

Project Management in Sweden and Ethiopia

- Potential improvements in Project
Management methods

Pär Karlsson

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Abstract

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Purpose and objective: The purpose of the study is to identify which successful methods of project management in Swedish projects that are appropriate to implement in the Ethiopian operations, and vice versa, to increase the efficiency and minimize the risks in construction projects. Subordinate objectives of the study are to:

- Identify success factors in project management for studied projects.
 - Identify potential improvements in project management for studied projects.
 - Match success factors against potential improvements to identify suitable areas for benchmarking.
 - Evaluate identified improvements, based on priority of which improvements that are most suitable to start with.
-

Method: The theoretical background was based on literature concerning the studied areas. The empirical approach in the study was qualitative and the data was gathered through informal interviews and observations on construction sites in Sweden and Ethiopia. The analysis was based on PMI's nine project management knowledge areas throughout the study.

Conclusion: The study resulted in strengths and potential areas of improvement and gives recommendations of areas that should be prioritized for improvement of management methods in the Swedish and Ethiopian operations.

Areas that should be prioritized in benchmarking from Sweden to Ethiopia were also identified. Contextual factors and conditions should be considered in all implementation and benchmarking of potential improvements, in order to develop more efficient methods of project management.

There are three areas in the Swedish operations and seven areas in the Ethiopian operations that are prioritized for improvements. The improvement that should be considered with the highest priority is the development of an efficient planning process early in the Ethiopian projects, in order to develop a coherent and accurate project plan.

Four areas are considered prioritized for benchmarking from the Swedish to the Ethiopian operations. The area with the greatest potential improvement by benchmarking is the management system. The Ethiopian operations need to be more consistent and reach a higher general level of professionalism, which an implementation of an adapted form of the Swedish management system most certainly would provide.

Keywords: Project Management, Construction Management, International Comparison, Method Improvements

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1 Introduction

1.1 Background

The construction industry is built up by many different companies in many different countries. The structure and conditions in companies and projects often vary largely from one country to another (Bray & Lugosi, 2008). The culture and history of a specific country have a big influence on the whole society, which also makes it an important issue to take into account in the management of a construction project. A project in the context of one country or culture is likely to experience different problems and have a different structure than projects in another context (Walker, 2007).

Both individuals and society in general are affected by the conditions in a country. The conditions for development and the social status also have a significant impact on peoples approach and values (Bray & Lugosi, 2008). Financial status and religion are also factors that largely affect how people act and behave in all situations in life. It is important to be aware of these contextual factors, as people interact with each other on a professional level (Everyculture).

Project management is naturally carried out in different ways depending on which context the project is situated in. This aspect is very important to be aware of when work methods and structures between different countries, in different contexts, are compared (Friedman, Dyke, & Murphy, 2009). This difference, however, also suggests that there can be a great potential for improvements by comparing the methods of project management in different contexts (Broms, 1987). As many companies expand their business to the international arena, issues concerning culture and different conditions must be taken into account. Although multinational companies face many problems, they also have a great opportunity to develop their work methods by learning from other cultures with different approaches (Friedman, Dyke, & Murphy, 2009).

A country's development has a strong connection to the level of skill and knowledge that people show in their profession. Companies in a low level developed country, often have employees with limited skills and experience, and the work methods are often outdated and inefficient compared to countries with

a higher level of development (Bray & Lugosi, 2008). Two countries with largely different conditions are Sweden and Ethiopia. The level of development differ largely between the countries and other contextual factors such as financial and social status, climate and influence of religion are all very different in Sweden and Ethiopia (Everyculture).

Ethiopia is a country with great opportunities for development in all areas of the society. This potential has attracted multinational companies, particularly in the construction industry, to establish in the Ethiopian market (Howard, 2010). Construction projects in Ethiopia, however, differ largely from construction projects in Sweden. Due to large differences in both development and business and work culture, problems that are experienced in Swedish projects are likely to be of a different nature than the problems experienced in Ethiopian projects. Differences in culture and conditions between the countries also mean that there are great difficulties in transferring a successful work method from one country to the other (EBDSN).

1.2 Problem formulation

The major differences in conditions and work methods in project management that exist between Sweden and Ethiopia, suggests that there is a great potential for improvement by learning from each other. Which parts of the respective activities in project management that are appropriate to transfer from one of the countries to the other, largely depends on how a particular work method, system or approach is respected and handled in the new environment. Differences in business and work culture, and differences in society in general, are important parameters to take into account when changes in methods and procedures for project management are investigated.

Which successful methods of project management in Swedish projects are appropriate to implement in the Ethiopian operations, and vice versa, to increase the efficiency and minimize the risks in construction projects?

1.3 Purpose and objective

The objective of the study is to identify and suggest improvements in project management, based on existing work methods in Swedish and Ethiopian construction projects. Subordinate objectives in the study are:

- Identify strengths in project management for studied projects.
- Identify potential improvements in project management for studied projects.
- Match strengths against potential improvements to identify suitable areas for benchmarking.
- Evaluate identified improvements, based on priority of which improvements that are most suitable to start with.

1.4 Demarcation

The study is concerned with methods of project management with the focus to identify strengths and potential improvements in the current operations. How implementation of new methods should be conducted is not included in the study. The study is to some extent limited to the involved projects and further studies are required in order to reach conclusions that are general valid throughout the construction industry.

1.5 Disposition of the study

Chapter 3 includes relevant theory to the study.

Chapter 4 is empirical data from the studied projects. The empirical structure is based on PMI's project knowledge areas.

Chapter 5 includes analysis of the empirical data, based on the previously presented theory.

Chapter 6 includes discussion regarding method and conclusion where potential weaknesses in the approach are handled.

Chapter 7 presents the conclusion of the analysis, with prioritized improvements and suitable areas for benchmarking.

2 Method

A method is, in an academic approach, a tool to solve problems and come up with new knowledge. With regard to sustainability and critical analysis, the context of the current study determines which method is most suitable. The method should be adjusted so that it, as closely as possible, consists with the reality that is investigated (Magne Holme & Krohn Solvang, 1997). To increase the sustainability of a study it can be necessary to use several methods that complement each other. All methods have strengths and weaknesses, making the choice of method important for the sustainability of the results (Magne Holme & Krohn Solvang, 1997).

2.1 Work methods

2.1.1 Qualitative and quantitative methods

There are generally two different methodological approaches. Qualitative methods are used to gain a deeper understanding of the studied problem. The objective in a qualitative study is to describe the big picture of the context that includes the problem. A qualitative method requires a significant closeness to the studied source. It is characterized by unsystematic observations as informal interviews or an interview schedule with no fixed answer alternatives (Magne Holme & Krohn Solvang, 1997).

Quantitative methods are based on structured surveys with predetermined possible answers. In contrast to qualitative methods it consists mostly of general conclusions and assessments. When the information is gathered, formal analysis and comparisons are made to determine in which situations, and for what units, the drawn conclusions are valid. In quantitative methods the analysis of collected information is characterized by statistical methods (Magne Holme & Krohn Solvang, 1997).

Both qualitative and quantitative methods have the common purpose to create an understanding of how society works and of the problems that may arise. The most significant difference between the two methods is that quantitative methods focus on transforming information into numbers and amounts which can

be analyzed. Qualitative methods on the other hand focus on the researcher's interpretation of motives, social processes and context of the problem (Magne Holme & Krohn Solvang, 1997).

2.1.2 Deduction and induction

Deductive and inductive methods are two methodological approaches that have different relations between theory and empiricism. Induction is based on empirical information and means that general and theoretical conclusions are drawn through data collection (Wallén, 1996). In the inductive method, it is important that data is collected completely impartial, which often is difficult to meet as many studies require some kind of theoretical position. The deductive method is instead based on hypothesis that originates from theories in the field. The conclusions drawn in a deductive study describes how well the hypothesis matches, and how applicable it is, with conditions given by the collected data (Wallén, 1996).

2.2 Data collection

2.2.1 Literature studies

Literature study is an integral part throughout the investigation in a study. A literature study provides knowledge of what have been written and studied in the area prior to this study. The literature is particularly important at the beginning of a study, as it gives the researcher insight and background information on the subject. Through literature study the researcher also gains insight on appropriate theories, possible issues and definitions of terms (Svenning, 2003).

2.2.2 Case studies

Case studies are a form of scientific method in an investigation. A case study can be used to develop as well as to test a theory. The case study is flexible and can be used regardless if a qualitative or quantitative method is used to collect information. A case study can in general be described as a systematic way to investigate a phenomenon (Merriam, 1994).

There is a fundamental difference between case studies in which experimental methods or non-experimental methods are used. In order to use experimental methods, it is required that the researcher is able to lock certain conditions and then manipulate the variables of interest. This method is often used to study

cause-effect relations in different situations. In a study where the conditions are impossible to manipulate and/or the variables are too complex to identify, it is preferable to use non-experimental methods. These methods are often called descriptive studies and strive to describe and explain events and phenomenon in the studied situation (Merriam, 1994).

A case study examines a specific event or phenomenon and requires a defined system for accurate conclusions to be drawn from the study. Qualitative case studies have strengths in that they focus on insight, discovery and interpretation of a problematic situation. As the focus is on a single event or phenomenon, the interaction between major factors that characterize the event can be illuminated. Another useful strength of a case study is that it can handle several different types of empirical data, such as documents, interviews, observations etc (Svenning, 2003).

2.2.3 Informal interviews

Informal interviews, sometimes also called semi-structured interviews, are an effective tool to collect soft data. An informal interview can in general be problem-orientated or problem-based. The difference between the two approaches is that the problem-based interview goes into more depth than the problem-orientated (Svenning, 2003). In practice, this difference can be very small since it depends heavily on the researcher to control the interview. The objective of both methods is to interview a few people around given subjects, where each question and area is covered thoroughly before the interview goes on (Svenning, 2003).

Informal interviews are characterized by the fact that the conversation flows freely, creating better access to comprehensive answers. To get the maximum effect of this type of interview, the interviewer should be flexible, adapt to responses and new topics or problems that are revealed during the interview. The interview can be recorded in order to facilitate the interpretation of the replies when the result of the interview is compiled. The interviewer can also take notes during the interview, although these do not completely replace the tape recorder in precision to reproduce questions and answers retrospectively (Svenning, 2003).

Who the researcher chooses to interview has a major impact on the outcome of the interview. To get an accurate picture of a problem, it is therefore important not only to interview key persons, who often have a personal responsibility for problems, but also people with other viewpoints on the subject (Svenning, 2003).

Responses from the interview must be understood according to the role and terms of reference of the interviewed person. In an informal interview it is important that the researcher maintains a critical, analytical position. The researcher's main instrument to control the interview is to be active with follow-up questions and thereby ensure that the interview is fairly deep, focuses on relevant subjects and reduces the risk of misunderstandings (Svenning, 2003).

2.2.4 Observations

Observation methods are often assigned to observer-based or participatory observations. Observer-based observations, often called systematic observations, are based on listening and observing, while integration with the studied group is subordinate. In an extreme observer-based observation, the observed is not even aware that the observation is carried out (Svenning, 2003). Participatory observations have a strong focus on integration, creating good conditions for understanding. The risk of observers also participating in the work is that objectivity may be impaired as a result of engagement in the task and friendship with the other participants. Participatory observations are often considered as the most effective, because the understanding of the problem is good. The presumption for its efficiency is that the observer is careful with objectivity and has respect for the observation group (Svenning, 2003).

2.2.5 Reliability and validity

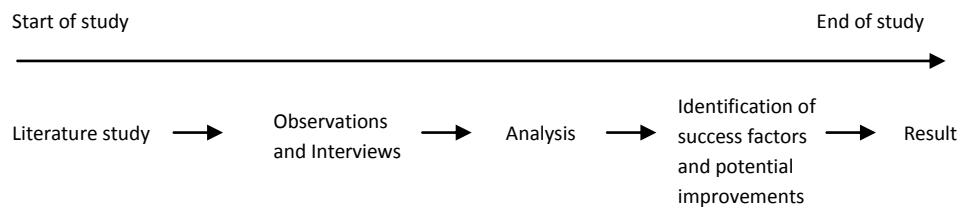
The reliability in a study concerns the reliability in data collection and analysis by taking the random variations in account. By reporting how a study is conducted, the reader can assess the approach. Good reliability means that a reader who makes the same study, with the same method and purpose should reach the same conclusion as the read study (Höst, Regnell, & Runeson, 2006).

Validity concerns the connection between what was intended to be evaluated and what was in fact evaluated. High validity means that there is a strong connection between theory and the empirical part in a study. One way to increase the validity in a study is to evaluate one object with several different methods (Höst, Regnell, & Runeson, 2006).

2.3 Chosen work method

The study was based on the differences in conditions and methods that exist between Swedish and Ethiopian construction project management. The general workflow of the study is presented below.

2.3.1 Workflow



2.3.2 Literature study

In the beginning of the study, a literature study was made to create a theoretical background to the studied issue. The literature study included areas such as construction projects, project management, process management, work and business culture represented by nonfiction literature as educational journals, scientific articles and company documentation. Relevant parts from the literature study are presented in the theory chapter.

2.3.3 Approach

There are many theories and method systems available in the area of the studied issue. Because of this, the study was made with a deductive approach, based on PMI's Project Management System. The complexity of the studied issue made the qualitative methodological approach most suitable for the study. A quantitative method was considered irrelevant in the analysis of the issue. The research was made through observations on construction projects and interviews with key-roles within the involved project organizations.

2.3.4 Empirical work

During the empirical work the author was present on the case company, both on a project in Stockholm, Sweden and Gambela, Ethiopia. In the case study, focus was on observation of the project team and review of project documents. Prioritized documents in the review were general overall documentation of the project management. Interviews were concentrated to key persons in the project management team and were carried out as informal interviews, to gain a deep

understanding of the conditions and the studied issue. The following roles were interviewed in both projects; project manager, production manager, controlling manager and procurement manager. The interviews had the basic structure of the template that is shown in appendix 1.

