Leader again.¹⁶⁵

¹⁵⁹ Project Leader Case B, Tetra Pak

¹⁶⁰ Engineer Case B, Tetra Pak

¹⁶¹ Project Leader Case B, Tetra Pak

¹⁶² Project Manager Case B, Tetra Pak

¹⁶³ Project Leader Case B, Tetra Pak

¹⁶⁴ Engineer Case B, Tetra Pak

¹⁶⁵ Project Leader Case B, Tetra Pak

Result

The project has taken 7 month from signed contract to delivering and is managed in time, despite shortage of time. To succeed within time, clarified milestones and awareness of when different part of the project team will deliver their part have been clear and predetermined.¹⁶⁶

The calculations for the budget are done by the Project Manager with help from the Senior Manager of the Asia cluster and monthly review is done. All team members have access to the budget, but are not able to change it.¹⁶⁷ The table 2 below shows a couple of numbers that will give an apprehension about the project.¹⁶⁸

	Difference
Overall	- 8%
Project Management	-78%
Equipement	-17 %

Table 2 - Differences in cost items (Case B)

The project is seen as a successful project with an increase of margin by 8 %. Several of variation orders have helped to increase the margin. The equipment savings are explained by currency hedging and discounts for the machines. Tetra Pak contacted their subcontractors to see their offer and these prices are used for the budget. When the contract is signed, a negotiating with the suppliers are made to get more discount, a general discount is about 5 -15 %. The customer is also satisfied with this project and has given the overall project 4 points out of five.¹⁶⁹

Appendix Case C

Background

Case C is driven by Tetra Pak France and is categorized as a L3 project. Normally Tetra Pak France does not run L3 projects and the decision to run this project was taken by managers within the office in France.¹⁷⁰ Team members are contingency if Tetra Pak France would have drove this kind of project today, they have a more structured risk analysis today then they had at the time. Four reasons to run this project by its own and not involve support from Global Projects were described; language issues, resource available, familiar with the pre treatment part and good support available for the cheese

¹⁶⁶ Project Manager Case B, Tetra Pak

¹⁶⁷ Other Case B

¹⁶⁸ Tetra Pak Internal Document

¹⁶⁹ Project Leader Case B, Tetra Pak

¹⁷⁰ Project Manager Case C, Tetra Pak

part. First time for Tetra Pak France to working with Tetra Pak Plant Master and has not been working with cheese plants for several of years.¹⁷¹

The plant is divided into two parts; one cheese part and one pre treatment. From the beginning it was meant that the contract would be two different, but it was decided to do it as one contract.¹⁷² This simplified for the customer and also the cooperation and overview within the office. Instead the Project Director decided to have two Project Managers and two teams, one for cheese and one for pre treatment.¹⁷³ Afterwards the total budget was split between these two parts and then the two parts were run as two different projects but with a close collaboration between the two Project Managers.¹⁷⁴ The two project teams can be seen in the organization chart below Figure 3.

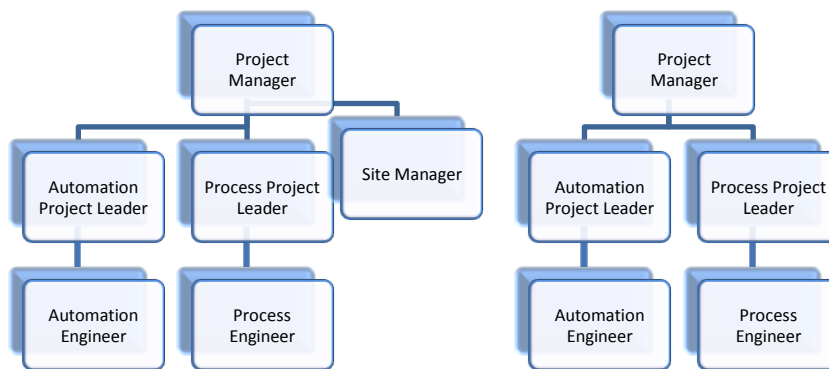


Figure 3- Organization chart Case C

Process

Pre project

Engineers in pre project do all the calculations to make an offer to the customer; this information is forwarded to the Project Manager after the contract is signed.¹⁷⁵ Tetra Pak France has used total different team in pre project and during the project; this according to the organization's arrangement. An explanation given is to give the Project Managers an overview of the project and not go into detail which is needed when doing the calculations.¹⁷⁶ The relation and the cooperation went well between the sales- and the technical teams during this phase, no misunderstandings appear and the customer was satisfied with how it was managed.¹⁷⁷ When it was time for the quotation, the pre project team had been working hard to figure out what the customer wanted and the solution was almost as expected. Only a few things were changed before the contract

¹⁷¹ Other Case C

¹⁷² Project Manager Case C, Tetra Pak

¹⁷³ Other Case C

¹⁷⁴ Project Leader Case C, Tetra Pak

¹⁷⁵ Engineer Case C, Tetra Pak

¹⁷⁶ Project Leader Case C, Tetra Pak

¹⁷⁷ Other Case C

was signed.¹⁷⁸ The person who was responsible for the quotation left the project when the contract was signed, but was still available for questions.

