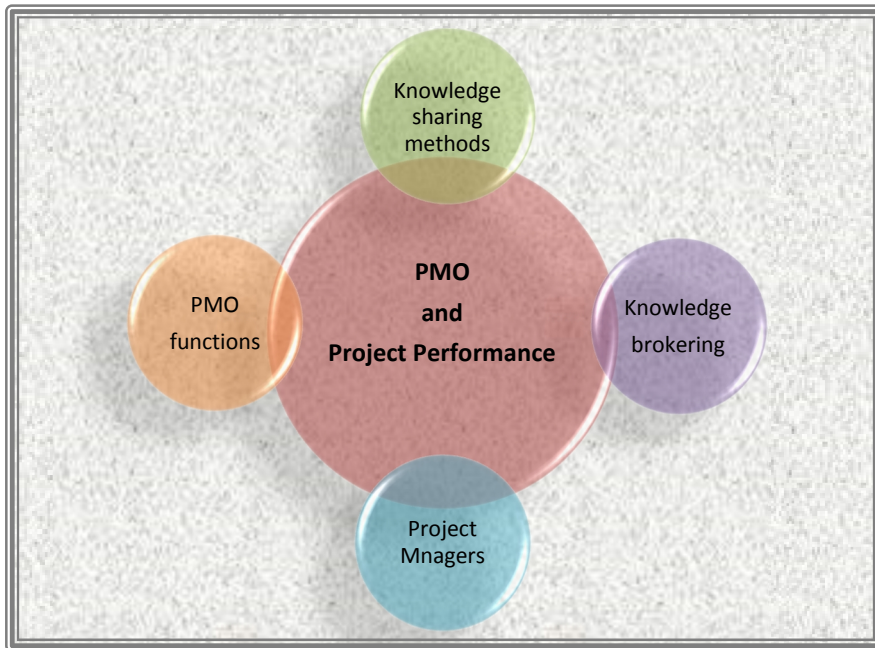


CHALMERS



Project Management Office-PMO

The Relevance for Project Based Organizations

*Master of Science Thesis in the Master's Programme
International Project Management*

EPHERAM DEMELASH GETAHUN

Department of Civil and Environmental Engineering

Division of Construction Management

CHALMERS UNIVERSITY OF TECHNOLOGY

Göteborg, Sweden 2014

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EPHERAM DEMELASH GETAHUN

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Figure – Illustration of research strategy and research focus. Source: the author.

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Epheram Demelash Getahun

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ABSTRACT

Project Based Organizations (PBOs) conduct much of their work by dealing with different sorts of projects. It is commonly understood that projects are related with handling of enormous quantities of information. These informations impact not only the daily activities of the organizations, but dictate also the long term success and existence of the PBOs future. Statistics indicate that still many projects fail to deliver according to predefined project objectives and aims. To deliver on time, within budget and without falling short of customer expectations are still many PBO's daily struggles.

The existence of Project Management Office (PMO) is not new. However, the use of it, in adding value to the strategic aspect of project management processes and the contribution to the improvement of project performance in a systematic and sustainable way are still in need of a closer look. To understand the factors and the different mechanisms that exist in the relation between PMO and project performance, this research has elaborated the academic view of the current subject and has conducted a qualitative research study based on one case organization.

The research has found that different tasks were carried out by the PMO's experts in order to secure customer satisfaction through maintaining the helicopter views, which enables efficient project monitoring through the project lifecycle as well as providing relevant support to project managers and project team members. The research has also identified the need of PMO being pragmatically fitted to the existing project and organization's specific context for ensuing expected project performance.

Keywords: Project management office; Project performance; Knowledge management; Knowledge repository; Boundary objects; Knowledge brokering

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GLOSSARY

Knowledge Management	A combinations of strategies and practices, enabling systematically to capture and distribute insights and experiences.
Knowledge Repository	A systematically documented lessons learned from past projects, for use of future project performance improvements.
Boundary Object	A means or reduction of boundaries between different knowledge areas by using a sort of object which facilitates communication.
Knowledge brokering	An intermediary person or organization that develops relationships and networks between producers and users of knowledge by creating linkages.

PREFACE

After many decades of initiatives and work in order to establish a better and efficient way to manage projects, project managers still fail to meet predetermined project objectives and aim. One of the latest approaches to mitigate project failure in Project Based Organizations (PBOs) today is establishing an intelligence and coordinating centre of project management called Project Management Office (PMO).

Nowadays project managers seem to struggle a lot in executing projects swiftly and successfully to fulfil what is expected from them by the organizations they work for. Often times, PBOs strive to initiate as many projects as possible for many different reasons. However, a project methodology designed to handle one or two projects will soon cause problem for such a scenario.

The existence of PMO is not new. However, in order for PMO solves project management process related problems and contribute improvement for project performance, it needs to embrace many different aspects. For instance, use of lessons learned from completed projects to prevent reinventing the wheel is one.

The purpose of this dissertation is to contribute to the understanding of the factors and the mechanisms which impacts project management process and clarify the relevance of PMO in order to enable efficient project performance.

Along with the research question, i.e. *why and how the use of PMO is relevant for project-based organizations*, the research has embraced the following objectives which are: investigating the role of PMO in the mirror of project performance, investigating the pros and cons of PMO and depending on the findings, offer suggestion for implementing of PMO practice for industry like civil engineering.

The research main and sub questions will limit the scope of the research by narrowing down the study *to project performance*.

1. INTRODUCTION

This chapter starts by presenting an introduction of the study in providing the theoretical and practical rationale and its justifications for the initiation of the study. Further to this, the goal of the chapter is to elaborate the relevant research questions, aim and objectives of the research. A description of the case organization context involved in the study as well as research limitations, scope and method are also discussed. The chapter ends by elaborating the structure of the dissertation.

1.1 THEORETICAL RATIONALE AND JUSTIFICATION OF THE STUDY

It is first in the 1990s that organizations started to realize that their initiatives and objectives could be essentially achieved via projects. Thus, the critical competency in this regard started to take shape. As a result of this and continual evolution of the field, an organizational project office started to emerge in developing and/or maintaining project management competency (Hurt & Thomas, 2009). One of the research topics, which are gaining more and more momentum in the arena of project management, is Project Management Office (PMO) (Aubry, Hobbs, Muller, & Blomquist, 2010). The Project Management Institute (PMI) has also shown major interest for this emerging organizational entity (Hurt & Thomas, 2009). The PMO's concept is driven forth from the assumption that an organization is in need of a central point in order to standardize management methodology, create efficient information flow, and administer control systems (Dai & Wells, 2004). Even though every project is unique in its own way, there are always elements of project management practices which are common for all and do not need to be reinvented for every project-, program-, and/or project portfolio. It is here the need of improvement for effective and efficient project management gets shaded by the spotlight of many organizational strategies (Hurt & Thomas, 2009). Project based organizations (PBOs), according to Pellgrinelli and Garagna (2009) are perceived to have the potential to nurture innovation and advance effective management and leadership across different functions of the organization's business. In this, a huge responsibility lies on project managers, not only to focus on management elements such as team-building, address client needs, struggle with technological uncertainties etc. but also to make sure of the value realization for the organizations investments

as whole (Pellegrinelli & Garagna, 2009). In all this the project managers are expected to ensure the intended success out of every project (Hobday, 2000). However, project managers have a tendency to be driven more to the technical details of projects and, for several reasons give less attention to the effort needed in order to make sure projects are mirrored to overall organizational strategies and objectives (Hobday, 2000). The purpose of PMO is to make sure that projects and project managers get support internally in making sure that project activities are done systematically and effectively by means of recognized best practices, standard project methodology and information flows in which a logical and efficient manner is practiced. There is, however one misconception about PMO where many people try to see it as an organizational entity being one-size-fits-all, in providing services for all type of organizations. PMOs are contextual, very dynamic and often in transition from one structure and charter to the next (Aubry et al., 2010).

The recorded empirical evidences, in regard to the benefits of implementing a PMO are still very few (Liu & Yetton, 2007). However, advantages of different organizational entities in general are well documented. But the fact remains the same that project failure rates are still high. Thus, improving existing organizational methods and strategies to ensuring a strong project performance has always been the focal point (Dai & Wells, 2004).

1.2 PRACTICE-BASED RATIONAL AND JUSTIFICATION

Many PBOs today have realized that there is a need for a PMO in order to achieve effective and efficient project management in terms of support, control for delivering of project values, sustainable business strategies etc. (Hill, 2004). As many studies indicate, proper use of PMO as an organizational entity plays a significant role in PBOs. This is especially in regard to enhancing the way multi-projects are managed in PBOs. Thus, this issue of PMO has been addressed through a variety of forms of PMOs implementations and authorizations among practitioners (Aubry et al., 2010). Even though the very dynamic context that exists within PMOs is capable to solve different organizational issues, major mistakes take place due to wrong configuration of PMOs. In fact, these wrong configurations have even caused PMOs to be terminated in different organizations. However, the wrong configurations, in other cases have also caused correction and transition of PMOs to more enhanced and

configured versions that serve better and last longer (Hatfield, 2008). One important way of addressing this enhancement is to nurture the ongoing journey of the PMO. For instance, one of the major reasons for lack of project management efficiency is the factor of the non-time nature of projects, i.e. few benefits from previous successes and failures are drawn from, due to a lack of effective knowledge transfer (Dai & Wells, 2004). A methodology of project management in this regard offers a standard, which is a repeatable process to steer project performance from the very concept to the completion. Furthermore, it enables to pull all the documentation/project data through a defined and structured manner in a single data repository for future use (Gerard, 2014). One of the core aspects of PMOs, in terms of project management methodology is that it introduces management techniques and practices, which are generally accepted in the field of project management that can fit within a relevant organization to meet required business needs. Prior to 2005 practitioners and researchers had settled for a common belief that it was possible to have one best practice for PMOs, i.e. a limited numbers of PMOs to be able to use for all project contexts and scenarios. However, since 2008 it is now more common to hear and observe that PMOs vary very much, change a lot and at the same time become more and more mature (Hobbs & Aubry, 2010). Research taking a closer look at how practitioners perceive and use PMOs in their day to day activities could identify important key success factors for PMO improvement. Nowadays, it is also noticed that even the project management competencies and skills possessed by a project team cannot give any guarantee of project success. Furthermore, different parts of organizational functions have also nowadays a major influence in an organization on how projects are initiated and how management processes are handled. Thus, it is not only the project team or the project manager who needs to learn and adapt the management process, but also everyone in the department involved(Young, 2013).