The primary objective with the empirical work was to understand the project's method of project management and to make an evaluation based on the 9 categories presented in the PMI's Project Management System. The approach was to make a comparing study between the Swedish and the Ethiopian project management methods. The identified potential improvements were also evaluated regarding priority and suitability for benchmarking against the Swedish/Ethiopian operations.

2.3.5 Validity

The author's close cooperation with the different project's management team created an open and honest information flow. The validity of the study concerns the author's ability to translate and convey the collected data correctly. Since the data collection was made over quite a long period of time, the conditions were good for the author to get a correct picture of the studied issue. The respondents in the interviews were closely familiar with the studied areas. Together, these factors contribute for the validity to be considered high in the study.

2.3.6 Method quality

The collected data through observations and interviews was influenced by the author's interpretation and view of the studied issue. The approach, based on the PMI's Project Management System, was consistent for both studied projects. The choice of persons for interviews was made so that the same roles in the project management team were represented in both studied projects. Notes were taken during all interviews to minimize the risk of misunderstanding and make it possible to control the answers during the analysis of the study. A new study in the same area is not likely to reach the exact same conclusion, since the empirical data was strongly connected to the studied projects.

2.4 The case company

Midroc Group, Mohammed International Development Research and Organization Companies, consists of four main concerns and is owned by

Mohammed Al- Amoudi. Al- Amoudi is born in Ethiopia but now lives in Saudi and has both Ethiopian and Saudi nationality.

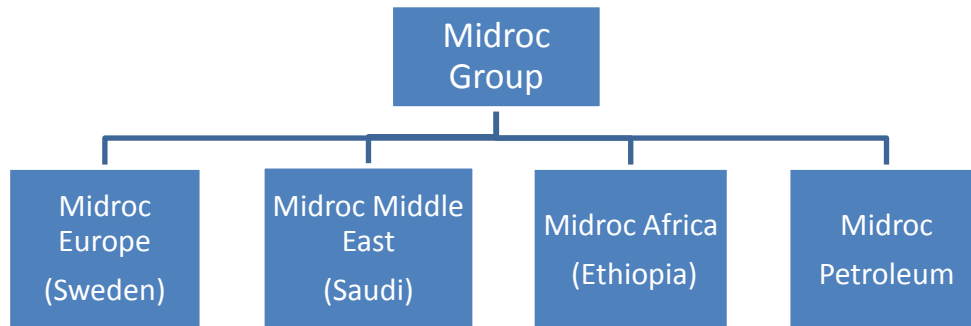


Figure 1. General organizational structure of the Midroc Group.

The four concerns have many subsidiaries and together with the large number of other companies owned by Al-Amoudi, there are a total of 70,000 employees in the Midroc Group worldwide (Midroc). Midroc Petroleum's main activities are exploitation, refining and distribution in the oil business. The other three concerns are mainly active within construction, Project Management, Project Development and Property Investment.

Midroc Project Management, an affiliated company to Midroc Europe, includes one unit that works exclusively with project export. The purpose of this unit is to create opportunities for more efficient cooperation with the sister organizations in Africa and The Middle East. From the platforms in Saudi and Ethiopia project export are conducted to countries in The Middle East and Africa with big influence of local labor. Project export mostly works with project management, engineering, and local construction management. There is a great potential benefit with the project export unit since it is a good concept for disseminating successful practices and tools for project management to other departments and markets where similar operations are conducted. The studied project in Ethiopia is owned by SSAD, Saudi Star Agriculture Development, which also is included in the Midroc Group.

3 Theory

3.1 Project

A project is a temporary endeavor with the objective to create a unique product or service. It is temporary in the aspect that it has a definite beginning and a definite end. The uniqueness with a project means that the provided service or product is different from all other services and products (Briner, Hastings, & Geddes, 1996). Many organizations use projects to response to requests that cannot be handled within the normal organizational limits. The size and length of a project can vary from one person to thousands and from a few weeks to more than five years (PMBOK, 2004).

A project ends when the objective has been reached, or when it becomes clear that the objective cannot be met, or if the need of the project no longer exists. When a project is terminated, documentation of lessons learned is made to make sure that the experiences drawn from the project can be used in future projects (Antvik & Sjöholm, 2007). The fact that a project is temporary does not mean that the result of the project also will be temporary. Most projects are undertaken to create a long lasting result (PMBOK, 2004).

The result of a project is unique because the exact same service or product has not been provided before. Even if the project is to develop a building that has been done to similar buildings thousands of times, it will still be a unique result since the conditions for each individual building is different from each other (PMBOK, 2004).

A project generally consists of four chronological phases:

- 1. Initiation** – The conditions are analyzed and the project’s objective is specified.
- 2. Planning** – Plans and methods for the execution are developed.
- 3. Execution** – The main work towards completion are done.
- 4. Closing** – The project is evaluated and closed down. (Tonnquist, 2007)

To get efficient feedback from drawn experience, the work in each phase should be evaluated as the project goes into the next phase. In the closing down phase it

is important that the work and result of the project as a total, is thoroughly evaluated and documented in order to benefit future projects (Tonnquist, 2007).

There are a number of different project types that all have slightly different characteristics. In general these project types can be divided into two categories; external and internal projects. In an external project the customer, or project sponsor, is outside the organization. These projects are often called delivery projects and starts with the signing of legally binding agreement. The agreement is drawn up between the customer and the supplier and it contains specific definitions of what work the project includes (Antvik & Sjöholm, 2007). To terminate or delay an external project the sponsor must be involved and financial compensation can be necessary if the agreement have been breached by either party. Internal projects have a customer within the organization and starts with a decision from the own organization (Walker, 2007). Internal projects often consists of development or change in work methods. These projects often have milestones or decision points where the project is evaluated, and the organization decides whether it will continue or be terminated (Antvik & Sjöholm, 2007).

3.2 Project Management

Project management is the work methods that are used to control and manage activities in a project. Project management involves the application of knowledge, skills, tools and techniques in project activities to meet the project objectives. All management work is based on processes as: initiating, planning, executing, controlling and closing (PMBOK, 2004). The project manager is an important role in the project team. A project manager needs to have the right skills and personal attributes, and most importantly the skill to be an effective leader, to carry out the role (Antvik & Sjöholm, 2007). The main task for a project manager is to integrate all activities and personnel in the project. As the integrator it is not necessary that the project manager have expertise within all areas, more important is the ability to bring out the other team members abilities and make them work together as a team (Briner, Hastings, & Geddes, 1996).

An important part of the project management is to manage the stakeholders in the project. A stakeholder can be an organization or a person with a will to influence the outcome of a project and the power to make an impact on the project (PMBOK, 2004). Stakeholder analysis should be carried out in an early phase of the project, where stakeholders are identified and classified into key, primary or secondary stakeholders. The classification is based on their potential

motivation and power to influence the outcome of the project (Antvik & Sjöholm, 2007). To develop an accurate and effective stakeholder analysis it is important that all stakeholders are included and that measures are taken to limit the potential negative impacts that are identified (Antvik & Sjöholm, 2007). It is important to identify new stakeholders and address their needs continuously throughout the project. Continuous stakeholder analysis also facilitates the management of previous identified stakeholders as their needs and expectations may change over time (Antvik & Sjöholm, 2007).

Many companies and organizations use a project management system to establish consistent methods in their work. An integrated project management system also facilitates the establishment of a certain level of professionalism in an organization (IPMA). All areas and aspects of project management are included in the developed systems. There are several different established systems on the market; two of the most used are International Project Management Association, IPMA, and Project Management Institute, PMI (Antvik & Sjöholm, 2007). These systems are developed as handbooks including management activities that should be conducted in a project, which can be used as a guide for the project management team in order to ensure that all required plans and activities in the project are handled (PMBOK, 2004).

3.2.1 Project Management Process Groups

There are five project management process groups required in any project. The process groups have internal dependencies and are often iterated several times before a project is completed. A process group involves project management processes, which are linked together as the outcome of one process becomes the input in another (PMBOK, 2004). The process groups are not to be considered as chronological project phases that end when a part or section of the project is completed. In large projects, with distinct phases or sub-projects, the process groups are repeated in every phase of the project and there are continuously interactions between the groups during the project (PMBOK, 2004). The five process groups identified by PMI are described below;

- Initiating Process Group
- Planning Process Group
- Executing Process Group
- Monitoring and Controlling Process Group
- Closing Process Group

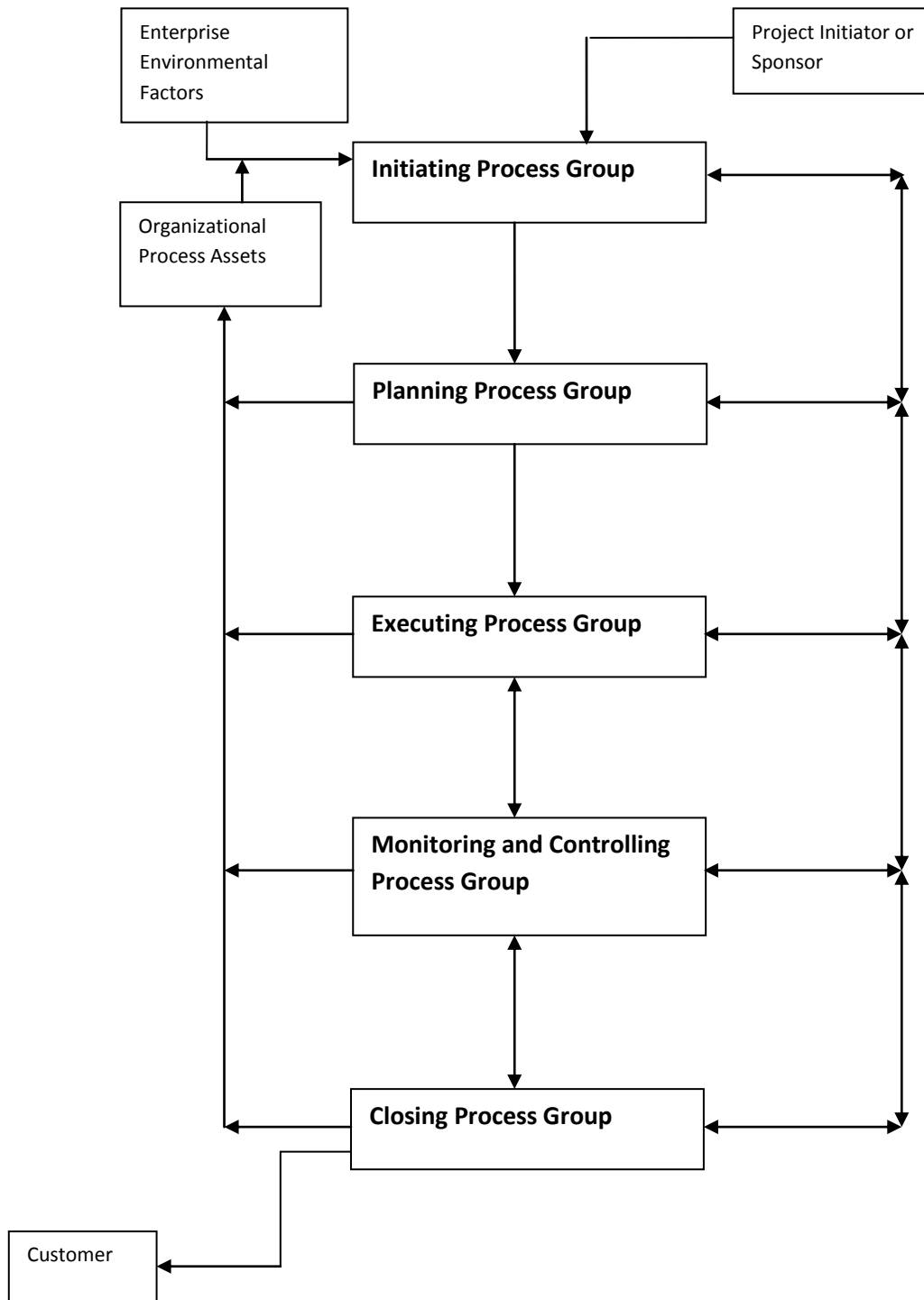


Figure 2. Adapted form of PMI's identified interactions between Process Groups.

Initiation Process Group

The initiation of a new project is often done external to the project scope. The decision to start initiation is based on basic descriptions of the scope, deliverables, duration and forecasts of resources required. This documentation is handled and further refined in the Initiation Process Group to facilitate the formal authorization to start a new project. When initiating a phase in a large, multi-phase project, the processes are carried out to validate assumptions and decisions made in the original project charter (Gupta, Aha, Nau, & Munoz-Avila, 2008). The project charter is developed by the project organization, but approval and funding are handled externally. By reviewing the initiation process at the start of each new phase or sub-project, the project remains focused and start criteria is verified for each phase. The sub-project initiation processes also perform further validation and development of the project scope (PMBOK, 2004).

Planning Process Group

The main concern in the Planning Process Group is to develop and manage the project management plan. The planning processes include identifying, defining and managing all parts of the project management plan. These processes are continuously iterated as new information is discovered in order to keep the project management plan updated (PMBOK, 2004). An updated project management plan provides greater precision in schedule, cost and resource requirements which increase the chances to meet the defined project scope. It is important that the project team involves stakeholders, who often have useful knowledge, in the project planning (Gupta, Aha, Nau, & Munoz-Avila, 2008). Demands and requests by stakeholders must also be addressed as early as possible in the planning processes. The importance of iterations in the Planning Process Group is based on that many risks often are easier to identify after most of the planning has been made. This means that the project team might have to reconsider the planning concerning schedule, cost or resources with aspects of new identified risks or opportunities (Gupta, Aha, Nau, & Munoz-Avila, 2008).