The project team was defined before the contract was signed; during the negotiation the time is critical and the planning need to be under control. Changes are done quickly and the project team need to be prepared for a start as soon as the contract is signed to not lose time and cost. It is also important for the organization to be sure of the resources needed is available.¹⁷⁹ The automation team consists of only a few people at Tetra Pak France and it can be hard to find the right persons for the project within the organization and it is needed to find them outside the organization. It is difficult to train people from outside to right level, but Tetra Pak France has a good cooperation with suppliers of automation engineers.¹⁸⁰ The structure of the project team has been changed, before in Tetra Pak France, it was one process team with a Project Manager and Process Engineers and the other team was the automation team. Now they are one team together and reporting to the same person, to avoid misunderstandings and lack of information between the process- and automation team members.¹⁸¹

Project

The implementation started easy, the project team members did know exactly what to do, which resulted in time efficiency.¹⁸² When some doubts appeared the project team asked the pre project team and also the Sales Director was involved in meetings in early stage to clarify the input. It took long time to clarify internally, the project team had long meetings with involved from the pre project instead of many. From the beginning 80% were clarified and then the project team comes back with questions, when they needed the remaining 20 %, which was more detailed information.¹⁸³ The handing over from pre project team to the project team were quite easy, a lot of documentation and the good relationship with the customer simplified it. Even when issues appeared, the relationship with the customer managed well.¹⁸⁴

During the project, project board meetings with stakeholders and the customer were arranged, to make sure all different parts were on track. It had occurred some technical problems with the customer, the customer expected something else than what the project team did, between 10-20 different things were unclear in the contract and then the Project Managers need help from involved people in the project board to solve it out. This has affected the project negatively by extra working hours, increased cost and some extra modifications for the solution. It has also been difficult to get paid for these changes, because the customer expected it and don't want to pay extra for something who was not clear in the contract.¹⁸⁵

The relation between the two Project Managers has been good, their different responsibilities have been clear and their cooperation has worked out well. They met

¹⁷⁸ Project Leader Case C, Tetra Pak

¹⁷⁹ Other Case C

¹⁸⁰ Engineer Case C, Tetra Pak

¹⁸¹ Other Case C

¹⁸² Other Case C

¹⁸³ Casanovas

¹⁸⁴ Other Case C

¹⁸⁵ Other Case C

twice a week and spent a lot of time at site together. One of the project managers is not situated in Tetra Pak's office, and is working from home. The communication tools used are email, phone and meetings at site. During commissioning both of the project managers spend about three days a week at site.¹⁸⁶ Lots of people were involved at site, and some clarification problems with the customer made the time longer than expected. The project team was dependent on the customer, because they can not test the solution without the customer's production.¹⁸⁷

A person from the pre project has left Tetra Pak France, afterwards it was discovered that all information from discussions with the customer was not documented. A lesson learned from this project was to write everything down and let someone from the company or the customer confirms it. A policy for the project board is to satisfy the customer as the first step and then manage internal documentation, claims and splitting up costs to different parts within the company.¹⁸⁸

Tetra Pak has a competitiveness network within the organization, for this project the team has been in contact with people around the world for different kind of support. The team is satisfied with all the help they got and the time to get an answer. This network should be used more, but sometimes it can be hard to find the right person to ask. Mr. X gave an expression "*We are in a network world, whatever problems you have, someone in the world have the solution, exactly the same in the Tetra Pak world.*"¹⁸⁹

Result

The project result is good and the project is seen as a successfully, it has also contributed new knowledge and experience.¹⁹⁰ The customer is also satisfied according to the involved people. Tetra Pak France sold the project by using performance guarantees and has success to reach over the level. The customer told them that they reached the level, but don't want to tell them how much over they passed. The customer doesn't want Tetra Pak to use the great number as a selling point to competitors of the customer. Tetra Pak in France think it is sad that they can not have a win-win relationship with their customers.¹⁹¹

The margin is still good; it has decreased a bit since the beginning. It mostly depends on the budget for automation. First of all the budget for automation was underestimated and then also problems within the automation team. One of the automation team member based at his own home did not follow his responsibilities as agreed. The project manager did not get the information needed and the customer suspect a prank. The person got feedback and is still involved in the team, but very strictly controlled by managers.¹⁹²

¹⁸⁶ Project Leader Case C, Tetra Pak

¹⁸⁷ Engineer Case C, Tetra Pak

¹⁸⁸ Other Case C

¹⁸⁹ Project Leader Case C, Tetra Pak

¹⁹⁰ Project Leader Case C, Tetra Pak

¹⁹¹ Other Case C

¹⁹² Other Case C

Appendix Case D

Background

The project was sold in Singapore by Tetra Pak Singapore and is categorized as a L2 project. The site is located in Singapore as well and is close to the office. Tetra Pak is one of five companies, which delivered this project to the customer and this project was ended in 2009. Tetra Pak Singapore's strategy was to sell the project to minimum base and then increase the margin by variation orders.¹⁹³

This project is a brown field project and an extension of the customer's existing fabric. The project consist of three extension projects; upstream extension, down stream extension and upgrading. The project requires a well defined time plan for how to manage closures in different parts of the fabric in the most effective way. It is also important that this is done in cooperation with the customer and it happen that Tetra Pak Singapore and the customer did not agree about how and when. During shut downs in this project the team members have working overtime to make the agreement in time.¹⁹⁴

The project team is illustrated in Figure 4 and shows that several of persons have more than one role.