1.3 CASE ORGANIZATION CONTEXT

The research will be limited to one organization, REINERTSEN Sverige AB (RE) and will particularly aim in trying to find out an answer for the research main and sub questions.

RE is a leading services provider to the oil organizations. The services include engineering, procurement, construction and installation of topside process facilities and subsea systems and infrastructure. The land based activity of RE consists of engineering and contractor services within civil, transportation and infrastructure. The former practices PMO but not the later mentioned, the land based activity.

1.4 RESEARCH AIM, RESEARCH QUESTION AND RESEARCH OBJECTIVES

The aim of this dissertation is to assess the relevance of PMO for PBO in the AEC (Architecture Engineering and Construction) industry, through the day to day project activities. The research will explore both the theoretical aspect of PMO as well as the use of it in a real project as a case study.

Level of organizational maturity, project size in a given organization etc. are normally vastly different from one organization to another. The same can be also said for one and the same organization containing different departments where project methodology applied varies between the departments. Thus, the research, in addressing its aim, attempts to find out an answer for the research question:

Why and how the use of the project management office is relevant for project-based organizations?

To narrow down and to take a closer look of the research question the author puts the spot light on one specific area of interest: *Improving project performance*. Thus, the following sub questions are at the focal point:

- *In what way PMO plays a role for improving project performance?*
- *What are the benefits and challenges of PMO?*
- *How can PMO be used to advance project performance in the AEC industry?*

The main research question along with the sub ordinate questions mentioned above indicates clearly the need for establishing the status quo both in the academia and within the PBOs. Thus, the research will focus in investigating the status quo (current state) of the case study (patterns, work flows, control mechanisms etc.) in order to be able to compare it with the academia. Further to this, the notion of PMO; being one of the remedies in preventing projects miss their predefined objectives is taken as a point of departure for this research.

Having the case organization context and the research questions as a point of departure the objectives of this research are as follow:

- To investigate the role of PMO in the mirror of project performance in day to day activities.
- To investigate the pro and cons of PMO in regard to project performance.
- Based on the findings, try to offer suggestions for implementing PMO practice in a PBO organization like civil engineering.

1.5 SCOPE, LIMITATIONS OF RESEARCH AND METHOD

It is commonly understood that management processes of projects will in one way or another be affected by all involved. However, the grade of involvement is directly connected to the impact on the project management process (Maylor, 2010). In relation to this, projects and project management generates vast amount of information which directly affect both the daily project operations and the directions of the organizations future. How to manage effectively the intellectual property of an organization can be addressed from many different views (Kendall & Rollins, 2003).

The research scope therefore addresses two different levels. At the first level, which is the major part of the research, the study will take a closer investigation at the department of Oil and Gas (offshore discipline) of the case organization. At the second level, depending on the research findings, the study suggests recommendations on how project performance can be improved in the AEC industry when implementing PMO, and in particular at the department of civil engineering. The department of civil engineering is a sub department for the land discipline of the case organization.

At the major part of the research, the focus will be narrowed down to one or two handpicked projects as well as few individuals to participate in the data collection of the study at the Oil and Gas department. Further scope limitations will be that the recommendations generating from the findings will only address the civil engineering department of the land discipline. Thus, the other department of the organizations at the land discipline will not be involved.

This scope setup will help managing the research in specifying the situational conditions of the case study in regard to testing the theories from academia in the view of collective orientation and task orientation of the case projects (Dippong, 2012). Another limitation, which will have an impact, is the time available to finalize and hand in the dissertation work. The dissertation is planned to be finished and handed in on 25 April 2014.

A qualitative research methodology with a case study along with interview-based approach is carried out in this research. The position in this regard has mainly to do with the preferences for seeing through the eyes of the people being studied (Bryman, 2012). For instance, the novelty feature of every project creates normally a set of uncertainties. These uncertainties can be seen differently by different project team members and even by other stakeholders who have an interest in a project (Hurt & Thomas, 2009). The research method is elaborated further on section 3.

1.6 DISSERTATION STRUCTURE

The structure of the dissertation is as follows: Chapter one covers the introductions by providing the foundation and justification of the dissertation. Chapter two addresses the literature review dealing with the main topics in the realm of improving project performance.

Chapter three presents the methodology applied to explore the research question. Chapter four addresses the data analysis connecting the results to the aim of the research. Chapter five is dedicated to the discussion referring to the data collected and analysis along with the literature reviews. Chapter six presents the conclusion of the research including recommendations for further research within the subject. The last two chapters will provide the references and bibliography respectively.

2. LITERATURE REVIEW

2.1 INTRODUCTION

This chapter starts by addressing why PMO is needed in PBOs followed by an explanation for the importance of project methodology. Different types of PMOs and the role of Executives and project managers as well as the knowledge sharing aspects are also discussed. The chapter ends with a literature conclusion.

2.2 THE NEED FOR PMO

It is commonly known that the way businesses operate, especially in knowledge intensive organizations, are through projects. However, statistics indicate that 50% to 80% of the projects fail to reach their overall goals (Desouza & Evaristo, 2006). These problems usually display themselves in failing, among others to deliver on time, overrunning budget in terms of estimated resources and time, failing to meet customer expectations etc. The underlying cause of this alarming scenario is indicated in the cause and effect explanations of the fact that organizations are repeating the same mistake over and over again. The two major problem areas, among others, are falling short to reuse information from completed projects as well as failing in transferring or sharing knowledge to others. Furthermore, the problem areas get even worse when it is orchestrated in additional weakness such as lack of: management consistency, formal tracking means, functional user involvement etc. (Desouza & Evaristo, 2006).

Quite often there are conflicts between executives and project managers over resources and deadlines. The same goes between project manager and resource manager and even between project managers themselves. Issues like what resource to allocate to which project, how many, when can a task starts etc. use to be longstanding issues which affects project performance negatively (Kendall & Rollins, 2003). This problem lays on the fact that most of new projects are just initiated by functional executives regardless the required resources are available or not. It is quite common that projects are kicked off without any coordination or collaboration between functional executives (Kendall & Rollins, 2003).

It is often observed that PBOs which are handling multiple projects, using shared resources and capacity which designed initially for few project initiatives, tends to

initiate too many projects without matching the resource available. Thus, inevitably, resources will be multitasked in different projects. Often time this takes place just to make functional executives satisfy at here and now, without having a clear strategy on how to handle it throughout the project life cycle. This leads to, among others; more time is invested in project reviewing, project rework etc. (Kendall & Rollins, 2003). Kendall and Rollins (2003) points also out that research shows a lot of projects that are investigated, using project resources inefficiently in completing project earlier would have been generated and contributed much more benefits to PBO in general if resources had been used efficiently (Kendall & Rollins, 2003).

Research shows nowadays that PMOs can step by step guide different project management disciplines to aligning project management processes with overall objectives of an organization. This is primarily to ensure the expected return on investment within the organization as well as to secure stakeholders satisfactions (Desouza & Evaristo, 2006). Desouza and Evaristo (2006) points out a survey (IPM) involving 450 managers where 67% of the involved organizations had a PMO in place and the fact that the longer a PMO was active; the greater was the value it added in terms of project performance improvement, project management efficiency etc.(Desouza & Evaristo, 2006).

First and for the most, PMO is not a one size fits all solution for organizations. There is no blueprint on how to establish a PMO either (Desouza & Evaristo, 2006). The one and only criterion PMO has is that its structure is as closely aligned to the organization's corporate culture as it possibly can. Thus, there is no one universal definition of a PMO since it highly involves an exercise of both customization and sustained effort (Desouza & Evaristo, 2006).

A lot of organisations have established PMOs in recent years. However, PMOs started to become popular already in 1994 (Hobbs & Aubry, 2010). In the telecom, defence and aerospace industries the use of PMOs has been common (Desouza & Evaristo, 2006). Referring to different functionality and authority, PMOs may have many different structures and names (Desouza & Evaristo, 2006).

PMO is also advancing in getting consensus in organizations where high technology projects such as IT, offshores projects etc. are involved. However, in the

construction sector where building and civil engineering projects are involved there is still reservation in questioning what additional value an organizational entity as PMO may add in terms of, among others, project performance. Traditionally the main focus of PBOs is on project scheduling and resource allocation without paying enough attention to the underlying mechanisms behind (Engwall & Jerbrant, 2003). In fact, after decades of initiatives for improving project management processes, project managers, especially in building and civil engineering sector, still fail in recording numbers not reaching predefined project goals. Consequently executives are fired in many occasions. The underlying puzzle here is that when activating too many projects the system fails badly due to different reasons. For instance, for a project manager, executing not all of the right projects but only a few of them just to match the resource available, leads often to results not reaching the organization's overall goals. This is a day to day struggle for project managers to solve in order to achieving a breakthrough impact through project life cycles(Kendall & Rollins, 2003)

2.3 PMO AND PROJECT METHODOLOGY

Methodologies, especially in terms of project management are vital for the reason that it provides standards as well as process which can be repeatable to boost project performance stretching from concept to completion (Gerard, 2014). Apart from technical methodology; project management methodology in a PMO is commonly designed to contain a set of processes which can be applied regardless the type of project, in a relevant organization. And this is done without losing attention to provide all-in-one use of single or multiple technical processes (Gerard, 2014).

Project management methodologies are simply the back bone of PMO. In other words, the function of project management methodology enables PMO to: Put in place a standard approach to project management which can be used by all project managers, incrementally introduce management practices (from the greatest impact on project success to the least), gain consensus across the organization's relevant business and technical areas for a proper PMO implementation, collect and provide a collection of applicable data and analyse of project performance (Gerard, 2014).

It is vital that PMOs are based and established on project management methodology that is well integrated in to the context of every single organization. PMOs, as mentioned before, are not one size fits all. Thus, it is relevant that all necessary steps are taken in establishing a project methodology. For instance, it is of great importance that PMOs ensure that individuals with business and technical interests along with project managers are properly presented and engaged in the effort of methodology development (Gerard, 2014). Figure 2.3-1 presents the methodology function model according to Gerad (2014).