Executing Process Group

The Executing Process Group is the processes where the work defined in the project management plan is executed. The process group involves coordination of resources and integration of the activities according to the project management plan (Walker, 2007). There is always a need for some re-planning in a project, due

to variances in activity duration, productivity etc. These changes in planning should be analyzed and when needed trigger an update request in the project management plan. Analysis of these types of changes is conducted by the Monitoring and Controlling Process Group (PMBOK, 2004).

Monitoring and Controlling Process Group

The processes used to observe and control the project execution in order to identify potential problems, and take corrective action, are included in the Monitoring and Controlling Process Group (PMBOK, 2004). When the project's performance is observed and measured regularly, differences against the project management plan is quickly identified. Identified problems or differences in the project are investigated and can result in an update of the project management plan. Through continuous monitoring the project team gain insight into the whole project's progress and areas that require additional attention are highlighted (Guo-li, 2010).

Closing Process Group

The Closing Process Group includes the processes to formally close down all activities of a project phase or an entire project. The processes also include handing over the completed product or, if the project is terminated before completion, close the project and handle the contract closure (Briner, Hastings, & Geddes, 1996). When the Process Group is completed it verifies that all processes are completed and establishes that the project or project phase is finished (PMBOK, 2004).

3.2.2 Project Management Knowledge Areas

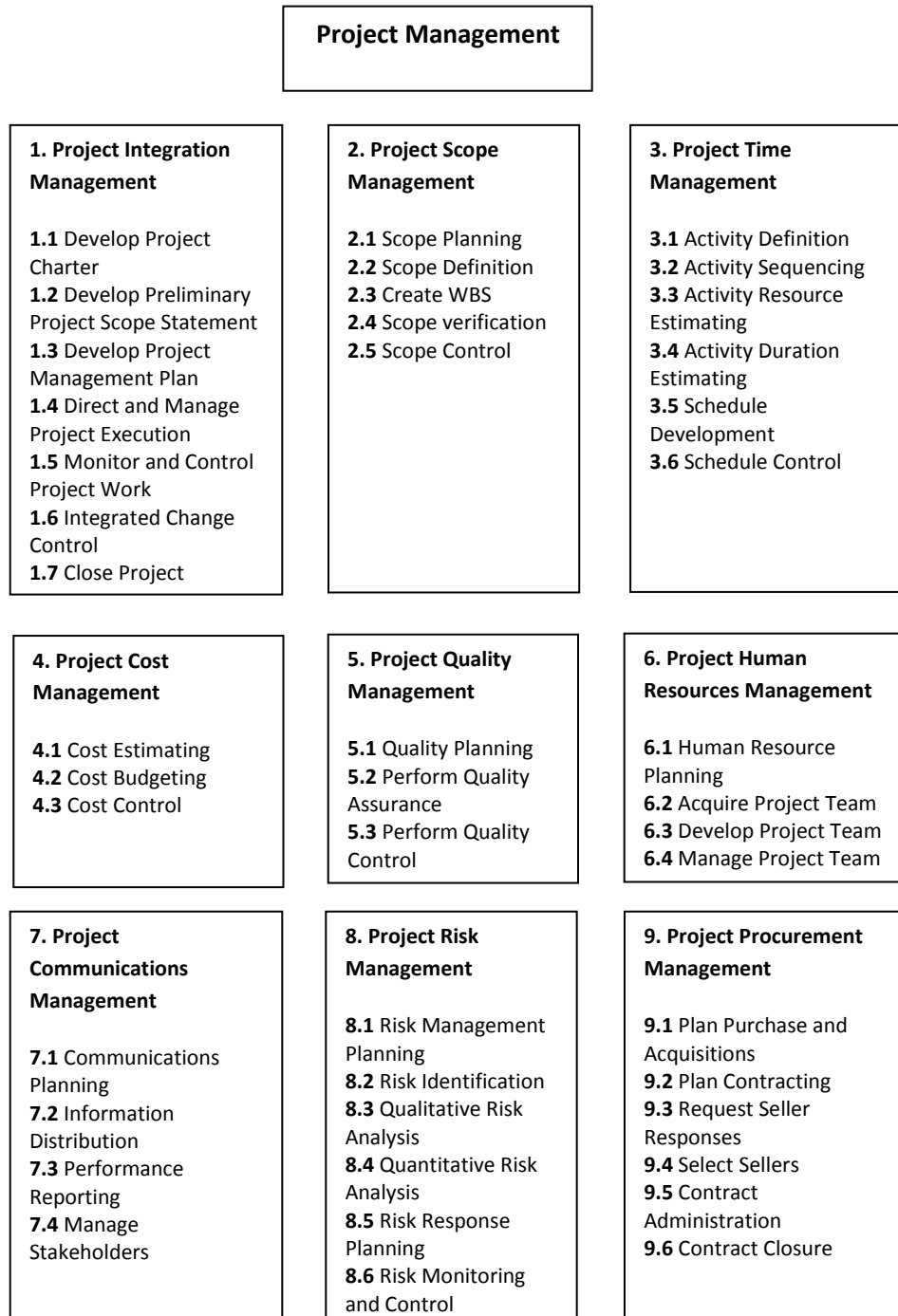


Figure 3. Adapted form of PMI's nine Project Management knowledge areas.

The PMI, Project Management Institute, has defined nine categories of project management knowledge areas. In PMBOK (2004) these categories are described in detail with inputs and outputs from each phase and process. Each of the nine categories and their purpose are described below.

Project Integration Management

The project integration management is the processes that are used to coordinate the various elements of the project. Prioritizing between competing objectives and alternatives are an important task in the integration management. It consists of *develop project charter, develop preliminary project scope statement, develop project management plan, direct and manage project execution, monitor and control project work, integrated change control and close project* (PMBOK, 2004).

A new project should always start with the development of a project charter. If the project has an internal customer, the project charter is often developed as an informal process. In projects with external customers the project charter development is a much more formal process (Gupta, Aha, Nau, & Munoz-Avila, 2008). The project charter is an authorization of the project, as a result of a customer request that need to be responded (PMBOK, 2004). Before starting up a new project it is important to carry out a feasibility study. The cost for this study is considerably less than the cost for starting up a project that then has to be closed down because of problems identified at a later stage in the project (Antvik & Sjöholm, 2007).

An important part of the planning process in a project is the development of a project plan. The objective of the development of the project plan is to create a consistent, coherent document that can be used to guide project execution and control (Gupta, Aha, Nau, & Munoz-Avila, 2008). The plan should include general plans regarding all areas of the project, such as; project objectives, time schedule, budget, etc (PMBOK, 2004). The project plan is the main document developed in the planning process and it is therefore very important to allocate sufficient amount of time and resources for this process. A project with a poor developed project plan is most likely to be poorly executed with high costs and delays as a result (Antvik & Sjöholm, 2007). The integration between the different elements of the plan is a complex process and is therefore often required to be iterated

several times in order to reach a complete and integrated project plan (Antvik & Sjöholm, 2007).

No matter how well and accurate a project is planned, there will always be problems, and factors that put the project at risk will always occur. In order to maintain control and monitor the project effectively it is important that the project team has a continuous insight to the health of the project (Briner, Hastings, & Geddes, 1996). The monitor and control work can be carried out through data collection, to identify trends of the project performance and to make sure that special attention are given to required activities (Antvik & Sjöholm, 2007). The main focus in monitor and control should be on comparing actual project performance with the baseline defined in the project plan (PMBOK, 2004).

The complicity of a project, and the many factors that are involved, makes it necessary for the project team to have an effective integrated control of changes (Gupta, Aha, Nau, & Munoz-Avila, 2008). The integrated change control should focus on influencing the factors that creates changes, determine that a change has occurred and managing changes when and as they occur. The main objective with integrated change control is to manage the performance baseline, either by rejecting or accepting changes and revise the project baseline (PMBOK, 2004). When changes occur at an early phase of the project it is not likely to be as expensive as if it is implemented at a later stage. Late changes often lead to much additional work, which makes the change much more expensive. This also highlights the importance for the project team to influence the factors that creates changes in the project (Antvik & Sjöholm, 2007).

Project Scope Management

Project scope management is a process to ensure that the project includes all the work required, and excludes the work that is not required, to complete the project successfully. It consists of five major processes; *scope planning*, *scope definition*, *create WBS*, *scope verification* and *scope control* (PMBOK, 2004).

The importance of a well formulated scope of work has been shown several times in many projects. It is not unusual that a project is rushed into start without the proper planning and preparation. This often leads to problems for both suppliers and customers as extra costs and delays are likely to occur (Antvik & Sjöholm, 2007). A clear project scope facilitates for the project organization to realize the

actual magnitude of the work and creates an understanding for the achievements that are required in the project (Briner, Hastings, & Geddes, 1996).

Scope planning is the process of elaborating the work that is needed to deliver the product of the project. It should be based on the product description and product requirements from the customer (PMBOK, 2004). The scope planning includes viewing different approaches to the project, in order to find the most suitable method for the current situation. The outcome from the scope planning is the scope management plan that mainly describes how the project scope will be managed and how scope changes will be integrated into the project (Gupta, Aha, Nau, & Munoz-Avila, 2008).

In the scope definition, the project's major deliverables and conditions documented in the scope statement are analyzed. The analysis should be based on needs and expectations from stakeholders, and thereby generate requirements of the project (Gupta, Aha, Nau, & Munoz-Avila, 2008). When more specified requirements are known, the deliverables are subdivided into smaller, more manageable groups, through the use of a Work Breakdown Structure, WBS. By dividing major tasks into smaller work packages, the accuracy of cost, time and resource estimates are improved. A WBS also makes it easier to assign clear responsibility to each group of tasks, which is necessary in order for the project organization to gain control of the project (Antvik & Sjöholm, 2007).

Scope verification is the work to obtain the stakeholders acceptance for the project scope (Briner, Hastings, & Geddes, 1996). Deliverables and work results must be reviewed to ensure that it is completed satisfactorily in order to keep a good relationship with the customer (Walker, 2007). Scope verification differs from quality control in that it is mainly concerned with the acceptance of the work results, while quality control mainly focuses on the correctness of the work results (PMBOK, 2004).

Project Time Management

Project time management includes all processes that are required to ensure a timely completion of the project. Major processes in time management are *activity definition, activity sequencing, activity resource estimating, activity duration estimating, schedule development and schedule control* (PMBOK, 2004).

The time schedule is one of the most important plans in a project. The development of time schedules should be based on the previously developed WBS. The level of work in planning, monitoring and controlling schedules in a project is often directly reflected in the execution and outcome of the project (Antvik & Sjöholm, 2007). In order to develop realistic and achievable schedules, it is important that activities are sequenced accurately. The activity sequencing involves identifying logical relationships and dependencies between the project activities (Guo-li, 2010).

The process of activity resource estimation involves determining what resources and what quantity of each resource that will be used in the project. Required resources can be personnel, equipment and material. This process also includes determining when each resource will be available to the project (PMBOK, 2004). There are in general two methods of resource estimation; top-down and bottom-up. If the project has limited detailed information, the top-down method is often used. It is carried out by the higher management of the project and is based on experience from similar projects. The bottom-up method is also called qualitative based estimations and involves each specific work category in the process. The bottom-up method is more time consuming to perform, but often generates a more accurate result (Guo-li, 2010).

The activity duration estimation should be based on the project scope, required types of resources, estimated resource quantities and the availability of resources. The result of the process is later used to develop schedules. To get an accurate estimation of duration it should be carried out by a person or group who is familiar with the specific activity (Antvik & Sjöholm, 2007).

The development of schedules is often carried out through the use of project management software. If the previous estimations are made correctly the schedule development mostly consists of aggregating the information into one document (Antvik & Sjöholm, 2007). To develop an efficient schedule it is important that the critical chain is identified and that the lags in the schedule is used to allocate the projects resources effectively (PMBOK, 2004).

A time schedule without control is fairly useless to the project organization. The control must be carried out regularly and relatively often in order to detect deviations early. This makes it possible for the project team to take necessary actions to avoid longer delays (Antvik & Sjöholm, 2007). The schedule control and

development must be an iterative process in order for the project team to have updated schedules throughout the project (Guo-li, 2010).

Project Cost Management

Project cost management includes the processes of *cost estimating*, *cost budgeting* and *cost control*. The main objective of cost management is to complete the project within the approved budget (PMBOK, 2004).

The project budget is very important and influences all areas in both planning and execution of a project. It is important to keep track of total costs as well as costs for different work packages in a project (Guo-li, 2010). A professional developed budget does not only control the project costs, but also creates good conditions for development of a well functioning cash flow in the project. The consequence of insufficient cash flow in a project is often connected to large extra costs and delays as there is a high risk for a temporary stop of the whole project (Antvik & Sjöholm, 2007).

The cost estimation should be based on the project scope, the WBS and be connected to the project plan. To reach a correct estimation it is important that each activity is estimated based on the conditions of the execution of the specific activity. Since there often are several factors that are uncertain in a project, a reserve cost can be assigned to activities with a low level of detailed information or work packages with potential high financial risks (Adisa Olawale & Sun, 2010).

To gain financial control of the project it is important to carry out proper cost control. The pre-calculated budget is the baseline of the financial aspects in the project but it is only with an updated and accurate control of the costs that the budget can be used effectively in a project (Antvik & Sjöholm, 2007). Cost control should include comparison of planned value and actual cost of each work package, but also include analysis of the earned value for the costs spent in the project. A correct performed analysis of the current financial status is necessary in order to develop forecasts of future, and final, costs of the project (Guo-li, 2010).

Project Quality Management

Project quality management involves all processes and activities in the project organization to determine quality policies and control that the performed work is of a satisfying quality. The major processes in quality management are *quality planning*, *quality assurance* and *quality control* (PMBOK, 2004).

The project team must identify which quality standards that are relevant in the project in order to perform quality control. The identified standards should be considered the baseline in the development of a quality plan. It is important that the quality plan not only consist of required levels of quality in different activities, but also methods to achieve the requested quality (Wei & Yang, 2010).