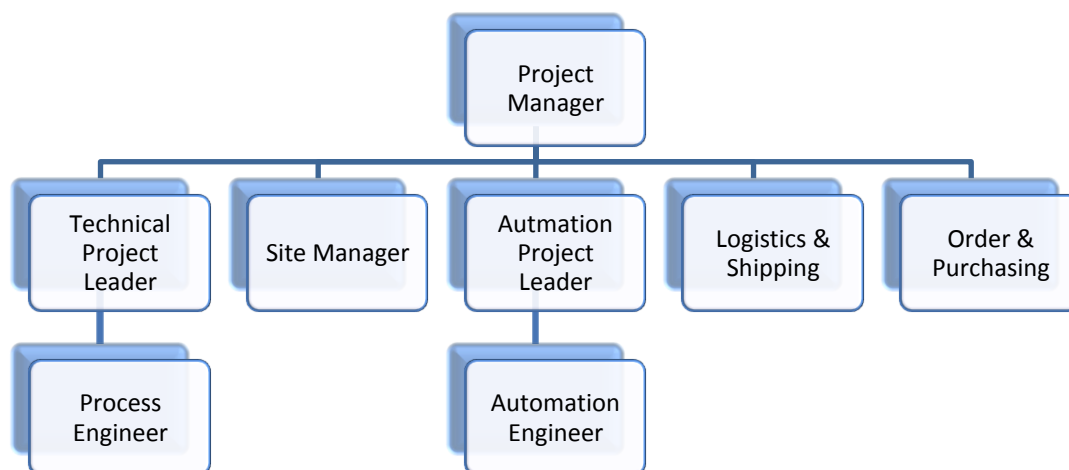


Figure 4- Organization chart Case D

Process

Pre project

During the pre project the Project Manager did all the calculations by creating a list of items for the plant and then the person responsible for the order and shipping is checking up the price information and then send over it to the Project Manager who gives the offer to the customer.

Only one person is working as sales manager in Singapore and is also supporting projects in Malaysia. Initially the focus is to understand what the customer wants, what

¹⁹³ Other Case D

¹⁹⁴ Project Manager Case D, Tetra Pak

is expected and how Tetra Pak's solution will suit this. It took 3-6 months to understand and create a solution in this project, but during time the sales manager worked with other project in parallel.¹⁹⁵

Project

During this project the Project Manager were changed because of personal reasons and the new Project Manager entered the project in October 2008 just before the work on site started and the first shut down of the customer's production.¹⁹⁶ The time was critical, since the planning is an important factor and the cost will increase if the project team is not enabling to manage the shut down in time.¹⁹⁷ When changing the Project Manager, the first Project Manager provided the second Project Manager with documents and the change process took about a month. This was the first project to run for the second Project Manager who has been working with process engineering before.¹⁹⁸ Several of the team members point out the great relationship which the second Project Manager has builds up with the customer and the well managed switching process of project manager in this project. The project team doesn't think that the customer has reacted negatively when switching the Project Manager and thinks the Site Manager and the two Project Managers manage the change smoothly.¹⁹⁹

All information is supposed to be spread by the Project Manager. The team members think it is important to continue to spread all information by the Project Manager, which gives the Project Manager control over the project.²⁰⁰ The Project Manager had monthly meetings with the customer, and then the information is distributed to concerned team members by email. If further explanations are needed, a face-to-face meeting is arranged.²⁰¹ The minutes of meetings are highly documented and explains what have happened, Tetra Pak's and the customer's commitments and in the end a decision about when and where the next meeting will take place.²⁰² According to involved team members, the project was completed by team work and all team members who were willing to cooperate. The team members have been working together before and know every person's particular responsibility. In this project the communication has been more informal than generally, since all the team members is located in same office.²⁰³

Several of the team members emphasize the advantages of having the site close to the office. The relationship to the customer has been stronger, the Project Manager can meet the customer more often and it is also easier to respond to their needs. The Project Manager and the site manager have also a close cooperation and the information from the Site Manager is spread by the Project Manager to the other team members. During the pressured shutdown a few misunderstandings appeared because of stress and because of the second Project Manager were new in the project. Even if there were a

¹⁹⁵ Project Leader Case D, Tetra Pak

¹⁹⁶ Project Manager Case D, Tetra Pak

¹⁹⁷ Other Case D

¹⁹⁸ Project Manager Case D, Tetra Pak

¹⁹⁹ Project Leader Case D, Tetra Pak

²⁰⁰ Project Leader Case D, Tetra Pak

²⁰¹ Project Manager Case D, Tetra Pak

²⁰² Tetra Pak Internal document

²⁰³ Project Leader Case D, Tetra Pak

overlapping by the two Project Managers by a month, it is hard to receive and forward all information.²⁰⁴

The project team is not satisfied with the cooperation with Dairy & Beverage (D&B) and thinks that D&B does not understand their needs. Market companies have to be innovative, creative and find quickly solutions and D&B is seen as conservative and not risk taking at all. The cooperation within D&B is not working out well either; the lack of communication between their two departments, order handling and shipping is affecting the project. The instructions are given to the order handling department by the team member responsible for logistics, later on when calling the shipping department, the information have not reach them.²⁰⁵

Usually Tetra Pak Singapore offers the best solution with the highest price, while their competitors offer a base minimum with much lower price. Tetra Pak Singapore use to have about 30% higher price on their solutions then their competitors. In this case, Tetra Pak Singapore changed their strategy and imitates their competitors and offers a base minimum. This was needed to win the competition, when the customer started to look at the price and almost ignored the offered technical solution. Tetra Pak Singapore's strategy was to sell the project to minimum base and then increase the margin with help from variation orders. In this project 16 variation orders have been made and increased the margin. The customer is awarded of if the scope is changing, then a variation order is made and would be paid for; this is accurately described in the contract.²⁰⁶

Result

A few selected cost items are lined up in the table 3 below. During the project, the organization changed control system to SAP, which may influence the comparisons between numbers of budget and actual cost.