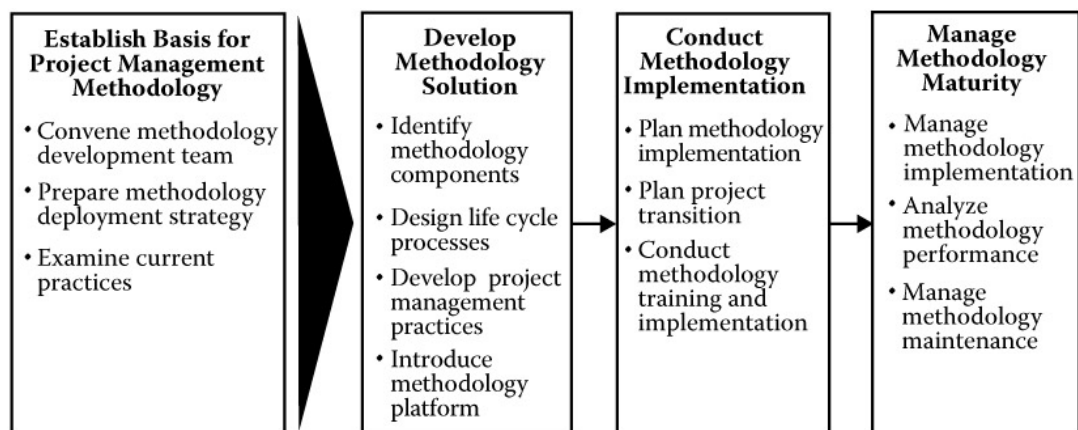


Figure 2.3-1: Project management methodology Function Model according to Gerard (2014).

2.4 TYPES AND ROLES OF PMOS

2.4.1 THE ROLES OF PMOS

There are many roles PMOs can fulfil and the variety of the PMOs population is very vast (Hobbs & Aubry, 2010). One way of conceptualizing the role of PMOs is to consider the features of organizational performance where PMO can be involved and add value. Hobbes and Aubry (2010) point out the four concepts of organizational performance (see figure 2.4.1-1), which address the PMO's contribution with a distinct focus in each concept. The framework is not defining what the roles of PMOs are, but lays a foundation for a strategic choice in deciding what the roles should be in order to enhance project performance and align projects outcome to the organizations overall objectives and goals (Hobbs & Aubry, 2010).

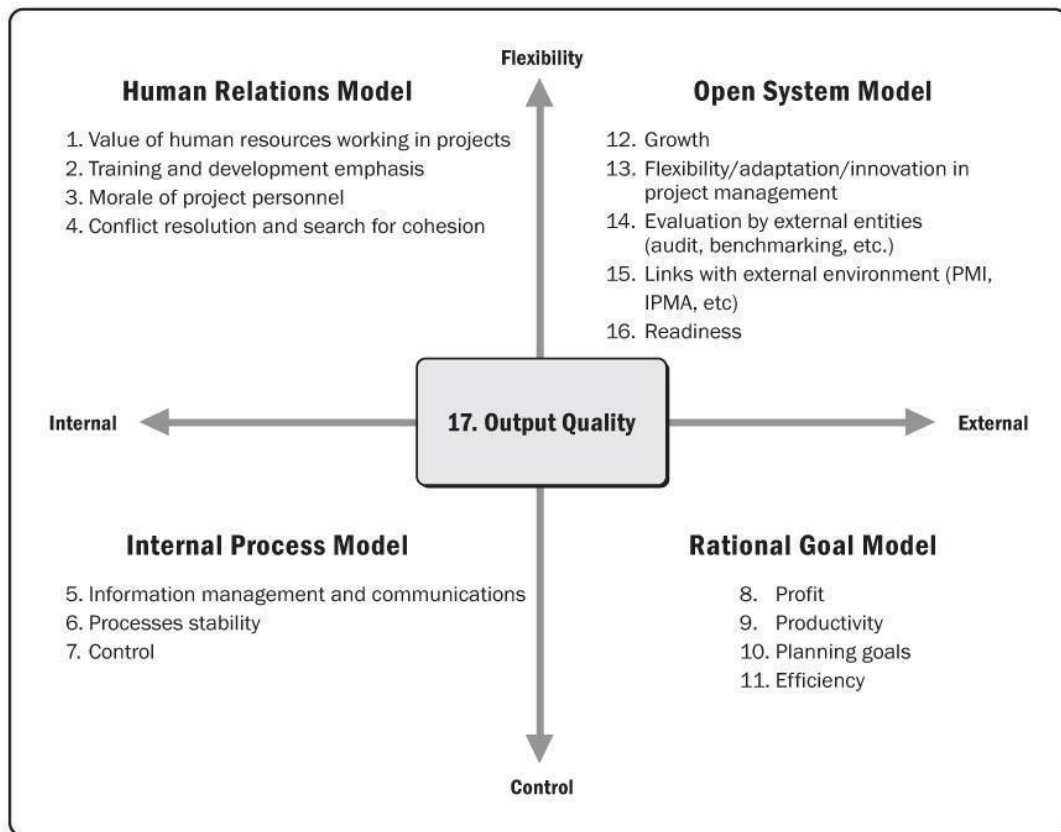


Figure 2.4.1-1: The competing values framework according to Hobbs and Aubry (2010).

Desouza and Evaristo (2006) categorize the roles of PMOs into three different levels, i.e. strategic, tactical and operational. The function of the PMO for knowledge management remains though as one of the primary functions at all levels (Desouza & Evaristo, 2006). At the strategic level it is an issue of ensuring that the projects are integrated in the organization's strategic objectives, strategic growth and effective and efficient knowledge management. At the tactical level the role of the PMO is to make sure that there is: a close integration between project initiatives, a consistency in products and quality generated by projects and to make sure there is a knowledge sharing among the project members by ensuring effective communication between project teams. At the operational level PMOs are responsible for: conducting project evaluations, knowledge integration which are derived from projects, expert project management knowledge and lastly regularly monitor customer satisfaction (Desouza & Evaristo, 2006).

2.4.2 TYPES OF PMOs

One way of classifying types of PMOs is by approaching the two major dimensions PMO commonly poses, i.e. the administrative dimension and the knowledge-intensive dimension (Desouza & Evaristo, 2006). The focus of the first mentioned is on managing information concerning projects, resources, tasks etc. as well as reporting of such information. However, the latter mentioned is more in to practicing an active role in managing project management’s best practices by learning from failures and successes of past projects, improving project management maturity etc.(Desouza & Evaristo, 2006).

Another way of viewing different types of PMOs is through the range of prearranged PMO project management methodology activities in referring to each level of the journey of PMO’s maturity (Gerard, 2014). Table 2.4.2-1 shows the different PMOs in this regard. For instance, “Project Office”, which is one of the types of PMOs, is often seen as an organizations entity that simply measures project progress without providing any expert assistance on how to run and mange projects. Further to this, there is even a risk to misunderstand this name, since it traditionally relates to construction industry referred to an office where a single project is controlled (Kendall & Rollins, 2003).

Project Office	Basic PMO	Standard PMO	Advanced PMO	Center of Excellence
<p>Applies essential practices for project performance and oversight</p> <ul style="list-style-type: none"> ▪ Emphasizes processes that manage cost, schedule, and resource utilization ▪ Employs standard life cycle processes when available 	<p>Introduces critical processes and practices of project management</p> <ul style="list-style-type: none"> ▪ Identifies and develops critical processes ▪ Manages cross-project critical process use ▪ Identifies best and preferred practices 	<p>Establishes and monitors use of a complete project management methodology</p> <ul style="list-style-type: none"> ▪ Provides full project life cycle coverage ▪ Integrates technical processes ▪ Conducts methodology user training 	<p>Enhances content and monitors use of a comprehensive methodology</p> <ul style="list-style-type: none"> ▪ Integrates business processes ▪ Optimizes automated tool alignment ▪ Facilitates methodology use across relevant business units 	<p>Conducts project management methodology analyses</p> <ul style="list-style-type: none"> ▪ Examines process variation in business units ▪ Assesses methodology use and ongoing process improvement

Figure 2.4.2-1: Overview of the range of prescribed POM methodology activities across competency continuum according to Gerard (2014)

PMOs, as an instrument of control between top management and project management are a way to institutionalize governance strategies (Müller, 2009). The types and roles of PMOs, as pointed out earlier differ according to the area or context which they are incorporated within. Even though, many PBOs may lack an explicit PMO, oftentimes some characteristics of PMO are found and are incorporated within the main organization (Pemsel & Wiewiora, 2013).

2.5 SUPPORT OF EXECUTIVES

Research indicates that many PMO directors feel that they have no direct involvement from their executives or meet their executives expectations (Kendall & Rollins, 2003). After Kendall and Rollins (2003) had a meeting with over 100 PMO directors in USA regarding this issue, over 90% could confirm the lack of involvement with executives. As long as executives do not fully understand the challenges project and program managers face today, they may go even further and ask if PMO is necessary in a first place. It is important to remember that executives perceive value only if the PMO helps them to meet their goals, because that is what they will be measured on. Kendall and Rollins (2003) claim that PMOs have to have required characteristics in order for executives to welcome PMO with open arms. PMOs must contribute in getting more project through completion without increasing resources correspondingly; project life cycles must be shortened dramatically; the impact PMO causes must be felt at all levels, i.e. from the bottom to the top line of the organization; executives and managers must feel and see what is in PMO throughout the organization, i.e. what benefit they are getting out of the PMO (Kendall & Rollins, 2003).

2.6 PMO AND PROJECT MANAGERS

Project managers are often found to be keen in making sure their individual projects are managed well and hit predefined project targets without paying additional attention to the broader and long-term success of the overall PBO (Pemsel & Wiewiora, 2013). From a project performance and knowledge sharing point of view this is unfortunate for the improvement of organisational performance. This is because such an inclination of a project manager will only contribute for tight links within projects and consequently fall short in contributing to the sustainable project performance at the broader level of the PBOs. Oftentimes the root problem of this is

embedded in the cultural values of the organizations. Many researchers have proven that the relation between organization culture and knowledge sharing behaviours is strongly linked; and this is more clearly seen within PBOs (Wiewiora, Trigunaryah, Murphy, & Coffey, 2013). Wiewiora et al. (2013) has further discovered in their overall findings that PBOs, which are surrounded by a non-competitive, friendly atmosphere; good teamwork, informality etc. have greater potential to improve project performance through inter-project knowledge sharing (Wiewiora et al., 2013).

As project managers play a central role in the project management aspects, the same goes for PMO's impact on project performance. Pemsel and Wiewiora (2012) have discovered in their research that some project managers explicitly state that they see themselves as a free-thinkers relying on personal experience earned from past projects and are convinced that the best is if they do the job on their own. Some even confirmed explicitly that they are not willing to share their shortcomings and failings but prefer to keep them to themselves so that they do not lose prestige. In addition to this there is evidence that some project managers are simply unwilling to change their old way of doing things and neither do they take advice from others (Pemsel & Wiewiora, 2013).