The objective with quality control is to ensure that the quality plan is implemented in the execution of the project and that established standards are met. In order to perform quality control the project team must develop methods to monitor and control specific activities of the project. It is important that the implementation and control of the quality plan is carried out thoroughly, since the quality plan otherwise will be of no use to the project organization (PMBOK, 2004).

Project Human Resources Management

Project human resources management is the processes used to ensure that the project organization is established in a way that provides the project with good conditions to succeed. Major processes in human resources management are *human resource planning, acquire project team, develop project team* and *manage project team* (PMBOK, 2004).

In the early phases of a project it is necessary for the project management to plan how the project team should be organized and determine what roles that are required (Al-Maghraby, 2008). Each role in the project team should be assigned with areas of responsibility, authority and required competence (Antvik & Sjöholm, 2007). It is important that a role with a defined area of responsibility also has the authority to make decisions within that area. Responsibility without authority makes it very hard for middle management to influence the work, which most likely will affect the project negatively (Walker, 2007).

Staff changes, especially when key-roles are involved, often affect the project negatively in aspects of time, cost and team development. The project management should therefore strive to make as few changes as possible in key-roles of the project team (Al-Maghraby, 2008).

Project Communications Management

Project communications management is the processes used to ensure that required information is distributed to the right person at the right time. The major

processes in communications management are *communications planning, information distribution, performance reporting* and *manage stakeholders* (PMBOK, 2004).

How communication in a project is handled must be planned in order to perform effective work and minimize the risks. A communication plan is necessary to ensure that both internal and external project communication is carried out effectively. The plan should contain details regarding what type of information that need to be distributed, who needs to receive the information, the purpose of the information, the frequency of the distribution and the responsible person to issue the information (Ramsing, 2009). The communication plan should also include what meetings are required within the project and a specification of participants, purpose and frequency for each type of meeting (PMBOK, 2004).

It is important that the project management performs frequently progress reports, mainly to inform clients and other stakeholders of the status of the project but also for the management team to keep control of all areas of the project. A progress report should focus on deviations from the project plan and contain current status of the project, executed and planned actions, uncertainties and forecasts regarding cost and time (Antvik & Sjöholm, 2007). When deviations from the baseline are identified in the progress report, the management team should include recommended corrective actions in order to bring the project in line with the project plan (Ramsing, 2009).

Project Risk Management

The main objectives of project risk management is to increase the probability and impact of events that are positive to the project and decrease the probability and impact of events that are negative to the project. Risk management include *risk management planning, risk identification, qualitative risk analysis, quantitative risk analysis, risk response planning* and *risk monitoring and control* (PMBOK, 2004).

All projects have uncertainties that can either turn out to be an opportunity or a risk. Uncertainties often occur in areas where the management has little information of the current conditions. By effective management many uncertainties can be evolved into an opportunity rather than a risk (Antvik & Sjöholm, 2007). Risk analysis is often carried out early in a project when the information is highly limited within several areas. To manage risks and

opportunities effectively, the analysis must be iterated throughout the project as more and more information becomes clear to the management team (Kululanga & Kuotcha, 2010).

The purpose of a risk analysis is to gain control of the uncertainties in the project. When risks are identified it is therefore important that a strategy is developed in order to respond to the risk (PMBOK, 2004). A response strategy can be to eliminate the probability or impact of a risk, or to accept the risk and calculate with a potential extra cost if the risk occurs (Kululanga & Kuotcha, 2010). A common, and effective, approach to analyze risks is to estimate the probability and impact of a risk. The risk response is then based on the combined value of each risk, which leads to a risk management where the response is in relation to the magnitude of the risk (Briner, Hastings, & Geddes, 1996).

Project Procurement Management

Project procurement management is the processes to control and administrate contracts and purchase orders from sources external to the project organization. The major processes in procurement management are *plan purchases and acquisitions, plan contracting, request seller responses, select sellers, contract administration* and *contract closure* (PMBOK, 2004).

The planning of procurement management should be carried out early in the project and focus on analysis of which products or services that need to be purchased. After the initial planning, a procurement plan should be developed that includes all major procurements that are needed in the project (PMBOK, 2004). The procurement plan is an important tool for efficient procurements throughout the project. It should be developed based on the project's WBS and time schedule in order to include all procurements and to be timely integrated in the project. The procurement plan includes budgeted cost and required finish date for each procurement (Eriksson & Westerberg, 2011). Especially important is the identification of procurements with a long lead time, since they have to be initiated early. A poorly developed procurement plan, or the lack of one, is likely to cause high procurement costs and in worst case even force the production to be stopped (Antvik & Sjöholm, 2007).

In larger projects there are often a procurement manager assigned to control and handle procurement activities. The procurement manager is responsible to plan and execute purchases. An important part of the procurement manager's work is

to evaluate quotes in order to achieve cost effective contractors (Eriksson & Westerberg, 2011). To keep control of the cost forecasts in the project the procurement manager must follow-up the actual cost in relation to budgeted cost for each purchase (Antvik & Sjöholm, 2007).

3.3 Benchmarking

Benchmarking is a method of improvement by comparison. There are many ways to implement benchmarking and the method can be applied in all parts of a business. A big difference from traditional competitive analysis is that a good completion of benchmarking not only results in which methods should be used, but also provides an understanding of how these approaches and methods are achieved (Camp, 1993).

There are different forms of benchmarking both in terms of what is compared, and of who the comparison is made with:

Comparison of what?

- *Performance benchmarking*
Aims to determine the own company's efficiency related to other companies, through measurement of times, quality and financial key figures.
- *Process benchmarking*
Compares methods and approaches in the own company with successful companies, to develop more effective working processes.
- *Strategic benchmarking*
Focus on other companies' strategic decisions, with the objective to create an effective strategic plan in the own company.

Comparison with whom?

- *Internal benchmarking*
Means a comparison with a different department, subsidiary or country within the same concern.
- *Competitive benchmarking*
Is a direct comparison against strong competing companies that produces or provides the same product or service as the own company.

- *Functional benchmarking*
Compares functions or processes with non-competing companies in the same line of business as the own company.
- *Generic benchmarking*
Means a comparison of the own company's processes relative to the absolute best process, regardless of which line of business it is used in.

(Andersen & Pettersen, 1997)

It is increasingly common for companies to carry out benchmarking that focus on processes rather than performance. A process-orientated benchmarking focuses on identifying new ways of working to increase the efficiency. The weakness of performance benchmarking is that it is often provided as a status report, without focus on how practices should be changed in order to develop the company (Andersen & Pettersen, 1997).

There is a great potential to achieve a successful outcome in an internal benchmarking, since the information is accurate and often readily available. In large concerns it is common that some departments are better than others, which creates a potential for improvement that is relatively easy to take advantage of. In competitive benchmarking there is a risk that the shared information is not entirely truthful or complete, which is devastating for the whole comparison. This type of comparison often becomes superficial and overly focused on key figures (Andersen & Pettersen, 1997). Information-sharing works better in functional benchmarking in which the two companies do not compete but still have some common areas where both are in need of development and increased efficiency. The problem of functional benchmarking lies in finding a common area which is suitable for comparison between the companies. Generic benchmarking has a limited use and often requires a lot of work to identify a comparable process. Once this is completed, however, there is a great potential for innovation and development of new technologies and approaches (Andersen & Pettersen, 1997).

As a benchmarking process is carried out, a predetermined work model should be followed. One example of a work model is presented in figure 4.

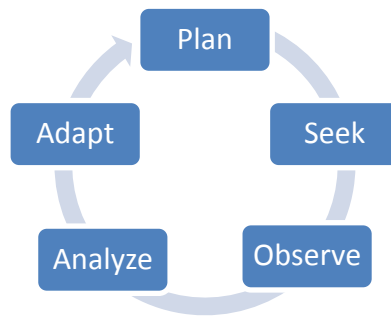


Figure 4. Example of a benchmarking work model.

Plan – Choose and document the process that is subject for benchmarking and identify measurement parameters.

Seek – Find suitable benchmarking partners.

Observe – Identify and understand the partner’s process, both in terms of performance and practice.

Analyze – Identify differences in levels of performance, work methods and conditions.

Adapt – Select which methods that are appropriate to transfer and adapt to the own company’s conditions.

(Andersen & Pettersen, 1997)

3.4 Context

Ethiopia has a hierarchical society and is a democratic republic divided into nine federal regions. Ethiopia is a poor country and many Ethiopians live under harsh conditions. The country has a history of prolonged warfare against the bordering countries of Eritrea and Somalia, which has further contributed to the poor living standards of the Ethiopian population (NE). During the period of Haile Selassie as emperor, many new private businesses started and the economy of the country was on the rise. However, severe drought and widespread corruption resulted in famine in the country. The Marxist regime that succeeded Selassie nationalized many companies which later were bankrupted. The period of 1975-1991, when the Marxist regime ruled Ethiopia, was a very difficult and poor time for the

country's population (Howard, 2010). Nowadays, the majority of the population makes a livelihood in agriculture, but the agriculture industry is characterized by outdated methods and low efficiency. The infrastructure in the country is of low standard and in great need of expansion and maintenance, in order to create conditions for development in other areas of the society (NE).

Since 1995, parliamentary elections are held every five years but due to disturbances during the 2005 elections, when leaders of the opposition were imprisoned, the democracy in Ethiopia has been challenged by several Western countries (NE). The government recently introduced a new law that forbids foreign aid to be used in work for development of democracy and human rights, which caused several countries to cancel their assistance (Howard, 2010). Citizens can be imprisoned for a long time without a trial verdict, if they are suspected for a crime. Journalists who are deemed to have violated the censorship in political articles can also be subject for imprisonment without trial. Since the introduction of the present form of government in 1991, Ethiopia has a free market economy (Howard, 2010).

Sweden is, in comparison with Ethiopia, a highly developed country. The living standards of the Swedish citizens are high, with a well functioning healthcare and a developed infrastructure. Sweden is a parliamentary democracy with a ceremonial monarch. General elections are held every four years and there has been public voting in general elections since 1919 (Everyculture). Sweden has not been at war since 1814 and a reduction in military expenditure has been ongoing since the end of the cold war. A big part of the Swedish population is working within services, silviculture and manufacturing industry. The Swedish industry is in general categorized by high developed methods and efficiency (Everyculture).

Ethiopian workers are in general more comfortable in situations with clearly defined tasks and responsibilities than in situations without clear boundaries. Keeping appointments and punctuality is valued in urban areas, but are not nearly as important in the rural areas (Howard, 2010). The Ethiopian business culture is characterized by risk aversion, which may be caused by the number of successful entrepreneurs that through the years have been imprisoned on charges of corruption. It is common with a certain mistrust between business people who have not done business together before. There is a fear that verbal agreements and promises will not be kept, which has caused cash transactions to dominate over payment with credit card and checks, which are rarely used (Howard, 2010).

Ethiopian businessmen show more confidence in former partners and there is often a long process before the same trust is built with new partners. Direct corruption and bribery is rare, which if discovered could provide severe penalties. Much more common is that one party requests some kind of personal favor after a reached agreement (Howard, 2010). Courtesy is applied in all business situations and negotiations take place without raised voices, with maintained respect to the other party. Diplomacy is valued over directness when an opinion is presented in a discussion. To direct present a deviant opinion in a discussion can be considered disrespectful or even rude (Howard, 2010). Leadership in Ethiopian organizations is often very hierarchically and the management team is expected to have the most knowledge and take decisions without consulting sub-ordinates in all situations (Howard, 2010).

Most Swedish workers are more comfortable when they get responsibility for the task or area they are working with. The knowledge of the workers are highly respected in many companies and this often results in discussions between workers and managers in order to reach the most suitable way of solving a problem (Culture). Decisions are often made in consensus with a close corporation between the managers and workers. The company organization in Sweden is often flat, with a short social distance between managers and sub-ordinates (Culture). Punctuality is of great importance in Swedish business culture. A late arrival to a meeting is considered very rude and disrespectful to the other participants. A direct speaking, with clear opinions which is backed up by empirical evidence, is respected in meetings and discussions (Culture).

Business partners in Sweden are to some extent chosen by previous experiences of corporation with a certain person or company. Facts and references from previous work can, however, gain a lot of respect and trust to a new business relation (Culture). Many business relations in Sweden are built on trust and payments are usually carried out through invoices that are paid after delivery. Cash payment is hardly ever used in businesses between companies (Culture).

In recent years, several construction and civil works projects have started in Ethiopia. It is difficult for domestic construction companies to compete in contracts for large projects, mostly because of their inexperience but also because many domestic companies lack the capacity for large projects. A further difficulty for domestic companies is that they do not meet the preliminary requirements placed on contractors in projects financed by the World Bank and African

Development Bank (EBDSN). As a result, almost all major projects, particularly in civil works, are signed to foreign contractors. Some domestic construction companies solve this problem by working with major international companies, as sub-contractors, in large projects (EBDSN).

Sweden has a long tradition of successful construction companies, both domestic and in the international market. The Swedish construction industry has therefore a big majority of domestic companies. There is a limited import of material and machinery in Swedish construction projects. Problems concerning import and customs are rare, but an international procurement often involves a long time of delivery (Boverket, 2005).

Ethiopia's largest domestic construction company is Midroc Construction Ethiopia, which is a subsidiary within the internationally established Midroc Group. The owner of Midroc, Mohammed Al-Amoudi, is half Ethiopian and devotes substantial resources for both development and sponsorship to build the Ethiopian society. Because of Midroc's internationally extensive business, the company is able to compete for contracts of big Ethiopian projects (EBDSN). Many construction companies are experiencing problems with importing materials to Ethiopia. There are sanctions of duties and taxes on imports of machinery and equipment to the country, but a tedious customs administration often cause delays in construction projects (EBDSN)

Major contextual differences between Sweden and Ethiopia are compiled in table 1 below;

Ethiopia	Sweden
Low developed country	High developed country
Poverty	High living standards
Hierarchically organizations	Flat organizations
Diplomacy in discussions	Direct speaking in discussions
Inexperienced construction companies	Tradition of successful construction companies
Questioned democracy	

Table 1. Contextual differences between Sweden and Ethiopia.