Table 3 - Differences in cost items (Case D)

Cost Item	Difference
Project Management	+163%
Equipment	+/- 0%

The passed project management budget by 163 % is explained by more time spend with the customer. The customer expected more direct communication and meetings than was budgeted. In common the market company manages the customer, now when the customer and site are near the project manager meet the customer at site. ²⁰⁷ The change of Project Manager did also affect the project management budget negatively.²⁰⁸ The second Project Manager can not explain why this is not considered in the budget, since the budget was done by the first Project Manager with help from the Senior

²⁰⁴ Project Leader Case D, Tetra Pak

²⁰⁵ Engineer Case D, Tetra Pak

²⁰⁶ Other Case D, Tetra Pak

²⁰⁷ Other Case D

²⁰⁸ Project manager Case D, Tetra Pak

Manager of the Asia cluster. In next project, the second Project Manager would prefer to do the budget as well; it would give more clarified numbers. The Project Manager has the responsibility to manage the budget and commonly the budget is not passed. The total result is better than expected in the budget.

Tetra Pak Singapore has not done any customer satisfaction for this project, but they think the customer is content with their work. This is based on lack of negative complains from the customer. A project team member thinks that one improvement for the team and project manager would be to learn to know the customer more and know how they operate.²⁰⁹

Appendix Case E

Background

The project is sold in India and is managed by Tetra Pak India and the site is located less than one hour drive from the office. This project is categorized as a L2 project. The project is an integrated project, which means that both process and packaging engineering is involved. Two contracts were signed, one for the process and one for the filling equipment. These both sides were to be managed by one project manager and one project team. The integrated project team was pressured to manage the customer with one integrated approach, since the customer only knows Tetra Pak as one company. An overall view of the project team can be seen in Figure 5. It is a brown field project, and includes two shut downs of ongoing production at site. When this case study is analyzed the project is in the commission phase, with four months left to closure.²¹⁰

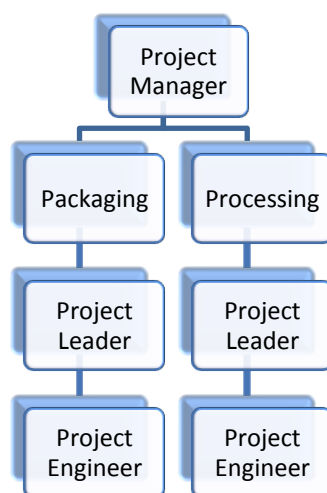


Figure 5- Organization Chart Case E

Process

Pre project

The Sales Leader is normally located in New Delhi, India but was under the pre project transferred to Pune, India, and closer to the customer and the rest of the pre project

²⁰⁹ Other Case D

²¹⁰ Project Manager Case E, Tetra Pak

team. In this project the understand phase (according to Tetra Pak's business approach) was well done. Before any calculations and work were done, the pre project team found out what the customer required and helped him to decide. The scope was well clarified, also the deliverables and which resources were needed.²¹¹ The aim from the beginning was to involve the customer and work very closely with him as a team member.²¹² Persons involved in the calculations are also involved in the implementation. The market company in India doesn't have any persons who is just doing the calculations during pre project and not involved in the project team. There are persons who are only involved in the project team and never do any calculations. In the beginning of the project everyone involved in the project had three days of meetings to understand the scope of the project, customer demands and expectations.²¹³

Project

A Project Manager was appointed during the pre project but had to be replaced by another Project Manager that could be hundred percent committed to the project, since the first Project Manager had other projects as well. The second Project Manger was hired from Tetra Pak Global Projects, Sweden and because of governance restrictions was not able to fulfill the project. This resulted in the Project Manager in the implementation phase being replaced the third time.²¹⁴

In the beginning of the project, everyone involved had three days of meetings to understand the scope of the project, customer demands and expectations. The involved team members in this case have been located near each other in the same office which has affected the communication frequency significantly. The meetings on site have also been simplified by closeness to the office, which has affected the relation to the customer positively. To complete the project successfully, the project team was depended on customer to deliver his part of the project. To be sure of the customer's deliverables in right time, the project team has a close collaboration with the customer; the customer was involved and considered as a team player. During one period in the project, the project team suspected that the customer did not read the documents sent to him, the project manager and the customer did sit down and go through all the documentations. In the beginning it was demanding but they appreciate it after a while.²¹⁵

In the beginning of the project, the project team had regular meetings more often and then less during the project process. The meetings are always summarized in minutes of meetings and distributed to all team members and the customer. To make sure all involved in the project had same vision and goal about the project, a meeting every Monday took place and people from both Tetra Pak and the customer participated. When it was needed the Sales Leader also participate to meetings, since the Sales Leader has information about the pre project and a relation to the customer.²¹⁶