In a cross-case study of seven organisations done by Pemsel & Wiewiora (2013) shows clearly that knowledge sharing functions of PMOs versus project manager's expectations of it is highly related and overlapping to six areas: (1) lesson learned repository; (2) active knowledge sharing; (3) seminars, workshops and training; (4) informal and formal social interactions; (5) quality assurance and control; (6) project procedures and standard (Pemsel & Wiewiora, 2013).

Project managers are expected to support and collaborate with PMOs by, among others, lessons learned are systematically organised and are saved in a database for future use, provide knowledge on how to deal with clients, how to deal with group dynamic issues, on how the workshops and trainings to be organised by PMOs so it will not be done just for the sake of formality but will also lead to the achievement of continual project performance (Pemsel & Wiewiora, 2013).

In order for PMOs and project managers' behaviours and expectations to be in line, PMOs are also expected to retain different knowledge brokering capabilities (Pemsel

& Wiewiora, 2013). Knowledge brokering is a sort of activity enabling effective connection between knowledge recipient and knowledge holder aiming spreading and distributing knowledge within the PBO. In other words, it serves for knowledge transaction or exchange (Cheng, 2009). In doing this, PMO serves as a bridge over knowledge and organisational boundaries (Pemsel & Wiewiora, 2013). These capabilities are also interrelated with promoting and facilitating the strategic development of project managers on how to handle relationships with different stakeholders, effective and strategic use of boundary objects and endeavours for effective interaction with project managers, govern and support project managers to secure efficient knowledge flows in ensuring sustainable project performance in PBOs (Pemsel & Wiewiora, 2013).

2.7 PMO AND KNOWLEDGE SHARING

It is commonly understood that the success of project based and knowledge intensive organizations is mainly affected on how well knowledge management in general and 'knowledge sharing' in particular are handled (Wilson, 2002). It is important to have in mind that one cannot actually share knowledge, as per definition knowledge is not possible to transfer from one person to another; what we transfer is information about what we know and then the opportunity is up to each and every one to transform the information in to his or her own knowledge (Wilson, 2002).

Researchers nowadays are stressing the PMOs' potential in acting as a knowledge broker between projects, top management and projects etc. from the perspective of knowledge sharing (Pemsel & Wiewiora, 2013). Projects are seen as temporary organisations with fundamental anticipation that they continuously provide and add longstanding values for the organization as well as for relevant stakeholders involved. In other words, projects are considered as an efficient means for creating a sharp mix of knowledge to secure project efficiency in order to optimise the organizations return on investment and enrich the organization's knowledge repository. The learning earned, the challenges and the new ideas from the projects as a temporary organisation should get transferred and integrated to the PBO. Thus, PMO needs to make sure that sharing and integration of knowledge takes place between and within projects. When this is missing the risk is high for reinventing the wheel and keeps repeating the same mistake over and over again (Pemsel & Wiewiora, 2013).

PMOs, seen from the knowledge management perspectives can be regarded as facilitating and coordinating of knowledge and other resources between the relevant organization and projects. Thus, it is relevant to see one of PMO's view as a knowledge broker because it has the potential to serve as a bridge over the knowledge boundaries as it embrace, at least three of main organizational levels: project teams, PMO personal and the senior managers (Julian, 2008). However, previous research has indicated that it requires the knowledge broker to be capable of translating, aligning different perspectives and coordinating of this function. This is mainly because of the nature of a broker role involving activities of social processes, where the broker is partaking in the interaction. Thus, in order for PMOs, to be successful as a knowledge broker they need to consider providing boundary objects such as guidelines and sketches, different kind of boundary endeavours including platforms for bridging boundaries between the end-user organisation and the project, such as meetings and study tours, workshops etc.(Carlile, 2002) (Pemsel & Wiewiora, 2013). PBOs should also make an effort to reduce the influence of boundaries within the organization when dealing with multi-domain collaboration, and this requires people should respect the different viewpoints arising from different actors (Huang & Huang, 2013).

PMOs which are Knowledge-intensive, apart from administrative PMOs, are very active in their role handling the best practices of project management, i.e. learning from past experience in terms of successes and failures as well as enhancing the maturity level of project management within the organisation for an efficient project performance (Desouza & Evaristo, 2006).

According to Desouza and Evaristo (2006) there are four knowledge archetypes of PMO to be distinguished and paid attention to. These archetypes are: the supporter, the information manager, the knowledge manager and the coach. PMOs which are more focused on 'the supporter' and 'the information manager' archetypes are categorized as knowledge-intensive PMOs with partial administrative functions and without authority of enforcement. However, the knowledge intensive PMO is known for its repository of best practices without having administrative responsibility. The main target of the knowledge intensive PMO is to be a knowledge-base; in making available all relevant project expertise, mentoring and training and be recognised as

the organization's authority in regard to all knowledge related project management (Pemsel & Wiewiora, 2013).

One of the archetype acting in a proactive and active manner, in terms of knowledge sharing is the coach. The coach, being the most knowledge intensive one, plays its role involving both control of knowledge shearing and enforcement as well as acting the role of the house of the best practices and knowledge (Desouza & Evaristo, 2006). The coach is the highway towards to the concept of a centre of excellence in creating a proper platform for continuous flow of project performance and eventually successfully managed projects (Pemsel & Wiewiora, 2013). PMO in its role of knowledge broker develops and maintains also management methods and a set of methods and standards (Dai & Wells, 2004).

In their research findings, Dai and Wells (2004) argue that there is strong evidence that project performance and project management methods and standards are very highly interrelated. They also underline the benefit of historical project archives have for improving project performance (Dai & Wells, 2004). For an effective knowledge sharing and best integration, it is vital that PMOs are capable of handling reflective learning having the objective of generating knowledge from completed projects and at the same time manage future learning, aiming at transferring from earned experience to prospect projects. The bottom-line here is that PMO needs to have its focal point in the loop of feedback and feed-forward while managing continual change in terms of objectives, goals and processes in order to remain effective and aligned to the PBO as whole (Pemsel & Wiewiora, 2013).

2.8 LITERATURE CONCLUSION

The topics assessed in the literature view provide a broad but comprehensive view of the research subject and link it further to the research aim and questions. The need of PMO with its different types and roles along with the aspect of the importance of knowledge sharing in order to improve project performance will be mirrored in the next chapter.

As it is stated by Desouza and Evarissto (2006) PMOs are meant, in general to guide project management disciplines in order to aliening project management processes

with PBO's objectives and aims by ensuring the PBOs' intended return on investment while securing client and other project stakeholders satisfactions.

3. RESEARCH METHODOLOGY

3.1 INTRODUCTION

In this chapter a description of the applied research method and an explanation for how it can enable the study in answering the established research questions are given. Nowadays, there are many different methods and approaches one can consider in social research world. A couple of research method and approach such as interviews, observations and questionnaires are some of which has been evaluated. The strength and the weakness of the selected research method are also uncovered through an overview of the method. In order to ensure respectable research practice, ethical considerations and research ethics are also presented at the end of this chapter.

3.2 RESEARCH APPROACH

Research methodologies in general refer to social research and its implications in terms of philosophical, political and social backgrounds. It is also a way of handling the implications it may have for research practice where a method is consisting of specific techniques in acquiring and analyzing data or knowledge. Thus, methodologies are strategies of enquiry in order to guide a set of procedures (Petty, Thomson, & Stew, 2012).

There are many different ways of conducting research, especially when it comes to how to collect research data (Bryman, 2012). The great divide here, in terms of research methodologies is whether the method applied has its point of departure from qualitative or quantitative research methodology point of view, perhaps even the mix of it (Polit & Beck, 2010). Qualitative research methodology is commonly used as an umbrella term to cover a broad range of research methodologies involving different epistemological positions (Petty et al., 2012).

The critiques of qualitative research, in comparing with quantitative research methodology, address the issue of the research being too subjective, difficult to replicate, difficulties of generalization and lack of transparency (Bryman, 2012). However, the main target of most qualitative researches is not, among others to be

able to generalize the findings so it can be extracted from its context but to serve a deep, contextualized understanding of a certain aspect of human activity and experience (Polit & Beck, 2010).

Some of the common contrast between qualitative and quantitative research are listed below in table 3.2-1.

Some of common contrasts between qualitative and quantitative research methodology	
Qualitative	Quantitative
Participants point of view	Researcher point of view
Contextual understanding	Generalization
Close researcher	Distant researcher
Theory emergent	Theory testing
Natural settings	Artificial settings
Unstructured	Structured
Deep, rich data	Reliable, Hard data
Words	Numbers

Table 3.2-1: Common contrast between qualitative and quantitative as adabted from Bryman (2012).

Quantitative research, in its deductive nature targets the testing of theories whereas qualitative research's focal point is commonly centred at the generation and establishment of theories. Thinking of the present research topic, its established research questions and the inherent difficulty in measuring involved issues like knowledge sharing etc., the author has concluded a qualitative research method to be the appropriate one.

3.3 RESEARCH STRATEGY

3.3.1 RESEARCH FOCUS AND SCOPE

To get a holistic view and understanding of an organization, it is important to pay attention to the pattern of organizational phenomena and the context in which different form of interactions takes place. In other words, not only the distinct organizational properties (Fox-Wolfgramm, 1997).

There are five commonly used methodologies and methods in in regard to qualitative research method. These are case study, grounded theory, phenomenology, ethnography and narrative research. As it briefly indicated earlier the issue of generalization is a bit complicated. This is mainly because of generalization requires extrapolation one can never fully justify for the very reason that findings in this method are embedded within the context that they are driven from (Polit & Beck, 2010). However, in order to be able to draw broader conclusions from specific cases and make an inference about what is unobserved, the act of generalization based on what is observed is necessary(Polit & Beck, 2010).

The main strategy here is to bring forth a rich and contextualized understanding of human experience by carrying out an intensive study of particular cases (Polit & Beck, 2010). Further to this the author narrows down the research scope and focuses to one specific area namely the *PMO and project performance* and uses the research method of a single case study. See also Figure 3.3.1-1.



Figure 3.3.1-1: Research strategy - research focus.

3.3.2 AIMING THE RIGHT RESPONDENTS

The other aspect of the research strategy was to find the right mix of the respondents from the case organization. In order to obtain a deep and broad contextual

understanding of the case study, a strategy of targeting respondents with different role in a shared context are established. The author, being advised by the case organisation's adviser, selected respondents consisted of top management, functional manager, senior project manager, project manager and PMO members. The number of the respondents was set as a target to be between six and ten, and resulted to be eight.