4 Empiricism

4.1 Sweden

4.1.1 Context

The Swedish society is well developed in general, with a very high (0,95) Human Development Index. The HDI is based on life expectancy, education and GDP, which makes it a good measurement of a country's development status (Nat).

The Swedish construction industry has many performing organizations and a strong financial influence on other parts of the society. The construction industry consists of a few companies that have a large share of the total market, and a large number of smaller companies with less than 20 employees. The majority of the companies in the Swedish construction industry have Swedish managers and Swedish labor. The industry has a strong focus on efficiency, energy-efficient buildings, safety and environment.

The government controls the construction industry with laws and restrictions that regulates construction quality, environmental influence, worker conditions etc. These restrictions and guidelines, together with well organized and developed construction companies, have contributed to a high standard in Swedish infrastructure and buildings.

In general there is a high level of knowledge and education amongst the people that work in the Swedish construction industry, and the employees have a relatively high salary. Construction managers use computerized tools to facilitate planning and managing of projects. The production workers are well equipped with electric hand-tools and laser measuring devices to make their work as efficient as possible. Construction companies usually have good conditions to make relatively large profits in most projects.

Most companies have a flat organization where the sub-managers are responsible for their own unit. The company culture differs a bit in different companies, but in general there is an open relation between managers and sub-ordinates.

The studied project

The studied project is a reconstruction of an office building located in central Stockholm. The building is five stories and the project includes reconstruction on every floor, without changing the framework and facade. The total time for execution of the project is one year. The location of the project means short transportations of material but also logistic problems due to lack of space for establishment and material stock on site. The project was in the final stage with only limited production left during the study.

Midroc Project Management is an organization that exclusively works with project management. The organization has no construction workers employed, but uses sub-contractors with construction workers for each individual project. MPM usually work as an EPC-contractor with a cost plus-contract.

4.1.2 Project Management

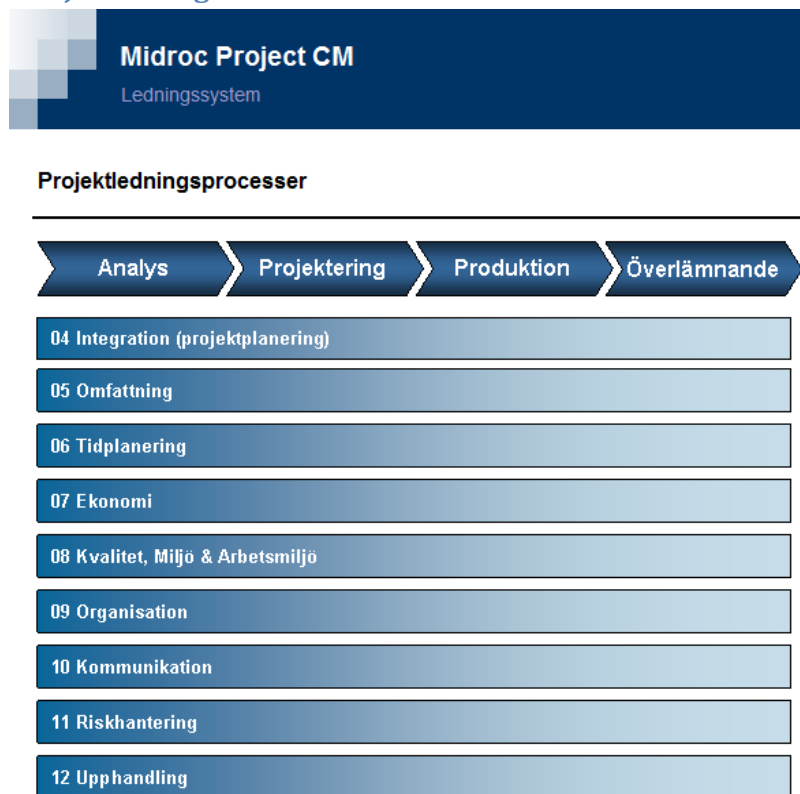


Figure 5. Overview of MPM's Project Management System.

Midroc Project Management AB has a computerized system for management in construction projects. The project management system consists of four phases in the construction process, with PMI's 9 knowledge areas integrated in the system. The four phases of the construction process are described with general actions and checklists to facilitate the elaboration of required plans and documents. Each phase is broken-down into smaller processes that are described with; inputs - tools and techniques – outputs. The system allocates a clear responsibility for the outputs of each process to a specific role or person in the project team. The project management system also consists of templates for plans and documents that are required in the project.

4.1.2.1 *The four phases*



Figure 6. The four major phases in MPM Project Management System.

The four phases all include different activities and deliveries of the project. The analysis phase involves the establishment of a project plan that includes descriptions, blueprints, schedules, cost budgets, risk analysis and reference objects. Templates are used in the establishment to ensure that all parameters are included. Throughout the analysis phase focus is on feasibility, market, risks and financial parameters.

The three remaining phases all consists of the sub-phases; *initiating, planning, execution and control* and *closing*. In the design phase focus is on establishing correct blueprints with the required level of detail, in order to carry out the production successfully. The design phase is an iterative process that includes the project management team, the client and external experts. The design leader is responsible for the design phase to be planned and executed according to the project manager's directives.

During the production phase, the main focus is on coordination of the production work and ensuring that schedules, quality, cost and risks are handled according to the plans established in the project plan. The production leader is responsible for

the production phase to be planned and executed according to the project manager's directives.

The handing over phase includes planning and execution of final inspection and functional testing of the building. It also involves to compile and handing over documents, as final blueprints and inspection report, to the client and authorities. The handing over phase ends with an evaluation of the own organization's performance throughout the whole project.

4.1.2.2 The nine knowledge areas

Midroc Project Management's work methods are described below. The investigation was based on PMI's nine knowledge areas and how the activities in each area of knowledge are carried out in MPM projects. The information was gathered through reviewing the Midroc Project Management System, interviews and observations on the construction site.

Integration

For each new project, MPM establishes a project plan. The project plan is the general managing document for the execution of the project. The extent and detail of the project plan varies with the complexity and size of the project. To ensure the quality of the project plan, it is based on a template with the minimum required contents. The project plan includes a briefing of the conditions and documents from which the project originates. It also includes plans and documents for project scope, time, cost, quality, human resources, communication, risk and procurement. In the early phase of a new project the plans and schedules are focused on general descriptions, and are further detailed later in the project. The project plan is established by the project team, lead by the responsible project manager. Before the project goes into the next phase, the project plan is reviewed and approved by the regional manager.

In MPM projects there are no standard routine for stakeholder analysis. Experienced problems regarding permissions from authorities, requests from the client and current and future tenants caused delays and increased the cost in the studied project. The strongly influential external stakeholders in the project also affected large parts of the project planning and production progress by unexpected demands and requests.

To control and develop internal work methods every project compiles a project control report in time of production start. After the production has started, a new report is compiled every six months. The report is always made by a person who is external to the project. The purpose of the report is to ensure that established management system, work methods, regulating documents and templates are used in current projects. The report is also made to identify potential improvements in the management system and current work methods. The project control report reviews all project documentation and determines whether plans and regulating documents are applied in the project. The result of the review is reported to the company management.

Scope

MPM define the project scope through identifying appropriate phases for the project and determining the required outcome of each phase. The most suitable way to break down the project into smaller work packages and deliverables are investigated. This is made as a WBS which is later used in the development of time schedules and budgets. The project scope is developed with a close contact between the client and the performing organization.

In a few projects there have been problems with defining a distinct project scope at an early stage of the project. These problems are primarily due to insufficient contact with, or obscurity from, the client and future tenants of the building. In the studied project the scope was distinctly defined, but not consistent with the building's actual design. This gap between documents and reality was caused by access restrictions, made by the current tenants of the building, during the project planning.

Time

A number of schedules are established in a MPM project; project schedule, procurement schedule, design schedule, production schedule and a detailed schedule over the current situation in the production. One person in the project team is responsible for each schedule and the project manager is overall responsible for the development of schedules. All schedules are developed through the same method and include the same phases. MPM uses a computerized aid, MS-Project, to facilitate the development and control of time schedules. All schedules are usually assembled in one MS-Project document,

which requires a certain level of computer skills amongst the employees to be able to view and print one specific schedule or part of schedule.



Figure 7. The phases of MPM Project Time Management.

To define the activities, the WBS is broken-down into a detailed activity list. The activities are then properly sequenced with internal dependencies. The dependencies are used to ensure that the schedule can handle that one particular activity has to be finished before the next can begin. After resources have been assessed and duration for each activity has been estimated, the schedule is developed. The schedule development is based on the previously completed phases. During the execution of the project, controls are made to manage the schedule. The most important part of the controls is the comparison of the schedule against the actual time spent in the project. Control of production schedule is made on a weekly basis.

In MPM projects, the regional manager has a high ambition in development of schedules. The computerized aid, MS-Project, has a number of functions that can be used to facilitate the schedule control during the execution of the project. In many projects however, these functions are not used which makes the schedule less effective when it comes to comparison and control against actual spent time. The required level of computer skills to fully be able to use MS-Project is in general not met by the actual level of computer skills amongst the employees.

Cost

Cost management in MPM consists of calculation, budgeting and control. In the start phase of the project the costs were calculated, based on a template for the project account plan and the project's WBS. The calculation generates a project budget which includes all costs in the project. Cost control is carried out through the use of a template and includes program changes and relocations as well as forecasts and reports of project costs. Program changes are monitored continuously throughout the project. Relocation of costs is made to make sure that costs are correctly located in the budget, according to which activity that

carried the actual cost in the project. The cost forecasts are based on performance reports that include information concerning spent costs in relation to completed work. Cost control reports are distributed continuously both internal and to the client.

The template for cost control works very well and allows the project manager to have good control of the costs in the project. Since the template is advanced, it sets high demands on the user to input correct data. The project manager is responsible for the cost control reports and ensures that the reports are distributed to the right people in- and outside the organization. The review of the reports is focused on activities that deviate from the cost budget. Cost control reports are made monthly or more often if the client specifically requests it.

Quality

In the studied project, a plan was developed regarding quality, safety, health and environment, which all are subordinate to the project plan. The quality plan was developed early in the project and is based on a template, to make sure that all required parameters and documents are included. The project manager is responsible for developing the plan, which is used as a guiding document throughout the execution of the project. The plan also consists of a number of required controls that need to be executed during the project. It is developed according to ISO standards in environment, quality and guidelines to quality plans. To handle safety and health in the project, the plan includes lists of activities with potential risks for the executing workers.

Human Resources

Human resources management in the project consists of three different activities; organizational planning, staff acquisition and team development. The organizational planning involves determining which roles that is required in the project. When a list of roles is developed, every role is assigned with areas of responsibility that includes which decisions every role is responsible for. The staff acquisition is about investigating what competence and other demands that are required for each role. Appropriate persons are then assigned to the roles in the organization plan. The project manager is responsible for team development in order to determine common goals and methods, and to create a good work environment, within the project team.

In MPM's management system every project role is described with general tasks and responsibilities. The project organization has an appropriate level of responsibility for each team member. The sub-managers can make decisions without consulting the project manager which makes the work efficient. Instead of consulting in every decision, the project manager is informed of the recent performed activities on a weekly basis. It is of great importance that the members of the project team stays in the project throughout the project execution. In projects where key persons have been replaced during a critical phase, the projects suffered losses in time, cost and future efficiency.

Communications

The formal communications in the project are mostly carried out through meetings between different parties of the project. The ways of communication and frequency of meetings are regulated in a communication plan that is developed at an early stage in the project. There are three categories of meetings which all involves different people and handles different issues. All meetings have records that are based on a general template, which might be adjusted to a current issue. Each meeting category has a predefined list of participants and a distribution list of the meeting record. The three meeting categories are;

A – Meeting between the project manager and the client, where the project manager reports the current status and issues in the project. The client makes decisions regarding project principles and program issues. Decisions regarding issues from B-meetings are also made by the client. A-meetings are usually held monthly, but can be held more often if the project is in an intense phase.

B – Meeting between the design manager and the design consults. Design activities are coordinated and remaining tasks are allocated to the appropriate consult. Decisions are made regarding issues from C-meetings. B-meetings are usually held monthly.

C – Is a non-decision making meeting where different technical issues and coordination of the production is discussed. The meetings are usually held once a week or when an issue needs to be discussed. Participants on these meetings vary, but the production leader and sub-contractors usually participate.

Every month a project status report is consolidated by the project manager. The status report is based on information from middle managers regarding current

status in design, production, procurement, cost and time. The report is distributed to internal managers, clients and other stakeholders of the project. The communication in the project works well with an honest approach to reports and forecasts regarding time schedules and cost control.

Risk

A risk analysis was carried out during the early phase in the project. Potential risks in the project are identified and evaluated regarding the probability that the risk occurs and the consequence of it. Each identified risk is graded from 0-10 in both probability and consequence. The grade places the risk in a matrix where the risks with high probability and/or severe consequences are highlighted and in need of an action plan. MPM's ambition is that an action plan for a risk is proportional to the probability and consequence of the risk. A template is used to grade and document identified risks in the project.

In the studied project a general extra cost were added to the budget for minor unexpected risks. When larger risks are identified a more extensive analysis are made, which often results in two budget alternatives. The first alternative includes the risk activity and is therefore more expensive, and in the second alternative the activity is excluded from the contract. The risk analysis in the studied project underestimated the magnitude of risks, which caused delays and therefore increased the cost of the project. The risk analysis was made in the beginning of the project and is not properly managed and continuously iterated throughout the entire project time.

Procurement

Project procurement is carried out by the procurement manager in general. Procurement of large or critical sub-contractors is supported by MPM's procurement department.