²¹¹ Project Leader Case E, Tetra Pak

²¹² Project Manager Case E, Tetra Pak

²¹³ Project Leader Case E, Tetra Pak

²¹⁴ Project Manager Case E, Tetra Pak

²¹⁵ Project Manager Case E, Tetra Pak

²¹⁶ Project Leader Case E, Tetra Pak

One of the team members is pointing out the importance of understanding the two way communication. The communication cannot be effective if only one way communication exists. To make sure that the receiver of information has understood the message correctly questions like; “tell me what you understood?” are asked and also to let the receiver retell what have been understood. First then is the potential for realizing if the receiver has understood or not. Questions like; Do you understand are almost answered by it self and does not assure that is the case. It is mentioned that this is typically Indian culture to answer yes even if the understanding is not clear and correct. The project team has been working with the expression “*put the fish on the table*”, which are supposed to create an open atmosphere in the office. The expression refers to communicate problems within the team, and then the problem can be solved with help from other team members.²¹⁷

An expression from Mr. X about their team work “*It is almost like some kind of game where you need to understand the other players so that you can do your job in cooperation with the other players and play as a team.*”²¹⁸

In this integrated project, the Project Manager had knowledge about processing since before and less knowledge about packaging and decided to have a greater focus to understand the packaging processes. This was the first time for Tetra Pak India to deliver an integrated project with equally involvements from both processing and packaging.²¹⁹

Result

The project is not closed yet, but is one week ahead the time schedule and considered as a successful project.²²⁰ Tetra Pak India has changed budget system during this project, which makes the numbers not comparable. The total result has increased by 3%.²²¹

Team work and communication within the project team have been key factors for success in this project. The motivation among team members has increase during the project and also knowledge sharing is achieved. The project team members have achieved new knowledge in how to manage integrated projects and also to switch Project Manager smoothly during project time.²²²

Appendix Case F

Background

This is a L3 project managed by Tetra Pak Global Projects Sweden and Tetra Pak Global Projects India. The site is in Syria and the managers are located in Sweden and the rest of the team in India.²²³The organization chart can be seen below (Figure 6).²²⁴ The objective of the project was to deliver a successful project within time and cost.²²⁵

²¹⁷ Project Manager Case E, Tetra Pak

²¹⁸ Engineer Case E, Tetra Pak

²¹⁹ Project Manager Case E, Tetra Pak

²²⁰ Project Manager Case E, Tetra Pak

²²¹ Tetra Pak Internal Document

²²² Project Manager Case E, Tetra Pak

²²³ Project Manager Case F, Tetra Pak

²²⁴ Tetra Pak Internal Documentation

²²⁵ Project Manager Case F, Tetra Pak

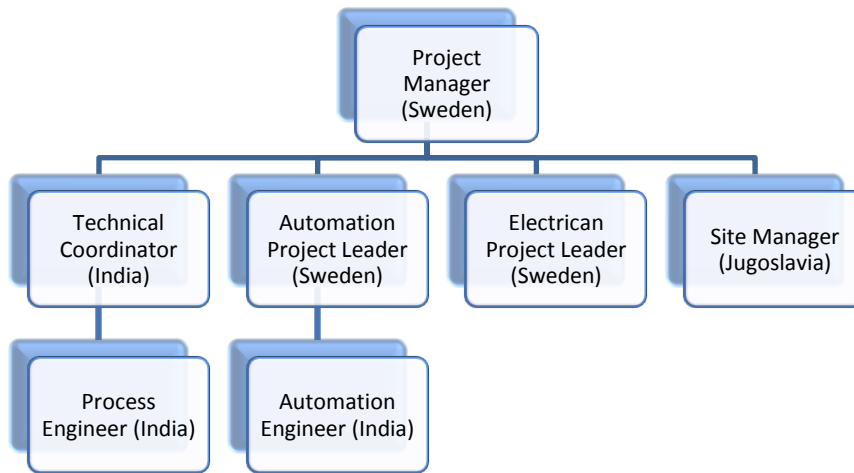


Figure 6 - Organization chart Case F

Process

Pre-Project

The pre project were more smoothly than expected, the Sales Leader gave direction to the Solution Leader for a simple offer with only the base minimum for a project. The pre project team expected negation from the customer, but the customer did sign the contract without bargaining. The contract was not even read through by the customer and the Sales Leader.²²⁶

As seen in the organization chart, it is the same person who is Technical Coordinator and Process Project Leader. He has also been involved in the calculations in the pre project. Mr. X. gave an explanation how it was possible to manage these two roles at the same time: *"I would be more worried if I not did have enough of job"*. To be both involved in the pre project and the project is seen as positive; while it gives a greater understanding of the total project and also direct feedback of your work from the pre project when then implement it.²²⁷

Project

In this project meeting place has been used for the Engineers to present weekly work for the Project Leaders. The Project Leader uses this tool to make sure everything is completed successfully. It is also explained that lack of control occur when not working in same office and also worries of competences. The communication within the team has gone well despite the distance; structured work has managed the complexity. The team members are aware of the communication plan and know who they should talk and report to. Team members situated in Lund, Sweden using informal communication, but have difficulties to forward informal decisions to the rest of the team in Pune, India.