3.3.3 *SELECTING THE CASE STUDY*

PMO has been practiced for some time within the Oil and Gas discipline of the case organization. PMO has been perceived by this discipline as contributing to the success registered in recent years. As a research strategy, what kind of role and function this PMO involve were identified at early stage before the case study started. The department has been working with one big project for more than three years now. This project is in the focus of this research. The main functions of the current PMO are as shown in Figure 3.3.3-1 below



Figure 3.3.3-1: PMO's major functions of the case organization, Oil and Gas department.

3.4 RESPONDENTS

The number of the respondent in the sample consisted of eight persons ranging from age 26 to 55 years old. One was female and the rest are men. As it is mentioned earlier, the respondents are chosen in aiming a relevant role and category mix in the sample.

Thus, table 3.4-1 below shows the respondents category and role.

Respondent's category and role		
Respondent (RP)	Category	Role
RP 1	PMO	Proactive Project Planer
RP 2	PMO	Project Economist
RP 3	PMO	Head of Procurement
RP 4	Top management	Head of Department
RP 5	Top management	Head of Sub-department
RP 6	Project manager	Senior Project Manager / Group Leader
RP 7	Project manager	Project Leading and Engineering
RP 8	Project manager	Project leading and Engineering

Table 3.4-1: Respondent's category and role at the department of Oil and Gas

For the first three respondents belonging the PMO was chosen for the simple reason that they are the main responsible persons for the corresponding PMO functions. However, when it comes to the other respondents RP 5 and RP 6 they were recommended by head of department (RP 4). The last two project managers were recommended by the senior project manager (RP 5).

In creating this mix of respondents the author aimed a holistic view through a natural setting to develop contextual understanding based on the participants point of view as the qualitative method implies (Bryman, 2012).

3.5 DATA COLLECTION METHOD AND DATA SOURCES

3.5.1 FOUNDATION

Generally speaking, there are three most important criteria for a set of data that is collected as a foundation of any social research. These are reliability, replication and validity. Thus, the process involved on how to collect the data will play the major role in the view of the three mentioned criteria. However, some researchers have suggested that the three mentioned criteria need to be evaluated or judged according to a bit different criteria when it comes to a quantitative research methodology. Thus, the alternative two primary criteria established for qualitative research are *trustworthiness* and *authenticity* (Bryman, 2012). Trustworthiness has four

cornerstones; where each one of the cornerstones has an equivalent of quantitative research criteria as well. See table 3.5-1.

Qualitative – trustworthiness:	Equivalent from quantitative view:
Credibility	Internal validity
Transferability	External validity
Dependability	Reliability
Conformability	Objectivity

Table 3.5-1: The four elements of trustworthiness in qualitative research and the parallels in quantitative research, adapted from Bryman (2012)

As a result, the present research has considered *trustworthiness* and *authenticity* as the foundation and route of the data collection method.

Furthermore, the collection of data is carried out by conducting semi-structured interviews. Semi-structured interviews seem to have potential to unfold in a conversational manner and this is an advantage for the participants to explore issues they consider is vital. By means of open-ended questions the interviewer reserves himself /herself from reining the interview tight and instead allows the subject to be explored much in depth and from different angles as it fits the participants (Longhurst, 2009).

With this background, after weighing different methods for data collection, the method of semi- structured interviews is applied in this study. A number of interview topics and questions were prepared in advance as an interview guideline and are conducted at the RE’s Oil and gas department.

The issue of handing out the questions for the semi-structured interviews in advance to the respondents became an issue, when two of the respondents asked for it. After giving it some thoughts and had a brief consultation with the research supervisors, on how it may affect the quality of data, the handing out of the interview questions decided to be okay. The motivation to this lays in the nature of the chosen research method and tools along with the focus and purpose of the study, i.e. seeking opinion about something specific which exists in the practice of the case study organization. Thus, the more the respondents are informed before the interview the better chance to making a good use of the limited interview time available for each respondent.

The interview question was given to all respondents in advance, meaning not only for those two explicitly asked for it.

3.5.2 INTERVIEW QUESTIONS' STRUCTURE

Swedish language is both the native and work language of the respondents. Thus, the semi-structured interview questions were carefully interpreted to Swedish so that the respondents would understand the questions in their context.

The interview questions had four main sections, See figure 3.5.2-1 below. The sections were structured so they would reflect and serve the research main and sub questions.

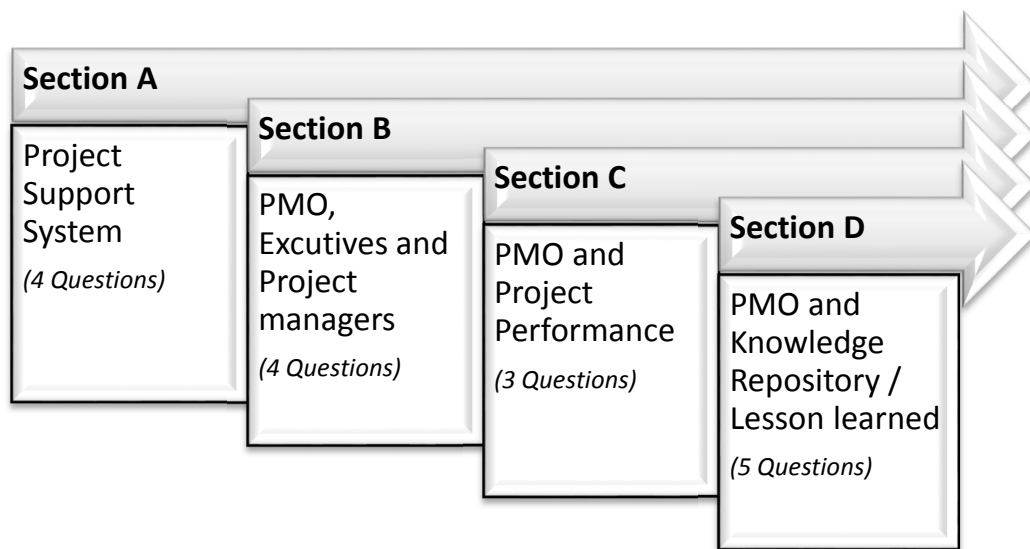


Figure 3.5.2-1: The structure of the interview questions.

The questions in *Section A*, consisted of 4 questions aimed to get a general insight in how the respondent reflects over the overall aspect of project support system in their daily activities. The 4th question was deliberately formulated to get the respondents feedback in what grade the term PMO is used in their daily activities, or if they use another equivalent term for it. The questions in *Section B*, consisting of 4 questions, were focused more on the background and the reason for why PMO was established in the first place. *Section C*, with its 3 questions was designed to take the conversation to a deeper level, approaching the main focus of the study, i.e. project

performance. Last but not least, *Section D*, with its 5 questions was designed to address two aspects. One is whether PMO plays a major role in terms of knowledge repository for the lesson learned and the other was to identify the major challenges and benefits of working with PMO. The total number questions were 16. All interviews were taped and respondents signed a consent form to take part in the study.

3.5.3 DATA COLLECTION

It is noteworthy to mention that, as the semi-structured interviews intend, the interview questions were not followed always strictly as it was presented to the respondents. At times, the respondents answer for one question led to related topics that accentuated the respondent's personal perception (Longhurst, 2009) (Bryman, 2012). These kinds of divergences from the established interview-template could have led to sources of error in the research. However, it is the author's believe that the deviations has contributed more to the enrichment of the data collected than affecting the data negatively.

The case organization has its office on two different stories, where the department of Oil and Gas is located on the lower story. To create a comfortable environment for the respondents an interview room was booked for all interviews at the upper story of the two stories mentioned. The interview time was booked for all within their ordinary working hours, i.e. between 8:00Am and 4:00 PM. The interview was conducted in a closed room. Furthermore, in order to make the data analyse easier at a later stage, the interview was audio recorded.

3.5.4 ETHICAL CONSIDERATION AND PERMISSION

Anonymity and *confidentiality* are the two most important ethical issues that needs a special attention of the researcher (Longhurst, 2009). The research data is collected through audio recorded interviews from the case organization. The recordings were supported by interview short notes in from of figures and charts as well. All the respondents are anonymous and consequently are not mentioned in the dissertation by name. In case a partaker respondent requests to be mentioned by name in the findings, a written application will be requested which evaluates according to rules

and regulations of both Chalmers Technical University and Northumbria University for its applicability.

Sensitive data in regard to personal and corporate perspectives are carefully selected from the collected data to emphasize its importance.

During the interviews it is most likely that confidential information may have been encountered due to the nature of the case study. To ensure that confidential information is excluded from the final dissertation a review copy will be provided to the involved parties sufficiently ahead of the dissertation's deadline. The storage of the collected data is put in safekeeping in a cloud-storage. This storage is protected with a SSL (Secure Sockets Layer) to safeguard its security. All kind of data collection is done by the researcher and supplied to Northumbria University or will be stored in a bank deposit. Afterwards, by the time the data collected considered to be obsolete it will be destroyed.

Prior to conducting the interview, each respondent had been provided by carefully prepared *information sheet* addressing all the relevant information about the research. After the respondents read through the information sheet, each respondent was provided with a specially designed *research participant consent form*. All confirmed their approval by signing the consent form to be interviewed and audio recorded. Both the *information sheet* and *the research participant consent form* were designed according to Northumbria University's dissertation handbook, module BE1180.

3.5.5 DATA ANALYSIS

One of the most important basic foundations, which are commonly on the spotlight of analysing qualitative data, is the principle of using a research technique to generating replicable and valid inferences from the collected data to their context. This lays on the basis of the premise that the vast amount of words from the interviews and the interviews memo notes can be minimized to categories enabling the words share the same implication or meaning (Westbrook, 1994) (Bryman, 2012).

4. FINDINGS AND ANALYSIS

As it is previously explained the collection of data was made through audio recording and interview memo notes. The results are presented in the following subsection of this chapter. The presentation of the results is structured in such a way that it embraces the major four divisions of the semi-structured interview questions, as presented in section 3, figure 3.5.2-1, which in its turn reflects the research objectives as well as the research questions. Further to this, the findings are presented in a category that ties to the role and categories of the respondents as it is defined in section 3, table 3.4-1.

A brief description of an overall current condition of the case study department is given at the beginning of the chapter. In order to get an insight of how the existing type of PMO looks like, the data collection was started with one of the PMO member respondents. Thus, the findings will be presented in the same pattern in the following sections of the chapter.