Figure 8. The phases of MPM Project Procurement Management.

The procurement plan is developed based on the project plan and sub-ordinate plans as schedule, budget, risk analysis and the project's WBS. The procurement plan involves analysis where critical procurements, in aspects of long lead times, extensive volumes and technical advanced contracts, are identified. The procurement plan also includes identifying appropriate procurement forms for each contract. A template is used in the development of the procurement plan to ensure that all aspects of each contract are included.

The request planning is based on templates for each type of contract request and specific selection criteria are identified when necessary. Before requesting a quote, it is defined which contractors that should be requested. Competitive tendering is always applied in procurement of contractors. MPM's ambition is to request quotes from at least one contractor that has not been procured in any previous project. Tender evaluation is based on a template with selection criterion that is adjusted to each contract.

To choose contractor, each tender is evaluated according to the predefined selection criterion. After the first evaluation the 2-3 lowest tenders are chosen to be reviewed in more detail. To ensure that the tender includes all required activities, it is also reviewed by the production leader before a contract proposal is sent out. The contract is based on a template and adjusted to the specific contractor. When the contract is signed, the production leader takes over the responsibility to manage the contractor during the execution of the contract. All documentation concerning the contract is archived in case of a future dispute. When the contract is closed out a formal confirmation is sent to the contractor. If the project team for some reason wants to cancel the contract before the delivery is complete, MPM's procurement department is always contacted for consultation.

MPM's project teams focus strongly on achieving successful procurements. In most projects the actual procurement cost is less than the budgeted cost, which increases the profit of the project. The methods of procurement are well functioning and well implemented in MPM's work methods.

4.2 Ethiopia

4.2.1 Context

The Ethiopian society is not highly developed and the country's HDI is 0,42 which is considered low (Nat). The Ethiopian construction industry has a widespread problem concerning cash flow in projects. As a consequence of this problem, there are a lot of half-finished buildings that are on hold until the owner manages to finance further production. Due to the cash flow instability in projects, many sub-contractors and suppliers demand cash or check payment in advance to performed work or delivery.

In the Ethiopian construction industry, a big part of the labor and managers have insufficient knowledge and skills within the construction area which often causes delays and low performing quality. There are a large number of labors in projects, but old-fashioned work methods and outdated tools often make the efficiency in production low. The history of long communism governance is shown in the morale of many workers, both in poor work efficiency and in the high rate of absence that many projects suffer. A large part of the material and machines that are used in the construction industry must be imported to Ethiopia since the domestic manufacturing is highly limited. Import is often time consuming because of tedious customs administration and long transports on low standard roads.

Ethiopia is one of the few African countries that never have been colonized, which many Ethiopians are very proud of. This fact, however, has the consequence of lack of influence from developed countries which has made the Ethiopian development slow and with overall lower standards than many other African countries. Many Ethiopians are very proud of the country's history and have the opinion that there is no need for other countries to influence the Ethiopian industry and development. Expatriates that are involved in Ethiopian construction projects are therefore often treated with a certain level of skepticism.

The studied project

The studied project involves constructing a 10,000 ha rice field in Gambela region, located in the southwest of Ethiopia. It also includes construction of a rice factory, five farm centers and camps on site for employees working in the project. The project is the first of a planned total construction of 200,000 ha rice fields. The time for execution of the first project is approximately five years. Because of the extent and location of the project, there is a very long mobilization period. The

project has been ongoing for one and a half year and is currently still in the mobilization phase.

In the area of the studied project there are contradictions between different ethnical groups. The major contradiction with a long history is between lowlanders and highlanders. The Gambela area, where the project is located, is in the lowland with poorly developed cities and villages. Projects in this area are often influenced by higher educated highlanders who come there to work. As late as a couple of years ago there was a violent outburst where many highlanders in this area were killed by lowlanders. This contradiction can of course lead to problems when a construction project starts in this area. Several different ethnical groups are represented in the project organization, which also can cause difficulties in communication and integration in the project management.

The location of the project create problems since generators have to be used for electricity and all material and machines must be transported a long way to reach the construction site. A new concrete batching plant also have to be constructed in order to execute all the concrete works. The climate in the area where the project is located also creates a problem since there is a five months long rain period stretching from June to October. During this period in 2010 all major work in the project was stopped due to unworkable conditions.

The owner of the studied project, Saudi Star Agriculture Development, is specialized in agriculture projects. SSAD carries out projects as an EPC-contractor where they employ their own managers for certain parts of the project and uses sub-contractors for others.

4.2.2 Project Management

SSAD's work methods are described below. The investigation was based on PMI's nine knowledge areas and how the activities in each area of knowledge are carried out in the studied SSAD project. The information was gathered through interviews and observations on the construction site.

SSAD does not have an implemented Management System to control the project management. Guidelines and work methods for different activities and phases in the project are developed gradually by the program director as the project goes on. The managers for the different areas largely base their work structure on their individual experience, without applying an overall management system that includes the whole project. There is a resistance, within the higher management,

to implement new methods and structures in the project management activities. Implementation of plans and guiding documents is not prioritized and in many cases considered superfluous.

Integration

The project plan in the studied project is under development, but not completed and therefore not implemented in the project management. The project plan includes a briefing of the conditions and documents from which the project originates. It also includes plans and documents for project scope, time, cost, quality, human resources, communication, risk and procurement. The project has been ongoing for one and a half years without an implemented project plan, which has caused an overall insufficient planning and control of the project.

Since the project plan is developed late in the project, and due to the lack of planning and control that the project suffers, some parts of the plan are already outdated. The basic guidelines and documents in the project plan are adequate but not implemented in the project management.

The general issue that is related to many of the perceived problems is the lack of planning in the project. The production started long before the required plans and organization was established, which has made it even harder to implement structure and control in the project management retrospectively.

A very extensive and professional feasibility study was made eight months into the project. The report includes guidelines and conditions concerning all aspects of the project management that needs to be addressed. Implementation of the result of the feasibility report is, however, not conducted.

Scope

The scope of work included in the project is defined by identifying appropriate phases and required deliverables of the project. The activities included in the project are then identified by a WBS where major deliverables are broken down into smaller and more manageable work packages and deliverables. The WBS is later used in the development of time schedules. The project scope of the studied project was developed after the production started which caused confusion in the early stage and also caused a late development of time schedules.

Since the project is internal, with SSAD both as client and as the EPC-contractor, the total scope of the project is quite clear. A problem is, however, that the higher management shows a lack of comprehension to the extensive work the project means. This fact causes problem in all aspects of the project management and particularly in time and cost management. There is also a clear problem regarding demarcation in scope of work for sub-contractors. This causes confusion and creates problems in areas where several different contractors are involved. The coordinating management of sub-contractors is weak, which partially is a consequence of the sub-contractors vague scope.

Time

The time schedules established in the project are; project schedule, design schedule and production schedule. The development of schedules are made by the planning manager and approved by the project manager. The computerized aid, PrimaVera, is used to facilitate the development of schedules.

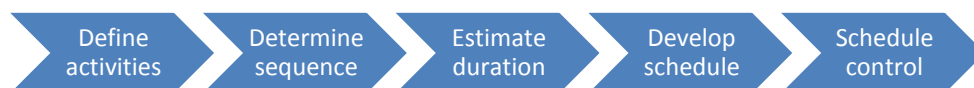


Figure 9. The phases of SSAD Project Time Management.

To define the activities, the WBS is broken-down into a detailed activity list. The activities are then properly sequenced with internal dependencies. The dependencies are used to ensure that the schedule can handle that one particular activity has to be finished before the next can begin. When the duration for each activity has been estimated, the schedule is developed. The schedule development is based on the previously completed phases.

The schedule control that is supposed to manage the schedules during the execution is not carried out, which has made comparison between schedule and actual performed work impossible. The current schedules in the project are not updated and since the project currently is close to 6 months delayed, the schedules need to be updated in order to carry out proper time management and schedule control.

The original schedules were developed after the project had started which caused inefficient production in the beginning. Although the original schedules were

professional and accurate developed, the lack of schedule control and general planning caused a large delay in the project. The rain period, which stretches from June to October, was not included in the time schedule, which caused even further delays.

A problem regarding time management is that many sub-contractors and some internal managers underestimate the time it takes to complete a contract, or part of contract. This means that higher management receives inaccurate information which impairs the time planning even further. The reason for inaccurate time schedules is also often caused by predetermined finish dates by the higher management. This means that time managers and middle managers are forced to cut time in the schedules which results in time schedules that are impossible to meet.

Cost

The studied project has no integrated project budget. After the production started a rough estimation of the total cost was made in order to be granted bank loans. This estimation is however not detailed calculated and it is not implemented in the project management. Funds to the project are assigned through requests to the owner, without control of progress or forecasts in the project.

Since there is no integrated budget, it is impossible to conduct cost control and procurement against budget. The lack of budget means that there is no knowledge in the project management organization, of how much funds the project needs to be completed. There is no cost control independent from budget, which means that the project management organization has no exact knowledge of where in the project the used funds have been spent. A project cost center structure is developed, but it is not implemented in the cost control management.

Quality

In the studied project a plan is developed regarding quality, safety, health and environment. The quality plan is used as a guideline for the sub-contractor, who is responsible for surveillance and quality control. There is, however, no control from the project management organization that the guideline is followed and implemented in the sub-contractors work.

The safety, health and environmental plans are developed, in which a very extensive study regarding the environmental impact of the project is included.

The plans are documented but not yet implemented in the overall project management.

Human Resources

There is a very extensive organization connected to the studied project. The organization chart is detailed and clear on how the organization is structured. The structure of responsibilities and authorities for the different roles in the organization is however not that clear. Middle management has very little authority to make decisions which affects the project progress negatively. The lack of assignment of responsibility in some areas of the organization also creates confusion and decreases the efficiency in the project.

The project in general is highly controlled from the top of the organization. Middle management is forced to verify and establish close to all decisions with the top management, which makes the efficiency low and the progress in the project slow. The staff acquisition in the project organization has in some cases caused that persons with insufficient knowledge and skills in the area of construction projects have been assigned to key-roles.

The project organization has suffered many restructurings, both through personnel who have been replaced and through personnel who have been assigned to new roles in the organization. Some roles have remained vacant for several months during restructurings. These restructurings, especially when key-roles are involved, have highly affected the project regarding progress and planning for future activities. One of the reasons to the overall lack of planning and control management in the project is the shortage of educated personnel in the management team.

Communication

The studied project does not have an implemented communication plan and distribution of information is not working well. A first draft to the communication plan has been developed, but it is not ready to be implemented as a guiding document in the project management. The lack of a plan for how the communication is to be carried out is clear, which causes confusion and much information never reaches out to the responsible person or others involved in the issue. Much information also seems to be kept from distribution in order for the higher management to be in individual control of the project.

Reports regarding progress and schedule forecasts from the production organization to higher management are often not completely accurate. If the production is way behind in progress, this information is in some cases withheld and an inaccurate report is sent to the project manager.

Meetings between managers in the performing organization and the higher management are not held on a regular basis and these meetings are, in the current situation in the project, held very seldom. The reason for this lack of frequent meetings is not clear, but the large distance between the site location and the office may have an influence. Frequent production meetings are not held which has caused confusion regarding production progress, prioritized activities and coordination of sub-contractors. A large reason for the confused situation in the production organization is that the role of the production manager currently is vacant.

A status report for the project is consolidated by the project manager every month. The status report includes current status and information regarding progress, design, procurement, time, schedules, cost and production. The report is distributed to the client and internal managers. The last three months however, no status report has been consolidated due to production stop during rain period and a period when the project suffered from shortage of funds.

Risk

A risk analysis was developed early in the project. The risk analysis is rough and the identified risks are not classified regarding probability and consequence of the possible outcomes. Each identified risk is assigned with rough mitigation measures. The risk analysis is not implemented in the project management and several of the early identified risks have occurred, with a big impact on the project, since the proposed mitigation measures never were executed.

A detailed risk analysis with aspects to existing local villages and possible new settlements in the area of the project is under development. The analysis consists of all identified risks that the project can cause to nearby settlements. The risks are classified from 1-5 in both probability and consequence of the possible outcome. Mitigating measures are investigated in proportion to the classification of each risk. The risk analysis is not yet completed and therefore not implemented in the project management.

Procurement

The studied project has no developed procurement plan, mainly as a consequence of inadequate, and lack of, updated time schedules and budgets. Procurement in the project is carried out through a purchase request from the production organization to the procurement manager. The methods of procurement management has big weaknesses and the lack of planning often causes problems in the production when material, machines and parts are delivered too late or not at all.

Procurement of sub-contractors is not carried out by the procurement manager. Most of the sub-contractors are procured by higher management that has a direct contact with the manager of the sub-contractor. Since the production and procurement managers have very limited influence and control regarding procurement of sub-contractors, the control and coordination of sub-contractors are weak.

The weakness in the procurement methods is partially caused by insufficient planning, or lack of planning, but also by shortage of funds in the project. The shortage of funds has limited the production largely and even forced the management to stop the whole project for a period. The reason for the situation with shortage of funds is unclear, but decisions regarding this matter are on a company strategic level.

Very large procurements in the studied project were made several years before the machines are to be used in the production. The reasons for these timely inaccurate procurements are unclear, but the lack of a procurement plan is certainly one of them. The large procurements that were made too early highly increased the cash flow problem in the project.

5 Analysis

The analysis consists of identified and evaluated strengths and potential improvements in the Swedish and Ethiopian operations. Areas that are suitable for benchmarking were also identified. Focus in the analysis was on potential improvements that should be prioritized to start with in order to develop work methods and create efficient projects. The context regarding culture and general conditions is strongly connected to the way a project is managed in both countries. These factors were also in consideration throughout the analysis. The analysis was based on previously presented empiricism and theory.

5.1 Sweden

The Swedish society is highly developed in general which also means that the construction industry use well developed methods. Improvements that can be identified in the Swedish project management methods are therefore few and often involve details rather than extensive organizational changes.