²²⁶ Project Leader Case F, Tetra Pak

²²⁷ Project Leader Case F, Tetra Pak

The geographical distance makes it harder as well; it is more difficult to explain to another person in telephone, mail or meeting place than in reality.²²⁸

The project team has identified cultural differences; Swedes are more organized than Indians and work more strictly after their role description. Indians are more flexible and often work outside the box of their responsibility. Multi cultural team work can help them learn from each other and develop each other's competencies. The Indian team members see the Swedish people as more punctual, structured and having more meetings. In India they communicate more informal and go over to the person's desk to get the information needed. They also think it would have simplified the communication within the team if the project team were situated in same place. Now they send email to the Project Leader in Sweden and then have to wait for answer because of different reasons, one could be different time zones.²²⁹ The cooperation between the team members in India and Sweden has been close, but more difficult when the team is not situated in same office. One team member points out the lack of communication and the cultural aspect. The opinion is that Indians don't take as much decision that Swedes do, they wait for a task and then they do it. A project leader has tried to suit the management to this culture and tried to be clearer. The view of time is different within the project team. While Indians have maximum one hour of total break each day, the Swedes have their lunch break for an hour.²³⁰

There is a close link between the process team and the automation team and it has been simplified when all of them are situated in Pune, India. To split these two teams would not be an alternative, it would make it much harder to communicate and illustrate the solution.²³¹ The work as a Technical Coordinator takes 1-2 hour each day and the rest of the day is spent by process engineering. These teams think it is possible to deliver the project faster if the process and automation leader also were situated in same place.²³²

During a project like this the Electrical Project Leader has estimated to use about 200-300 hours to finish the work. The electrician part is late in the design chain, but the limited time makes the electrician team members start before earlier work is finished and always have to start with preliminary information. This results in several of changes, because the earlier parts in the chain affect the electrician work. The work could be done during the half time than what is it done today, if it was possible to start with right information from the beginning. This is not specific for this project. The electrical calculations are done by same person who implement it and is also preferred, because you give yourself an evaluation about your calculations then. The team member thinks this would be useful even in other roles and think it is possible. Some people only do calculations and have never been in the implementation phase.²³³

Output

This project has not been unique; it has been the same problem like other projects; unclear input and pressure of time. The relation between budget and actual cost is not

²²⁸ Project Leader Case F, Tetra Pak

²²⁹ Engineer Case F, Tetra Pak

²³⁰ Project Leader Case F, Tetra Pak

²³¹ Engineer Case F, Tetra Pak

²³² Project Leader Case F, Tetra Pak

²³³ Project Leader Case F, Tetra Pak

interesting in this case, since the Project Manager has changed and replaced the number in the budget, so they are almost similar.²³⁴ The most interesting number is the difference for the system design, which passed the budget by 323 %.²³⁵ The difference is explained by using another plant solution than was supposed from the beginning. From the beginning it was meant to use a platform developed for another project in Lund. Later it was decided to develop a new one, since the old one did not meet up to the customer expectations.²³⁶ Interesting in this case is also that the involved team members have different ideas about who took the decision to change plant solution.

The customer is satisfied with the overall project, but is complaining about his involvement in the project. He would prefer to be more involved and participating into more meetings. He also points out the negatively affect of doing business with one person and then see another person implement the project. Several of discussions he had with the sales leader he had to take over again with the new project team and recommend Tetra Pak to use a uniform approach against the customers.²³⁷

Appendix Case G

Background

The project started in September 2009 by the Tetra Pak Denmark. The size is an L2 project and is a green field project.²³⁸ There were many discussions back and forth with the customer regarding the price. The customer did have a very strict budget and the project was sold in purpose to maintain good relationship with the customer. From the beginning the customer made it clear that there were no space for selling extra equipment or add something else. The customer is a well known customer, since they have done much business before. It was a strategically decision for Tetra Pak Denmark to run this project, even if the project does not generates great profit this time, the customer will do more business with Tetra Pak Denmark and hopefully more profitable.²³⁹

Doing this study the project is during installation phase and start commission phase in one month. The project team involves two persons from Tetra Pak England, the Project Manager and the Technical Coordinator. The rest of team is situated in Denmark, and automation engineers in Sweden and Ireland.²⁴⁰

Process

Pre project

During the pre project many meetings with the customer were hold. The main discussions were about the customer's limited budget. The finally solution was decided in cooperation with the customer and the customer was also accessory in the time- and resource planning for the project. Before the contract was signed, the customer chose persons from Tetra Pak project team that would deliver the project.

²³⁴ Project Manager Case F, Tetra Pak

²³⁵ Tetra Pak Internal Document

²³⁶ Project Leader Case F, Tetra Pak

²³⁷ Other Case F

²³⁸ Tetra Pak Internal documentation

²³⁹ Project Manager Case G, Tetra Pak

²⁴⁰ Project Manager Case G, Tetra Pak

Many people were involved during the pre project, which has affected the project negatively. Nobody took responsibility for what was actually discussed and decided at meetings. Agreements and discussions with the customer were not documented. During the pre project, it was different persons participated in meetings, which resulted in inefficient meeting. None of the involve pre project team members did have an overview of the project. ²⁴¹

When the contract was signed, the project was handed over to the project team. None of the team members in the pre project continued to actually run the project. It occur lack of communication and information when handed over the project to the project team and pre project team members did not take responsibility for what was sold. This resulted in some difficulties since it was quite diffuse what was expected to be delivered. The time plan and the budget were found unrealistic and the project manager had to do priorities and resource allocations. ²⁴²