In the following sections the respondents are mentioned in accordance to their roles given to the number pattern in section 3.4, table 3.4-1. For instance, RP 1 refers to Proactive *Project Planer* Respondent 1 of PMO staff member.

One additional noteworthy issue is that, although a vast amount of input data and opinions are gathered from the interviews, selection has been made emphasizing only the relevant portion of it for this particular research.

4.1 THE OVERALL CURRENT CONTEXT

The case study organization in general has many different disciplines. What is more specific and significant for the Oil and Gas Department is that the projects are of a very larger size and span over a longer period of time. It is also unique for this department that the clients are few but with a big capacity. The same clients have been providing projects for the department for more than five years now. Thus, these clients seem to have a great influence in placing criteria on the contractual bases on how project should be managed.

One of the questions, in *section A* was aimed to find out in what level the term PMO uses in the departments daily managerial activities. The term PMO is not formally in

use. The PMO group is called by another Swedish name equivalent to *Project-steering-group*. Thus, the term PMO is taken as equivalent to the Swedish term used by the respondents. PMO is also used in the presentation of the findings for the following sections.

4.2 WHY THE PMO EXISTS

According to the RP 4 (*Head of Department*), the need and the establishment of the PMO lay in the different phases which took place gradually before the department of Oil and Gas started. The types of projects that are running today at this department were handled earlier at the mother company (the head office) located in Norway. RP1 (*Proactive Project Planer*) started his career as PMO staff at the head office in Norway. According to RP 1 the origin of the PMO is strongly related to how projects were handled at the mother company.

4.2.1 THE CLIENT'S INFLUENCE

According to RP1 the demand of big and influential clients, on how their projects should be handled has had a major role why the PMO exists as a support and guiding function for the project management processes. When the case department Oil and Gas started in Sweden a copy of the PMO as it was in Norway was one of the primary conditions to start the business in Sweden. Further to this, as RP 1 stated:

“As long as the criteria of our major clients are as they are, it is unthinkable to work without PMO and the support it provides.”

In general, it is the respondents' conviction that the department and the project management processes would not have been possible to carry out without the role of the PMO functions and support to project managers.

4.2.2 EXPANSION DEMAND ON PMO

The PMO started with two persons, RP 1 and RP 4 in year 2008. RP 4 is also the coordinator for the PMO group as it is told by RP 1 and RP 2. As the years went by, and more and more projects started to be handled from Sweden, the PMO group started to grow in numbers to provide sufficient support to the project managers in ensuring the required project performance. For instance, at the PMO's early stage there were no *Project Economist* at all, however today they are three working solely

with assisting project managers in different kind of project economy related tasks and responsibilities.

4.3 PMO AND PROJECT PERFORMANCE

The projects in general are of two types of major categories. Figure 4.3-1 below is a representation as most of the respondents addressed it in their contextual descriptions.

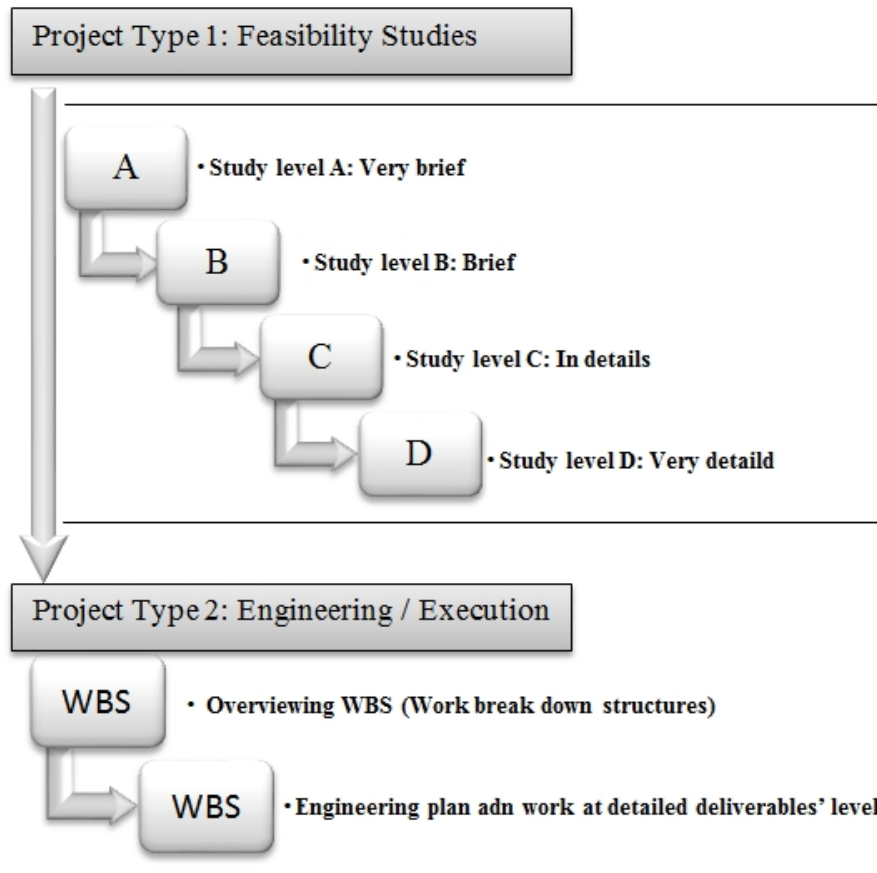


Figure 4.3-1: The two main project categories at the Oil and Gas department

Projects in Type 1 are more kinds of feasibility studies at different detail levels. In type 2, projects are more complicated and involve stakeholders in much more intensity than project type 1. For instance, it is common that workers from the construction sites are involved in different aspects.

4.3.1 THE WORK WITHIN PMO

The PMO staff worked very closely internally when both the Oil and Gas department and the PMO itself were very young. As RP 2 commented the bigger the department became, the more PMO staff members started to come a bit away from each other in handling the workload. RP 2 wished they could work as intimate as they were when they were only a few in the department.

The PMO has today a regular meeting once in a week and they also attend all project review meetings with each project manager and engineer involved in the project. However, *procurement* and *documentation* part of PMO (as described in section 3.3.3) are not normally expected to participate on all of project meetings. As for the *Procurement*, it is mainly because of the different needs project managers have, depending on whether or not a project is a feasibility study or concurrent engineering. As for the *documentation*, it is more like if there is a particular issue or need in terms of correspondence or deliverables they will be invited to join the regular project meetings. Having said that, apart from meeting events, the *documentation* group works very closely with project managers on daily bases to deal with different kind of documentation.

4.3.2 THE PMO ROLE AND THE CORE WORKFLOW

The core workflow as it was described by RP 4 (*Head of Department*), who also works very close to all PMO staff members, is as follows:

Every Friday, all engineers and project managers report project progress to RP 1 (*project planer*). The RP 1 does all necessary adjustment in terms of required additional resources, change of conditions for deliverables, etc. What RP 1 has done will be verified by RP 4, usually by sitting together and thinking through all the important details. After all additional necessary adjustments, and even consulting the involved project managers, RP 4 approves all the changes made and let it go to the next stage, which is involving RP 2 (*Project Economist*). RP 2 brings in the revised data from RP 1 in to the economy system and analyses it to see what kind of impact and consequences it may have in monetary terms.

Depending on what kind of project is at stake (see section 4.3 for type of projects), RP 2 asks for feedback and other inputs form RP 3 (*Head of Procurement*). This is

in regards to current commercial prices etc., to have the holistic view of the cost aspect that could possibly cause changes in the engineering and alike. Depending on the consequences of RP 3's input, RP 4 will be again contacted for approval then the project managers will be informed either to go ahead or to wait for additional adjustment.

4.3.3 PMO MATCHING RIGHT PERSON TO RIGHT PROJECT TASK

RP 4 (*Head of department*), seen also by many as PMO coordinator mentioned about one practice in regard to how to allocate the right person to the right project task. There is a check list consisting of a couple of questions. These questions are designed to profile the new project manager or project team member in what area he or she needs special support. The idea here is not to question their technical competence or anything like that. It is rather to identify if they are fully aware of the client and the organization's requirements in terms of project deliverables and if they have the required experience to do it in a reasonable time frame. RP 4 informed that the department along with the PMO tries to create a good environment where people can in all situations openly tell the area where they already have enough experience and where they do not. To assure this, straightforward questions need to be asked, told RP 4. And as a reply, it is even more important to provide all support needed quickly. According to RP 4, this serves both the issue of knowledge sharing and secures proper project performance through effective time use and to mitigate project reworks. According to RP 4 this contributes a lot to lift the project managers' burden in a proactive manner and consequently ensure project performance to achieve project objectives and goals.

4.3.4 PROJECT MANAGERS AND PROJECT PERFORMANCE

One of the main issues, repeatedly mentioned by the respondents in terms of project performance, is that the sizes of the projects the project managers deal with are often very huge and complex. Especially when it comes to project types 1C, 1D as well as all projects in type 2, as illustrated in figure 4.3.1, are very demanding in its project managerial complexity. It is also said that it is the clients' major concern to ensuring a sustainable project performance throughout the project lifecycle in this kind of projects. Thus, as mentioned earlier, the clients are even enforcing contractual details, which are in project managers' favour to facilitating them with different kind of

support functions to ensure project performance. At one point in the interview, one of the PMO members (RP 3) stated:

“It is all about acting proactively and enabling a helicopter view to ensuring deliverables and acceptable project performance, both from the organization and the client’s point of view”.

Further to this RP 1 stated:

“In order for project managers to focus on making the right thing to happen at the right time and there by deliver the required project performance, they need to be relieved from a number of tasks that have not direct impact on the engineering technicalities. Otherwise it would be almost impossible for project managers to meet the organizations and the client’s requirements.”

When it comes to projects in category type 2 and project performance it normally requires a vast amount of internal coordination and externally with collages at construction site. As RP 1 stated it:

“I work very closely with construction site personals to make sure our project performance, in terms of deliverables, is in alignment with theirs construction progress.”

4.3.5 PMO ACTING AS PROJECT MANGER

According to RP 4, the *project planner* (RP 1) in the PMO is, in a way, a project manager without project manager’s responsibilities and decision making mandate. In fact, whenever a project manager is too busy and cannot attend all the required meetings the RP 1 takes the place and attend the meetings in answering questions concerning the projects as well as asking for all needed information to the present projects. Depending on the circumstances, the client and other relevant parties might also be contacted by the PMO staffs in assisting the project manager.