Swedish organizations are according to (culture) often flat with balanced authority and responsibility assigned to middle managers. With required authority assigned to middle managers, the project organization has good conditions to be effective and processes that require decision-taking is less time consuming than in a top managed organization.

Many Swedish organizations have an integrated project management system, which creates consistent work methods and facilitates the project control for the management team. The management system, according to IPMA (2010), also ensures that required planning and documents are handled before the project execution starts.

The methods for project control are highly developed in general, but the actual level of control in projects is often limited by the computer skills of the personnel. Control methods are according to Antvik & Sjöholm (2007) important in order for the developed plans to be effective throughout the project.

The identified strengths and improvements in Swedish project management are compiled in table 2 below;

Strengths	Improvements
Project Management System	Time – schedule control
Human Resources – authority/responsibility	Stakeholder analysis
Procurement – procurement plan	Risk – analysis
Cost – control	Human Resources – staff changes
Communication – project status report	

Table 2. Strengths and improvements in Swedish project management.

5.1.1 Strengths

Project Management System

The Swedish case company, Midroc Project Management, has a well integrated and developed management system. The management system has established a consistency in the work methods of all MPM projects and facilitates the general control of operations for the higher management. Since it is built up as guidelines and consists of checklists it also works as a self control for the management team in each project. The management system is well adapted to the management team’s reality, which makes it very useful and appreciated by the different project managers. A system with this level of integration is according to IPMA (2010) an effective tool to establish a high level of professionalism and consistency in a company.

Human Resources – authority/responsibility

The human resources in MPM are organized to be as effective as possible throughout the organization. Each role has a clear assigned area of responsibility and the authority to make decisions within that area, which according to Walker (2007) is a condition for a project organization to be effective. Walker (2007) also means that the responsibility assigned to the middle management makes the decision-making less time consuming. It also makes it possible for the project manager to take focus off the daily management and instead concentrate on long term planning and control.

The management culture in Sweden is influenced by trust and respect for the knowledge of the workers. The workers often have greater experience and knowledge of a specific work than the management. The big responsibility and authority that often is assigned to workers and middle management is based on their high level of skill and knowledge within construction.

Procurement – procurement plan

The MPM methods for handling procurement are highly developed with an assigned manager who is responsible for all procurements. The main reason for the well functioning procurement is the development of a procurement plan at an early stage in the project. As Antvik & Sjöholm (2007) has stated, an important part of the plan is to identify the purchases with long lead time. This is also included in MPM's procurement plan, with all required actions of each major procurement integrated with the major time schedule for the project.

Cost - control

An effective cost control is, according to Guo-Li (2010), a decisive factor that creates good opportunities for a project to be successful. The cost control in MPM projects are highly detailed with relocations and forecasts of high accuracy. The reports from cost control are also distributed to concerned stakeholders in- and outside of the project organization which according to Antvik & Sjöholm (2007) is important to maintain a positive attitude towards the project. The effective cost control in MPM is based on the developed template which highly facilitates the work involving cost control.

Cost control is strongly connected to the budget, which sets high demands on the budget in order to conduct effective cost control. The accuracy of the MPM budgets should therefore also be seen as a strength together with the methods of cost control.

Communication – project status report

The project status report that the MPM project manager consolidate every month is necessary for the client to get information of the progress in the project. Antvik & Sjöholm (2007) also means that the status report is useful for the project team itself in order to keep control of all aspects of the project. Since the report includes status information regarding time, cost, procurement and production it clarifies which areas that currently needs to be prioritized. The status report is

based on honest evaluations and forecasts, in order to be an effective tool for the project management team. As stated in Culture (2010), Swedish organizations prefer a direct way of presenting information as opposite to some other cultures where diplomacy is highly valued in discussions and reports.

5.1.2 Potential areas of improvement

Time - schedule control

MPM project organizations have a high ambition in schedule control. The computerized aid, MS-Project, has potential to control and manage time schedules in many aspects. Many members of the MPM project teams do not have the required level of computer skills to fully use the potential of the software and the higher management's ambition is therefore not met. Schedule control is carried out in minor scale, but there is a potential for improvement by reaching a higher level of computer skill throughout the organization. The schedule control is important and according to Antvik & Sjöholm (2007) the project team has little use of a schedule that is not effectively controlled.

Stakeholder analysis

Without the development of a stakeholder analysis early in the project Antvik & Sjöholm (2007) means that large problems that cause high costs and delays are likely to occur later in the project. The stakeholder analysis in MPM projects are of insufficient extent and are not iterated throughout the project, which according to PMBOK (2004) is a condition for the analysis to be an effective tool in the work of the project management team. The stakeholder analysis should include measures to limit negative impact from identified stakeholders. Many of the experienced problems caused by stakeholders as authorities and tenants could have been avoided if an efficient stakeholder analysis had been made earlier in the project.

Risk - analysis

Risk analysis is developed early and mainly correctly in MPM projects. However, there is problem in that the magnitude of risks in some cases is underestimated, which leads to insufficient mitigating measures to handle these risks. Kululanga & Kuotcha (2010) states that risk management must be carried out continuously throughout the project in order to identify and handle new risks as well as to keep control of previously identified risks. The risk management in MPM tends to be

concentrated to the early phase of a project, which can cause problems as risks occur in a later stage of the project.

Human Resources – staff changes

According to Al-Maghraby (2008) staff changes, especially when key-roles are involved, always causes problems in the project organization and usually affects planning processes and future progress negatively. In some MPM projects the project manager role has been reassigned for reasons that the project organization could not control. These changes have had several negative impacts on both progress and control of the project. When changes like this occur it is, according to Walker (2007), important that a proper handover is planned so that the negative impact on the project is minimized.

5.2 Ethiopia

The Ethiopian society, and construction industry, has according to Howard (2010) many areas with opportunity for improvements. The identified improvements in Ethiopian project management methods are therefore very extensive in some areas.

Since many construction companies have a short-time focus it is likely that most companies do not have an integrated management system. This leads to a project specific management where different managers within the same company, use different methods and have different approaches. This method of project management is according to IPMA (2010) likely to result in low consistency and a highly varying level of professionalism in the project management.

The planning processes are often neglected in Ethiopian projects, and the execution of the project is often started without a developed project plan. This is often shown by the many stopped projects, which have resulted in a lot of half-finished buildings in Addis Abeba and other Ethiopian cities. The planning processes are according to PMBOK (2004) highly important, and projects with no developed project plan often suffer delays and increased costs as a consequence.

Ethiopian construction projects are often highly managed from the top, with very little authority assigned to middle managers. This is according to Howard (2010) connected to the Ethiopian culture and flat organizations are very rare in the Ethiopian construction industry. A top managed organization is according to

Antvik & Sjöholm (2007) less effective than a flat organization and many processes have a slow progress in a top managed organization.

The priority of project control is not high in Ethiopian projects, which together with the neglected planning often causes several problems for the Ethiopian project management. The approach with a low priority of control is according to Howard (2010) connected to the Ethiopian culture, and problems are often solved as they occur rather than by controlling and planning to avoid them. Projects with insufficient planning and control are according to Gutpa (2008) highly likely to suffer severe delays and increased costs in the execution of the project.

A general problem in the Ethiopian construction industry is the low level of knowledge and experience amongst workers. This contextual condition has a significant negative impact on the efficiency in project execution. The level of knowledge and skill amongst workers is according to Walker (2007) a very important factor to reach a successful completion of a project.

The identified strengths and improvements in Ethiopian project management are compiled in table 3 below;

Strengths	Improvements
Adaption and Flexibility	Project Management System
Communication – project status report	Integration - planning
	Human Resources – authority/responsibility and staff changes
	Cost – budget and control
	Time – schedule control
	Procurement – procurement plan
	Communication – communication plan
	Scope
	Risk - analysis
	Implementation of plans

Table 3. Strengths and improvements in Ethiopian project management.

5.2.1 Strengths

Adaption and Flexibility

In the Ethiopian case company, Saudi Star Agriculture Development, the higher management has an approach that prioritizes an early start of execution rather

than taking the time to plan the project. This fact together with problems caused by the location of the construction site, the weather conditions and the high rate of absence amongst workers, forces the project management team to be adaptive and flexible. Since the middle management are used to these conditions, methods to handle sudden changes and new directives have been developed. The middle management on the construction site is effective in adapting to new situations which creates possibilities to fairly good progress in the project, even without sufficient plans for the execution. The project did, however, have a potential to reach a significantly faster progress if proper planning had been done at an early stage.

Communication – project status report

The SSAD project manager consolidates a project status report every month, which includes information regarding progress and identified issues that the project currently is limited by. Antvik & Sjöholm (2007) mean that the status report is useful for the project team itself in order to keep control of all aspects of the project. Since the report includes status information regarding time, cost, procurement and production it clarifies which areas that currently needs to be prioritized. The reports are not as useful as they could be since the included time schedules are outdated and forecasts often are too optimistic and therefore impossible to meet. The reports are not completely honest which according to Howard (2010) originates from the Ethiopian culture, where diplomacy is valued high and it is considered disrespectful to direct present a deviating opinion, e.g. a forecast that means a delay in relation to the original time schedule.

5.2.2 Potential areas of improvement

Project Management System

Since the SSAD project organization does not have an implemented project management system, there is no consistent work method established in the organization. According to IPMA (2010) an integrated project management system facilitates the work for the management team and also establishes a certain level of professionalism in the organization. The lack of a management system mostly effects the integration between different areas of the management team since all managers use different methods, based on their own experience. It also affects the ability for the project manager to control and monitor the different areas of the project since there is no consistency in the management methods.

Integration – planning

The planning processes that usually are conducted when a new project starts were not prioritized in the SSAD project. The project execution were launched to a start without proper development of a project plan, which according to Antvik & Sjöholm (2007) often causes delays, high costs and general execution problems in the project. The lack of an implemented project plan has caused problems in all project management areas and has made it impossible for the management team to have the required control of project activities. The development of a project plan started about a year into the project execution, but the implementation of a new project plan in an ongoing project is very hard to conduct successfully.

Human Resources – authority/responsibility and staff changes

The SSAD project organization is highly managed from top of the organization, which according to Walker (2007) leads to slow processes in decision-taking and therefore often causes delays in the project. Since the middle management have responsibilities without the proper authority, the whole organization becomes passive and slow in decision-making processes. Key roles in the management team are in some cases assigned to persons with insufficient knowledge of construction projects, which also causes an inefficient leadership of the project.

Staff changes, which Al-Maghraby (2008) means always have negative effects on project time and costs, have been made several times involving key-roles of the management team. The staff changes have also caused much confusion since key-roles have been vacant for several weeks before a new person is recruited to the team.

Cost – budget and control

Guo-Li (2010) clearly states that a project budget influence all areas of a project, both within planning and execution. Since the SSAD project do not have an integrated budget it is impossible to conduct cost control, which causes a high level of uncertainty in the financial management of the project. The lack of budget also means insufficient planning of cash flow in the project. This fact has contributed to shortage of funds which forced the management to stop the whole project for a few months. The lack of budget and cost control makes forecasts of final project cost impossible to carry out, which according to Guo-Li (2010) is an important factor in managing a project successfully.

Time – schedule control

The time schedule is one of the most important plans in a project and according to Antvik & Sjöholm (2007) the time schedule becomes useless to the management team without a properly conducted schedule control. The lack of schedule control in the SSAD project has made the original time schedules inaccurate and outdated which means that the project currently is managed without a comprehensive time schedule. The consequences of managing a project without an accurate time schedule is according to PMBOK (2004) often connected to long delays and inefficiency in the executing organization. Several contextual factors also cause uncertainties in development of time schedules. The high absence, the rain period, the lack of skill and shortage of funds all have impacts on the time schedule. These uncertainties mean that there is a higher level of schedule control required in Ethiopian projects than in Swedish projects.

Procurement – procurement plan

The lack of a procurement plan in the SSAD project is strongly connected to lack of a developed time schedule and budget. The project has suffered large delays and cash flow problems due to lack of a procurement plan, just as Antvik & Sjöholm (2007) states as a likely consequence in projects with poorly developed procurement plans. The reason for the low priority in development of a procurement plan is mainly contextual, as planning overall has a low priority in the SSAD project. The insufficient procurement plan has caused both stop in production and cash flow problems. This occurred mainly because procurements with long lead time were initiated too late and because very large purchases were made several years too early. These areas have a great potential for improvements and the development of a procurement plan should be highly prioritized in future projects.

Communication – communication plan

There is a clear problem in the project regarding communication, both internal between middle managers, and between higher management and middle management in general. Since the project has no integrated communication plan, it is according to Ramsing (2009) likely that required information never reaches the concerned persons, which cause inefficiency and increases the risks in the project. The lack of meetings also causes confusion in the project team, since there is no effective forum to solve important issues.

The restriction of information from higher management and the somewhat inaccurate progress reports are, according to Howard (2010), based on cultural issues. Howard (2010) means that Ethiopian leaders are expected to have total control and information is therefore often withheld in order to keep the individual control of the project. Ethiopians prefer a diplomatic way of discussing problems, which sometimes lead to a dishonest report if the truth can be interpreted negatively to an individual.

Scope

The total scope of work in the project is quite clear, but the management team shows a lack of understanding for the large extent that the scope means. A clear developed scope also leads, according to Briner, Hastings & Geddes (1996), to the required level of understanding of the scope. This suggests that the reason for the underestimation of the work is caused by insufficient knowledge and experience rather than lack of scope planning. The underestimation has largely affected the project, since planning in general was neglected due to the perceived narrow scope.

The scope of work for sub-contractors has been unclear throughout the project and has caused a lot of confusion and inefficiency in work areas that involve more than one sub-contractor. According to Gupta, Aha, Nau & Munoz-Avila (2008) the confusion between sub-contractors would not be an issue if a proper scope definition had been developed early in the project.