Project

After the contract was signed, it was supposed to have the Sales Leader as Project Manager for the project. But discussions regarding the competence of the Project Manager in Denmark were challenged, in this way Tetra Pak England was involved and a Project Manager from the office in England was appointed. The customer did know the Project Manager from Tetra Pak England and was satisfied with his previous work. Tetra Pak England is used to run large project and has done business with the customer before. The Project Manager had some lack of resources for software development. It was hard to find right persons with the right experience and knowledge within office in England and Denmark, Engineers from Tetra Pak Sweden and Tetra Pak Ireland were involved. ²⁴³

The project started with a kick-off meeting in Denmark where the project and different roles were discussed. The project team had project meetings every three weeks, and more often during installation phase. Otherwise the team members distribute information through emails and telephone. The Project Manager tries to work from Tetra Pak in England and travel to site when it is necessary. His opinion is that their used communications tools work well. The project team push to start using more telephone video conferences and also with the customer. In the beginning face-to-face meetings are needed to win the customers trust. Another problem is that the server in Denmark is really slow when working on it from England. The team spirit is still there even if they are located in the different countries, but could have been better according to involved team members.

Initially the information was received from the contract, P&ID (Piping and instrumentation diagram), and emails. All the documentation is available on the Danish server. All exchanged information and email with the customer needed to be read by the implementation team to be able to understand the scope and expectation. In the beginning of the project the customer made a point in having the project and information in Danish so all email conversations within the team and with the customer is in Danish, even with the English Project Manager. Luckily there is a Norwegian person

²⁴¹ Project Leader Case G, Tetra Pak

²⁴² Project Manager Case G, Tetra Pak

²⁴³ Project Manager Case G, Tetra Pak

in the office in England and also involved in the project team that can translate this. This leads to an extra communication channel and has been ineffective and frustrating. The Danish people do not feel secure to speak English and the language differences have caused misunderstandings. The communication between team members becomes more crucial when having distance to each other. The main reason for manage the language differences in this project is the Danish speaker in the office in England, who has made a lot of ease with the project. To use the Danish language has made the customer relationship much better, otherwise the communication would be more formal, and result in less relation. ²⁴⁴

There have been some differences of opinions with the customer, what should or shouldn't be included in the project and what is documented in the contract. The pre project team has been asked and consolidated regarding this but no clear answers have been given. The communication, the teamwork and the relationship with the customer is so far so good and the customer is satisfied with the project. ²⁴⁵

The automation part of the project is done by a mixture of persons working in different market companies, like Sweden, Denmark and Ireland. The Swedish persons involved are from Global Projects, Sweden and discontent to their commitment in the project is negatively pointed out by project team members. According to the project team members the Swedish people do not have the same responsibility and pressure to deliver, they do not have the same responsibility for the project and to the customer. In this project people have been sub optimizing and it have been hard to see the total view of the project. ²⁴⁶

Result

The project is called toxic, because of lack of information and well defined pre project. The margin has decreased and there is no contingency money to use either. ²⁴⁷ The margin has decreased by 3 % because the project team had to do a lot more extra work, since the pre project was not well done. The engineering costs have increase and cost for equipment is lower than expected.²⁴⁸ No variation orders have been made, since the customer's lack of money. ²⁴⁹

During the project, two delays emerged, but it was because of the customer didn't like the initial design., The initial design was not good enough and the project team had to reconstruct the design, This cost Tetra Pak around 250 hours more to do the design to a level that the customer could except. These misunderstandings occur because of not well defined scope and expectations from the customer. ²⁵⁰

²⁴⁴ Project Leader Case G, Tetra Pak

²⁴⁵ Engineer Case G, Tetra Pak

²⁴⁶ Project Leader Case G, Tetra Pak

²⁴⁷ Project Manager Case G, Tetra Pak

²⁴⁸ Tetra Pak Internal Document

²⁴⁹ Project Manager Case G, Tetra Pak

²⁵⁰ Project Leader Case G, Tetra Pak

Appendix Case H

Background

The project was sold and run by Tetra Pak Brazil and the customer is also located in Brazil. The project is categorized as a L2 project. All the project team members are from Tetra Pak Brazil. The objective was to deliver the project within time and during the time of the project increase the margin.²⁵¹ The project is a brown field project and when this case study is analyzed the project is in the commission phase. The project is an integrated project with the process and the plastic bottles.

Process

Pre Project

The sales leader is normally located in Sao Paulo but was partly transferred to the office in Campinas to work near the pre project team. The customer thought the project price was too expensive so the sales leader focused to sell on performance guarantee and costs instead of price. Important to make the customer realize what Tetra Pak deliver. The sales leader helped the customer make a comparison between different solutions and competitors. The scope was well defined and the customer was a specified but there were some questions that were unspecified and appeared some disagreements in the project. A customer that wants a very detailed solution and knows and understands the solution very well is considered as a specifier. There is potential for improvement in the pre project to increase the detailed engineering work. There is a gap between the pre project team and the project team. There is an us and you mentality.