4.3.6 PMO, TOOLS AND BOUNDARY OBJECTS

Two respondents were critical towards using PMO for project performance in its current form. They are referring to some of the project management tools and boundary objects currently in use by the project support functions of the PMO. This is particularly when it comes to how project performance is measured by PMO through project progress and how the planning tools, templates etc. are used. According to one respondent project performance needs to be measured in a much

more detailed level throughout the project life cycle than is practised today by the department's PMO. The underlying point here was that project financial performance and project technical performance should be measured accordingly in order to offer project managers a clear and reliable guidance in their managerial day to day activities. If one is measured without measuring the other the project performance will miss its holistic view. RP 6 and RP 7, having many years project management experience find it sometimes a bit frustrating for not being able to change some of the PMO's criteria and method.

One respondent stated the following:

“In some area, it seems like there is a gap between PMO expertise and we project managers. PMO's staffs are experts in the different roles they are particularly involved in. However, we the project managers may be do not fully understand it as they do.”

As it is mentioned by one of the respondent, an individual initiative is taking place in making one unique template aiming one of the PMO's functions. By creating and using this template parallel to the current PMO toll, the respondent aim to communicate the idea better with PMO and eventually contributing to the enhancement of the current project management processes.

4.3.7 THE QUEST FOR A PRAGMATIC PMO

RP 6 and RP 7, who are a bit over 50 years old, are project managers with many years of work experience. Their experiences are both in the current discipline and others related disciplines. According to them the best project performance can be achieved if the project management processes and the PMO embrace more a pragmatic approach. It is also mentioned here that they are aware of the fact that making changes on established routines cannot be done overnight. By this the respondents mean that the case organization is big and is dealing with even bigger clients. However, as RP 6 stated it:

“Executives along with PMO need to find out a way in making the clients aware of their excessive criteria and the fact that project can be carried out in a more efficient way, without compromising the end product, than it is uttered today..”

The clients criteria which are embedded in the PMO routines, as RP 6 sees it, is not adding any significant value on the end products but only affect very much the

project financial performance. It is also mentioned here that the Oil and Gas industry in general has shown, for a while now, less concern about cost effectiveness in engineering projects. However, nowadays, according to RP6 there are clear signs on the way that things are changing and cost effectiveness is getting more focus than before. The point the respondents are making here is that PMO needs to adapt current project needs in a more pragmatic way by constantly adding value in enhancing the project financial and technical performances.

4.4 PMO AND KNOWLEDGE MANAGEMENT

4.4.1 THE VIEW OF MOST RESPONDENTS

When it comes to PMO and knowledge repository, lessons learned and knowledge sharing the common response of most of the respondents is that they feel there is less focus on the matter. It is not that the respondents think it is less important - on the contrary. RP 5 (*Head of Su-department*) states that they are doing this, and described that the lessons learned and knowledge sharing takes place mostly in form of daily conversations, but not in a more systematically format. It is also highlighted by the respondents that at times it feels like there is a boundary between PMO and project managers and to some extent within PMO itself due to the different expertise exercised by different people.

4.4.2 THE “PROJECT HISTORY”

According to the RP 4 (*Head of Department*) there is one focused endeavour, which is integrated in one of the routines of the project management processes at the department. There is one well-established routine concerning a project progress report document to be written on a monthly basis. What this report contains, beside issues like key performance indicator, financial ratio etc., is a so called a project history. RP 4 told that it is formally his responsibility for the monthly report to be done with all elements required including the project history. This is of special importance for the project type 2 (see figure 4.3-1) because the execution of projects is taking place in parallel with the engineering work.

In regard to knowledge management and the mentioned project history, RP 4 stated the following:

“The project history is very vital in collecting all the information (knowledge) about problems project teams are confronted with and how it was solved or is planned to be solved on monthly basis. It serves as a knowledge repository for the lesson learned through the different projects coming and going in the department”

Initially this report is written as a draft by RP 4, with the information and formal reports which have already reached his table in one or another way. The project engineer and responsible project manager will distribute the draft to all involved in order to elaborate further, among others concerning the project historic for that particular month. This monthly report with the revised project history will be at last distributed to the partakers and will be handled by the PMO's *documentation* group.

Additionally, two important elements of the monthly report are emphasised by RP 4: one is that it would be almost impossible to keep track of the projects throughout the project life cycle, because it happens that project team members or project manager leaves and new comes into the project instead. The other one is that, at the completion of every project, which normally takes more than a year, there is a requirement to write a lesson learned report for the entire project from start to the compilation. This single report, aiming exclusively towards the lesson learned part would have been very difficult to realize if it were not for the monthly report consisting project historic documented month by month.

Another aspect of this was mentioned by RP 6 (*senior project manager*) is that one should not underestimate the potential of the talks at coffee-breaks and in the corridors for canalizing and sharing information/knowledge between collages.

4.4.3 THE CHALLENGES OF KNOWLEDGE MANAGEMENT

There are a couple of challenges the case faces concerning knowledge sharing and knowledge repository. As RP 5 (*Head of Sub-department*) stated one is:

“People are normally uncomfortable to openly admit all the mistakes they have made. Especially if it is a major mistake people either keep it to them or worst case try to find other reasons to cover committed mistakes.”

Another main challenge, which is almost pointed out by all respondents, is stated by one of the respondents as follow:

“Oftentimes there is a time constraint between project completion and new project start. If these two are not in the first place overlapping, there is usually only a very brief moment between the two.”

The respondents emphasised that this causes often that neither PMO nor project managers get a chance to view and reflect upon the documented in regard to lessons learned from completed projects.

The other cause for not getting usage of the knowledge repository, as it is perceived by RP 5 is that some grade of reluctance and underestimation of the treasure in the repository which is there for every once disposal. Thus, they also pointed out, that this unfortunately might, from time to time, cause to reinvent the wheel.

4.4.4 ADDRESSING SOME OF THE CHALLENGES

There is one new strategy, which has been taking place in the department lately to mitigate the trend of not paying attention to lessons learned in the knowledge repository from completed projects. The strategy as it was told by RP 5.

“At every project start the presentation is said now to include one specific agenda, i.e. lesson learned from a similar completed projects, carefully searched out from the knowledge repository (or monthly reports).”

Prior to every kick-off all new projects, the project team and the appointed project manager to the new project will have to make a presentation at the project start meeting. What is new for this strategy is that this kind of presentation used to be done always by same person, RP 5. This has often caused participants to attend the meeting with a bit of passivity, since they have not yet started the project. And when the project has started everyone rushes in to carrying out the project’s tasks. However, by having lessons learned aspects included in the project start presentation, done by one of the project team members will improve the use of the knowledge repository. The emphases was highlighted here that it is to enhance project performance even more for the new project than it was in the past.

5. DISCUSSION

This discussion chapter is structured by placing emphases on three major areas in the aspects of *the need for PMO*, *Project performance* and *Knowledge management*. This structure is chosen in order to enable a proper link with previous chapters in regard to Literature review and Findings and analysis.

5.1 THE NEED FOR PMO

In the interviews, the overall understanding of most of the respondents was that the need for the PMO in the department was an obvious matter. This is mainly due to the nature of the projects that involve high technology. This is also explained by (Engwall & Jerbrant, 2003). The statistical alarming scenario about the high rate of project failure as mentioned by (Desouza & Evaristo, 2006) seems to be taken in to consideration here and measures to mitigate project failure by having PMO are taken. The consequences for not having a management support system as PMO, in relation to the project size and project lifecycle duration as the current case, will simply cause project objectives and goals of the organization and the client to fail. Thus, the need for coordination and collaboration as highlighted by the respondents as well as by (Kendall & Rollins, 2003) is one vital element for carrying out project management processes as it is anticipated. It seemed to be obviously PMO, in this regard is the prime candidate to address the matter.

The case study shows that the need for the PMO, in this particular study case, is well understood by the current client. In fact, to some extent, one could tell from what the respondents had pointed out that the clients had made the existence of the PMO as a contractual matter. This scenario, as one can tell is favourable for project managers. However, as it is explained by (Kendall & Rollins, 2003), in many organizations, motivating the need of the acceptance of PMO and consequently receiving support from executives is seen often as a hurdle. In the contrast to this, the study in this organization reflects a quite different view, where the mentioned hurdle is not recognized in this context. This is, of course mainly for the very fact that client demand is woven on the need for PMO.

It is also, as it was reflected by most of the respondents' explanations, that they could find it very difficult if they would carry out projects of this kind and size

without the support of the different functions the PMO offers. This primarily, as explained by (Desouza & Evaristo, 2006) is in the light of mitigating the weakness such as lack of formal tracking means, management consistency etc. This study shows that the degree of the need of the PMO depends obviously according to the type of projects which are at the stake. For instance, For project *Type 1* and *Type 2* as illustrated by the respondents (see figure 4.3-1), the need of PMO might be partially or fully for the projects in *Type 1* while the need of PMO is always full involvement for projects which are included in project *Type 2*.

5.2 PMO AND PROJECT PERFORMANCE

As Hobbs and Aubry (2012) have pointed out in their four different organizational performance concepts (see figure 2.4.1-1), the *rational goal model* which is one of the four concepts contain the elements of profit, productivity, planning goals and efficiency as basic features. These tend to have a major role in the way projects are handled in the project management processes of the case organization. Considering the core workflow of the PMO as it is described by the respondents and as it is explained by (Desouza & Evaristo, 2006), the PMO is contributing additional value at the operational level, i.e. in the area of expert project management knowledge, monitor customer satisfaction, conducting project evaluations and alike.

It is highlighted by (Gerard, 2014) that well established project methodology as it is incorporated in the PMO's framework plays a major role in the endeavours for boosting and sustaining project performance in PBO. This is done, among others by enabling project management processes that can be repeatable and improvable. In addition to this Gerard (2014) stresses the importance of a management methodology and management process need to be well integrated in each PBO paying attention to its own context.

According to some of the respondents in the study there is a feeling of predetermination on the view of what the PMO should look like, i.e. the copy as it is in the mother company in Norway. Even though, the clients are more or less in the same category for Norwegian and Swedish based organizations, the organizational contexts are inevitably different to some degree. This is also particularly emphasized by some of the respondents, highlighting their day to day project management

activities, especially whenever dealing with project *type 2*. Projects in type 2 are where project managers are in need of breaking down huge projects to the smallest task to insuring deliverables accordingly and there by maintaining proper project performance. Thus, project methodology with all standards and project management process, designed and applied in one organizational context should be taken with adequate caution whenever there is a need of applying it in a different context. As some of the respondents stated there are contextual factors at times causing the project performance not to be revealed in its full effect, which otherwise could be if the PMO had not to mirror the mother company in Norway at all aspects. This aspect is also highlighted by (Gerard, 2014) that PMOs are not one size fits all but need to contextualize.