Risk - analysis

The risk analysis in the SSAD project was roughly developed early in the project with assigned mitigating measures for each identified risk. Although there was a low level of detail in the analysis, the main problem in risk management was that the proposed mitigating measures never were executed. Kululanga & Kuotcha (2010) clearly states that an effective risk management must be based on iterative risk analysis throughout the project. As a consequence of the neglected analysis, several identified risks occurred and caused delays and increased costs in the project. The underestimation of the project scope is likely to have influenced the risk management which made the risk analysis less prioritized by the management team. The most severe risks are likely to have been avoided if the risk analysis had been properly managed and iterated throughout the project.

Implementation of plans

Although much of the planning was neglected in the early phases, several plans and guidelines have been developed later in the project. The developed plans are, however, not implemented in the management work. In order to improve the methods of project management in the studied project, these plans need to be implemented and managed effectively throughout the project. The empirical data shows a certain level of skepticism to expatriates, which may be one of the reasons to the slow process of implementation since most of the plans and guiding documents have been developed by expatriates in the project.

5.3 Benchmarking

The identified potential areas of improvement that are most suitable for benchmarking between the Swedish and Ethiopian operations are presented in table 4. The analysis found that improvements suitable for benchmarking are, in this case, weaknesses in Ethiopian project management that are matched against strengths in Swedish project management.

In benchmarking between Swedish and Ethiopian operations it is important to take the differences in culture into account. Direct implementation of Swedish methods in Ethiopian projects can cause problems and some methods must therefore be adapted in order to work effectively in another context. MPM and SSAD are two subsidiaries within the same main company, which makes internal benchmarking most suitable for the studied companies. Internal benchmarking has, according to Andersen & Pettersen (1997), a great potential to achieve successful improvements since the conditions for an honest exchange of information are good. In development of new work methods, Andersen & Pettersen (1997) also means that benchmarking should be focused on processes rather than performance. The most effective method for MPM and SSAD should therefore be internal process benchmarking.

Areas suitable for benchmarking
Project Management System
Human Resources – authority/responsibility
Cost – budget and control
Procurement – procurement plan

Table 4. Areas suitable for benchmarking.

Project Management System

The project management system in MPM is highly developed and integrated in the methods of management. The SSAD methods are based on individual experience and a management system is likely to provide consistency and establish a higher level of professionalism throughout the project organization. The benchmarking of a management system should include an evaluation of which areas that needs to be adapted in order to be effective in the Ethiopian context.

Human Resources – authority/responsibility

The empirical data shows that the balance between responsibility and authority is higher prioritized in MPM than in SSAD. The low authority that is assigned to the middle management in SSAD projects is mainly caused by cultural factors. The higher management in Ethiopian projects is often involved in all decisions, in order to keep total individual control of the project. To succeed with an implementation of assigning authority to middle management, the benchmarking should focus on the increased efficiency that it creates. Since the higher management’s involvement in all decisions is very time consuming for the project, there should be a high potential for improvement by benchmarking against the MPM methods in assigning authority to middle management.

Cost – budget and control

The MPM project has a detailed budget with highly developed methods of cost control. The low priority that budget and cost control has in SSAD suggests that there is a high potential for improvements by benchmarking the methods and benefits of MPM’s cost management. The difference in context and culture is not likely to affect an implementation of the MPM cost management methods into the SSAD operations.

Procurement - procurement plan

Insufficient planning of procurements has caused several problems in the SSAD project. Delays in project execution due to late deliveries and preliminary stops due to cash flow problems are both issues that could have been avoided with a proper developed procurement plan. The MPM procurement plan is highly developed and is an important factor to increase the profit in projects. Benchmarking of the development of a procurement plan is an extensive process that is strongly influenced of processes for development of budget and time schedules. The benchmarking of procurement plan should therefore have a wider focus and include processes in cost and time management in order to identify necessary conditions for an effective procurement plan.

6 Discussion

6.1 Discussion regarding method

The author's approach to the studied issue was to evaluate the methods of project management in MPM and SSAD operations, based on the nine categories that are developed by Project Management Institute. The empirical data in the evaluation was gathered through informal interviews with key-role persons in both of the studied projects and through observations on the construction sites.

A potential weakness in the method of the study is that only one project in each company has been studied, which means that conclusions may not be representative for the companies in general. It is, however, likely that both MPM and SSAD have the ambition to manage all their projects using the same methods, in order to gain consistency in the company operations.

The empirical data from the MPM project was partly based on their management system, which provided detailed information of how project management is conducted in MPM. Since SSAD has no management system, the empirical data was exclusively based on the interviews and observations on site. This fact may have caused that all MPM activities came to the author's knowledge, while performed activities in SSAD may have been overlooked. The observations of the SSAD project was conducted over several weeks, both on site and in the project liaison office, which is likely to have contributed to a high level of correctness in the empirical data.

Most interviews in the SSAD project were held with expatriates. This may have given an excessive negative picture of the project management, since most expatriates are used to different, more controlled work methods. The interviewed expatriates, however, have an extensive experience of construction management from projects in Africa and Asia which suggests that their statements are objective and professional. The approach and method of empiricism in the study has, according to the author, created good conditions for a reliable empirical data input to the study.

6.2 Discussion regarding conclusion

There is a big difference in conditions and context between Swedish and Ethiopian construction projects. The differences in development and society in general also includes construction projects, which means that methods of project management in Sweden are more developed than in Ethiopia.

The studied projects are very different from each other and the extensive Ethiopian project involves many issues that do not occur in the smaller Swedish project. Factors like rain periods and the extreme location affects the Ethiopian project in a large scale. These factors require high developed methods of planning and control in order to reach a successful execution of the project. The main approach and initial analysis should, however, be conducted by the same methods regardless of the size of the project.

The Swedish operations have a consistent organization which facilitates the implementation of a management system largely. It takes a long time to reach an effectively integrated management system, which complicates the implementation in SSAD since many employees only are contracted for one single project. The higher management should, however, be able to implement general guidelines even though the consistency in contracted managers is low.

Many problems in the SSAD project originate from issues regarding culture and general development in society. The high influence of expatriates in the project means that people with several different religions and culture must interact and find a way to communicate that everyone understands. Ethiopians are also proud of their own people and country, which can complicate implementation of new methods and management systems since most changes are suggested by foreign personnel. The lack of educated personnel in the Ethiopian construction industry also causes problems and inefficiency as new methods are to be implemented.

7 Conclusion

The conclusion was based on the analysis and focus on the areas that should be prioritized in the work of improving project management methods. The identification of prioritized areas was based on which areas that are most suitable to start with, and which improvements that has the greatest potential positive effect on the project management.

The areas that are prioritized for benchmarking are successful methods in the Swedish operations that are matched against weak methods in the Ethiopian operations. The priority is also based on which areas that has the greatest potential positive effect on the Ethiopian project management. The most suitable method of benchmarking between the case companies, MPM and SSAD, is internal process benchmarking.

The study has resulted in several areas of improvement in Ethiopia and only a few areas in Sweden. This is mainly caused by the differences in development and the extensive differences in the construction industry between the two countries. Financial status, education and culture in general are all contextual factors that highly affect approaches and methods in project management. These factors has also caused that the identified improvements in the Ethiopian operations are much more extensive than the improvements identified in the Swedish operations.

Many Ethiopian companies are top managed which is strongly connected to the culture and company traditions in the country. The lack of authority assigned to middle managers is a problem since most managers have responsibility of a certain area but not the authority to take decisions within that area. Swedish organizations are more flat and authority is assigned to middle managers in a large extent. This is also connected to the higher level of knowledge and skill amongst workers and middle managers, which makes it effective to allocate authority in the organization.

The planning processes are not prioritized in Ethiopian projects. Many organizations start the execution of a project without sufficient planning, which is shown by the many half-finished buildings where the production is stopped in Addis Abeba. The Swedish construction industry is highly focused on extensive

planning in the early phases of projects. This approach is mainly developed by the Swedish companies' many years of experience within construction, which most Ethiopian companies are in lack of.

Project control is not prioritized in the Ethiopian culture and problems are solved as they occur rather than by controlling the project to avoid problems. This causes several problems in the Ethiopian projects that could have been avoided if an efficient project control were conducted. The Swedish culture is, however, strongly connected to control and construction companies often have well developed methods to control their projects. This is, just as the approach to planning, developed through the companies' extensive experience within construction.

Prioritized areas of improvement in Swedish and Ethiopian project management methods and prioritized areas for benchmarking are compiled in table 5 below;

Sweden	Ethiopia
Stakeholder analysis	Project Management System
Risk – analysis	Integration - planning
Time – schedule control	Human Resources – authority/responsibility
	Cost – budget and control
	Time – schedule control
	Procurement – procurement plan
	Implementation of plans
Benchmarking	
	Project Management System
	Human Resources – authority/responsibility
	Cost – budget and control
	Procurement – procurement plan

Table 5. Prioritized improvements and benchmarking.

Prioritized areas of improvement

SWEDEN

Stakeholder analysis

The present method of stakeholder analysis underestimates the influence of several stakeholders, which has caused delays and affected the execution plan negatively. The stakeholder analysis in MPM projects should be more extensive and iterated throughout the project in order for the management team to be able to manage stakeholders effectively.

Risk - analysis

The MPM risk analysis is concentrated to the early phases of the project and the magnitude of risks is often underestimated. The risk management should include analysis that is iterated throughout the project as new risks may occur and more information is available to the management team. It is also important that each risk is evaluated, in order to ensure that sufficient mitigating measures are taken in relation to the magnitude of the risk.

Time - schedule control

The time schedules in the MPM project are well developed and the higher management has a high ambition regarding schedule control. The actual performed schedule control is, however, limited by the insufficient computer skills amongst middle managers. In order to increase the efficiency in schedule control, middle managers need to reach a higher level of computer skills and increase the priority of schedule control.

ETHIOPIA

Project Management System

The lack of a management system in the SSAD project causes an inconsistency in work methods and general approach by the project management. Each manager use methods based on their own experience, which can be effective but also provides the project manager with little ability to control and monitor all areas of the project management effectively. The SSAD organization should develop and

implement a management system in order to establish a higher level of professionalism and increase the control of their projects.

Integration - planning

The planning processes are not prioritized in the early phases of the SSAD project. The lack of a proper developed project plan has caused problems in all project management areas and made it impossible for the management team to have the required control of project activities. A higher priority of the planning processes and the development of an integrated project plan would create significantly better conditions for a successful execution of the project. The development of planning processes should be considered with a high priority in the work of improving the SSAD management methods.

Human Resources – authority/responsibility

The SSAD project is highly managed from the top of the organization, which leads to time consuming processes as decisions has to be made. The middle management has responsibility for their assigned area, but not the authority to make required decisions within their responsibility. This causes inefficient leadership on all levels of the organization. The balance between responsibility and authority should be established in the initial phase of the project, in order to create efficient leadership by the middle management.

Cost – budget and control

The lack of an integrated budget has caused severe financial problems in the SSAD project. It also makes it impossible to conduct cost control, which leads to insufficient management of all financial aspects of the project. The management team should develop a budget early in the project and prioritize cost control in order to avoid cash flow problems and reach a successful completion of the project.

Time - schedule control

The insufficient schedule control in the project causes confusion and inefficiency in all activities of the project. The schedule control is of great importance since it affects all other plans in the project. The schedule control should be higher prioritized throughout the project in order to reach an efficient management.

Procurement – procurement plan

The procurement plan is strongly connected to the schedule and the budget. As a consequence of the insufficient integrated budget and the low prioritized schedule control, a procurement plan was never developed in the project. The problems caused by the lack of procurement plan are severe, including shortage of funds and temporary stops in production. The priority of the procurement plan development should be increased together with the priority of budget and schedule control.

Implementation of plans

Several planning processes that were neglected in the initiating phase of the project have been conducted at a later stage. The developed plans are of high quality but need to be implemented in the project management in order for the project team to be able to use them effectively. Implementation is always hard, but the SSAD management team needs to develop a method for implementation of plans to be able to manage the project effectively.

Prioritized areas for benchmarking from Sweden to Ethiopia

Project Management System

The MPM management system is highly developed and well implemented in the project management methods. SSAD has no developed management system and the current management methods are highly unstructured. This suggests that there is a high potential for improvement by benchmarking. It is, however, important that culture and context are taken into account, so that only suitable methods for SSAD are transferred and implemented in the organization.

Human Resources – authority/responsibility

The balance between responsibility and authority is successful in MPM projects, and should contribute to a higher efficiency in SSAD projects as well. The culture of higher management's extensive influence on all decisions must be handled if new methods of assigning authority are implemented.

Cost – budget and control

The MPM method of budgeting and controlling cost is effective and provides accurate financial forecasts. By an effective benchmarking, these methods should be able to be directly transferred and implemented in the SSAD methods of project management.

Procurement - procurement plan

The high developed procurement plan is an important factor that often contributes to increase the profit in MPM projects. The process used to develop the procurement plan is likely to increase the profit in SSAD projects as well if it is directly transferred and implemented.

Future studies

To create good conditions for implementation of new work methods it is important that issues regarding culture and context are evaluated. The following questions must be answered in order to succeed with an implementation of improvements and benchmarking in the Ethiopian organization;

- how the implementation should be conducted
- what methods or parts of methods that can be transferred directly and which parts that must be adapted in order to work in the new environment
- if expatriates should be involved in the implementation and if so, what role should be assigned to expatriates

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Appendix 1 – Template for interviews

Description of the project, your role in the project?

Project organization?

Functions, roles (different groups/departments)?

How well do the project work as a whole? – problems/strengths?

Plans, analysis, documents? – do you have guidelines of what to do? – are they done?

Do you have any problems within/ do you have plans to handle:

Integration

Scope

Time

Cost

Quality

Human Resources

Communication

Risk

Procurement

Are the plans applied to the production?

What would you have done differently if the project was restarted?