Project

In the beginning of the project there was a kick off meeting and everybody in the project team participated. The sales leader was also involved. None of the team members that were involved in the pre project were also involved in the project. Normally it is preferred to have the same people involved in the pre project as in the project to decrease is understanding and lack of information. The project leader is responsibility for supporting the job and keeping the budget.²⁵² This project was complex since there were some difficulties because of lack of experience of brown field projects. There were also some difficulties for the people responsible for the administration with the suppliers and the documentation. The project leader is new in her/his role and has tried to work with feedback and motivation in an informal discussion. The project team work very close to each other and some of them have worked with each other before. The involved team members in this case have been located near each other in the same office which has affected the communication significantly. The site is quite near and the meetings with the customer are summarized in Minutes of meetings. It was easy to see that the project team members were stressed and had to work long days and even on Christmas holiday. It was difficult to motivate them and make them deliver in time. The most difficult part I this project was the delivery time and became more challenging when some of the team members got involved in other projects, especially during the end of the project. The issues and the time limit was a fact and the team members asked for help with some of the documentation and administration from the trainees and interns. Normally in the end of a project there is a lot of documentation and the engineers prefer to do engineering and consider this administration part as difficult. The project was a brown field

²⁵¹ Project manager Case H, Tetra Pak

²⁵² Project leader Case H, Tetra Pak

project and included shut downs.²⁵³ The buyers of the equipment have some difficulties with some of the engineers since they all work very different. It depends on how long they have been in the business and some of the new engineers do not know which information the buyers are interested in to be able to put an order. This can result in some delays for the project and the buyers have started to participate the kick-off meetings, so that some main equipment with long delivery times can be ordered as soon as possible. The engineers are younger and changes often so it is difficult to educate them and pass on the information on how to put the orders. But this is managed pretty well since they all sit near each other and most of the communication is informal. The best way to do business is face-to-face so the buyers prefer to visit their suppliers often so that they can build relationships with the suppliers and make them prioritize their order. The suppliers become more committed to deliver. There is some lack of feed-back and there is a wish for more feedback in the project team. Having one feedback session once a year is not enough.

Result

The project will be delivered in time. There were some difficulties and surprises during the project but these were handled well and the project margin increased by 2%. The project was sold to a large company and with many competitors involved the margin was initially lower than normal.²⁵⁴ Potential for improvement is the transfer of the lessons learned from each project.

²⁵³ Engineer Case H, Tetra Pak

²⁵⁴ Project manager Case H, Tetra Pak

Appendix Case I

Background

The contract is signed between Tetra Pak Brazil and the customer is located in Brazil. The project is categorized as a L2 project. The objectives from the project team were to deliver the project within time and during the time of the project increase the margin. This project was of interest for Tetra Pak Brazil since it was their first cheese plant. In this market cheese is an important category and Tetra Pak Brazil really wanted this project. It has affected the margin and the project was sold to a lower margin in the beginning. Another explanation to the lower margin is the competition on the market at that time. Their competitors' solutions are cheaper but have not as high quality as Tetra Pak Brazil's solution.

At the same time Tetra Pak Brazil had a similar project, and their purpose was to deliver this project smoothly and use similar solutions in these two projects. The calculations from the other similar project was copied and used in this project. They only changed the calculation into the prices of today. In this project, the pre project was short because less time for calculations. After the contract was signed, the pre project team left the project and the project team continued. One person who was both involved in the pre project and in the project team explains the advantages of being involved in both parts and suggests everyone to be that.

Process

Pre project

The pre project took about 2 month before the contract was signed. No details were discussed and an old technical solution was used. No technical issues were discussed, since the customer did not have enough of knowledge in that area. The customer was well involved during the planning and well aware of different happenings during the project time. When the contract was signed a kick off day started the process for this project. In the kick off meeting, the customer participated and a long-term planning was made.

Project

The role description for all the team members are well defined, but are not read in detail. Lately organization changes have been done and for some persons the responsibilities have been changed. Most of the team members are located in the same office. Now when the project is in installation phase, the project manager is located at site and can be hard to reach by phone, since the telephone network is weak.

Both the pre project team and the project team reports to same person. The team had problems with prioritization and to get the needed knowledge. Tetra Pak Brazil is working to get all employees to work with same tools.

The documentation in this project has been in Portuguese, since the customer does not speak English. It happened often that team members from other market companies are involved in the project team, for example when an expert knowledge is missing. But team members do not think it is an obstacle that they can't speak Portuguese or do not understand the documentation in Portuguese.

One team member explains something called knowledge base that is available on Tetra Pak's intranet. It is a place where engineers can put information and make it available worldwide.

The purpose of this tool is to spread the knowledge worldwide and use same kind of solution for a similar problem.

Result

The team members have different opinions if they achieve the objective or not. They have different views of what the objective was. The objective is fulfilled in their attempt to strategic implement a new cheese plant and this project have result in lessons learned for the future. But at the same time, the margin has decreased by 16 percentage points and is now minus.

The lessons learned from this project are to be more customer-oriented. In future Tetra Pak Brazil will discuss more deeply with the customer and involve the customer more than they do at this time. During the project, they will involve the customer more and explain every important step in the process. In the pre project the customer management was fully involved but not in the project, Tetra Pak Brazil would like to have the customer involved during the total process. The project was sold to a director of the customer and then is the plant used by a manager. This has lead to misinterpretations within the customer's team. Tetra Pak Brazil would also like to have more integrated project teams, today there is a clear line between pre project team members and project team members. This would facilitate for the customer to understand Tetra Pak's business approach even more.

The margin decrease because of more service to the customer during start-up, and the project team had to order more material, tools and more time to the project. The contract was quite diffuse and the customer refuses to pay for variation order, since he expected to get it free, when the contract was not clear enough. The customer has claimed on the delivered solution twice and is still not satisfied. This project has still not received the performance guarantees demands. Tetra Pak Brazil is afraid that the margin will decrease even more and think this will also be the case.