One clear benefit of the PMO as most of the respondents from the project manager group highlighted is the administrative support provided by the PMO. For project managers, being assisted in handling all project related administrative tasks is seen as a great support. This is mainly because it provides time, which enables project managers and engineers to focus more in project core matters to secure required product quality within predefined time and financial scopes. It is not that the administrative part is less important than the technical engineering part, but it is rather a strategy for ensuring project performance in its holistic view to meet the PBOs and client's expectation. As it is explained by (Hobbs & Aubry, 2010), PMO in this regard is adding value to project performance by, among others making sure the output quality of the project is in alignment with predefined project's objectives. For instance, as it is explained by some of the respondents in the case organization, the PMO staff member (*RPI, the project planner*) is at times substituting the project manager for attending meetings and alike whenever the project manager of the current project find it difficult to be present for different reasons.

Another key aspect, as mentioned by the respondents, is the importance of making sure the right person is assigned to the right task. As it is stated in the findings, it is not just a matter of picking the right person to the right task but it is more an endeavour to make available mentoring and guiding for those with less experienced to a specific task at hand. By doing this project time usage will be steered so it would contribute to the overall project performance in enabling efficient productivity. It is

also explained by (Aubry et al., 2010) that internal support to ensuring project activities that are carried out effectively and systematically to the recognized best practice of the PBOs is one of the main key issue when it comes to PMO and project performance.

5.3 PMO AND KNOWLEDGE MANAGEMENT

Among the interview respondents there seemed to be a consensus about the importance of the issue of dealing with knowledge management in a PBO in general. As it is explained by (Pemsel & Wiewiora, 2013) that projects are temporary; they come and go, some with longer period spanning over years and some maybe only weeks or even shorter. However, the PBOs remain and hopefully stay for much longer time than a single project lifespan.

One aspect that needs to be pointed out here is the information flow or communication between different parts of the involved parties. As it is mentioned by some of the respondents the need of sharing and managing knowledge over the boundaries may have its own challenges. Of course, the idea here is not to make everyone a project economist or procurement expert etc. but to increase the knowledge exchange for a more efficient interaction in the existing context. As it is mentioned by one respondent there has been one special effort in creating one special project measurement tool as a boundary object to facilitate sharing of the knowledge possessed by this respondent to PMO and others. This kind of endeavour, as it is explained by (Carlile, 2002; Pemsel & Wiewiora, 2013) is essential for effective knowledge sharing. Furthermore, as (Huang & Huang, 2013) pointed out different viewpoints arising from different parties involved should be encouraged to keep the knowledge sharing alive.

It seems to be obvious that the respondents are faced with time constraints when it comes to both contribute to the historical project archives and even take time to take good advantage of it whenever is needed. As Dai and Wells (2004) underlined, systematically created and used historical project archives are one vital element of knowledge management. As it is explained by one of the respondent the use of project history done on monthly basis is worthy to mention in this context.

6. CONCLUSIONS

This chapter starts by recalling the research questions and objectives in order to connect it with the findings and discussion. The chapter concludes by presenting recommendation and suggestion for further research areas.

6.1 RESEARCH QUESTION AND OBJECTIVES

The aim of this study was to consider the relevance of PMO for the PBOs in the AEC industry by conducting a qualitative research on one PBO. The main research question, as it is stated in introduction emphasizes as follow:

Why and how the use of the project management office is relevant for project-based organizations?

This research question along with its three sub questions have been, as seen in the preceding analysis and discussion, elaborated from different angels. The research sub questions have been helpful both in terms of designing the interview and even to establish a reasonable research scope both for the academia and within the PBO.

The objectives of the research in cooperating the following were recognized briefly as follows:

- Investigating PMO in day to day activities focusing project performance
- Investigating the pro and cons of PMO
- Offering suggestions on how to use PMO in other PBOs like construction.

The objectives are achieved through the means of interview questionnaires designed in reflecting and including the objectives accordingly. The mix of the respondents category and role has also contributed to address the pre settled objectives and the validity of the findings.

6.1.1 ROLE OF PMO FOR IMPROVING PROJECT PERFORMANCE

The research found that the role of the PMO has been very much in terms of supporting project managers in different area of project management processes. The PMO, apart from sharing the project management tasks with project managers, they are expertise in the specific role they are engaged with. For instance, the project economist form the PMO operates with this special expertise. Thus, PMO in view of

project performance plays a major role, among other by enabling project managers more time to allocate in a more project engineering core issues and carry out project administrative tasks, as economy follow-ups, project review reports etc. handled by more expertise of PMO's staffs.

6.1.2 BENEFITS AND CHALLENGES OF PMO

The research in this specific case has found that the major benefits are that the PMO provides a helicopter view over all projects so that any single of any cause diverging from the predetermined route of the project path will be discovered in time and also act proactively to mitigate such an occurrence. The other major benefit, which has been discovered in the research, is the relief the project managers experience due to the support they get in terms of a couple of project management administrative tasks from PMO.

The main challenges of the PMO, as were found in this research are to having all requirements and wishes from all project managers and project teams as well as from all other internal and external stakeholders to be met in the PMO support functions. The challenge reflects also in communicating why a specific methodology and tool is established and that it has to be practised by all for the sake of systematic and strategic purpose of adding value to the organization in the long run.

6.1.3 PMO USE IN THE AEC INDUSTRY

The research has found that the PMO in its vast variety, with all its different maturity levels can be carefully examined and be adapted in the AEC industry in order to enable a better control over the area of: collaboration, customer satisfaction, systematic documentation, knowledge transfer etc. It is also of great importance to bear in mind that all kinds of project management methodologies established by PMOs in PBOs need to be evaluated from time to time in order to make project management process pragmatically fit the current needs of the organizations as well as the criteria of clients for major projects.

6.2 RECOMMENDATION AND SUGGESTION FOR FURTHER RESEARCH

The research indicates that client oriented PMOs tend to have a high status in the organization and seem to be sustainable in its role and existence. Thus, creating awareness in what a PMO can do among major clients and other project stakeholders with high interest and power should be one of the urgencies in terms of PMO use in the AEC industry. In addition to this, PBOs should pay more attention to cultivate an organizational culture in regard to putting adequate effort for building up project knowledge repository and the use of it.

In this research there are some loose ends, which could be elaborated on by further research. These are:

- The root cause of time constraints for not using lessons learned from past projects in PMOs.
- Ensuring acceptance of PMO in the client's realm in order to have a shared strategy for securing intended project outcome through the usage of PMO.

Furthermore, as this research is conducted in only one organization it would be appropriate to further elaborate the topic in more organizations and similar industries to confirm its general applicability.

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9. APPENDICES

9.1 INTERVIEW QUESTIONS – ENGLISH

Presentation:

Name:

Function:

A. Project support system

1. What kind of project management support/system are you using in your work today?
2. How long have you been using it?
3. Why did you start to use this management support system?
4. Is the term Project Management Office (PMO) or any similar official term applies for the project support system exists?

B. PMO, Executives and Project managers

5. What was the main reason or need for establishing PMO in this department?
6. Who were involved in the decision making of establishing the PMO?
7. What were the preparations/the procedures taken place before choosing and implementing the current type of PMO and the defined roles?
8. How do you work internally within the PMO?

C. PMO and Project Performance

9. How are you using PMO in your work? Can you give a concrete example in an ongoing project or one you have worked in?
10. In what area do you think PMO plays a major role in improving project performance? Can you give a concrete example?
11. Do you and the PMO's staff meet in a regular basis, throughout the project lifecycle or is it occasionally? If occasionally, what are the common reasons look like? Can you give a concrete example?

D. PMO and the knowledge repository /lesson learned

12. How does PMO help you to share information systematically with others in the organization?
13. Do you think PMO play a major role in providing you and your project team the learned experiences from past similar projects, before new one starts? If yes, in what way?
14. In what way do you get use of PMO to systematically transfer the lesson learned to others and vice versa?
15. What is the major challenge you think exist for POM in terms of knowledge transfer and project performance?
16. What is the major benefit you think in having PMO?

9.2 INTERVIEW QUESTIONS – SWEDISH (RESPONDENTS' LANGUAGE)

Presentation:

Namn:

Role:

A. Projektstöd

1. Vilken typ av projektledningsstöd använder du i ditt vardagliga projektledningsarbeten?
2. Hur länge har du använt den?
3. Varför har du börjat använda den?
4. Används termen PMO (Project Management Office) för gruppen som tillhandahåller projektledningsstöd eller är det någon annan benämning som bekant?

B. PMO, Avdelningsledare och Projektledare

5. Vad var den främsta anledningen PMO startades på avdelningen?
6. Vilka var med när beslut fattades för att införa PMO?
7. Hur var förberedelserna samt olika stegen som togs m.h.t. vilken typ av PMO, vilka funktioner och roller den ska ha?
8. Hur utförs arbeten internt inom PMO?

C. PMO och Projektframdrift

9. Hur använder du PMO i ditt vardagliga arbeten? Skulle du kunna ge ett konkret exempel från ett pågående projekt eller redan avslutat projekt?
10. På vilket sätt anser du PMO spelar viktigt roll m.h.t. förbättra projektframdrift? Skulle du kunna ge ett konkret exempel?
11. Träffar Du och PMO-personal regelbundet undertiden, från projektstart till avslut eller är det bara vid behov? Om det är bara vid behov, hur ser behoven ut? Skulle du kunna ge ett konkreta exempel?

D. PMO och Kunskapsbas/Erfarenhetsåterföring

12. På vilket sätt anser du att PMO hjälper dig för att, på ett systematiskt sätt dela med dig projekt information med dina medarbetare på företaget i stort?
13. Anser du att PMO spelare viktig roll m.h.t att servera dig och ditt projektteam på relevanta erfarenheter från avslutade projekt, innan ett nytt liknande påbörjas? Om ja, på viken sätt? Skulle du kunna ge ett konkret exempel?
14. På vilket sätt hjälper dig PMO för att, på ett systematiskt sätt, ta emot projekterfarenheter från dina medarbetare och vise versa?

15. Vad anser du det är största utmaningen PMO möjligen har när det gäller att förmedla projekterfarenheter som främjar bl.a. projektframdrift?
16. Vad anser du är största nyttan med att ha PMO?