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The functions of a Project Management Office in an IT infrastructure outsourcing context

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Tiivistelmä

Työssä tutkitaan projektinhallintatoimistojen (*project management office, PMO)* rakennetta, niiden yleisesti suorittamia tehtäviä sekä organisointitapoja. Tutkimuksessa pyritään selvittämään, millainen projektinhallintatoimiston malli soveltuu parhaiten tukemaan IT-ulkoistusta sekä –konsultointia tarjoavan monikansallisen yrityksen Pohjoismaiden projektitoimitusta.

Tutkimuksessa käytetty tutkimusmenetelmä on laadullinen. Tutkimuksen välineinä on hyödynnetty kirjallisuuskatsausta sekä haastattelututkimusta kohdeyrityksessä. Saatujen tulosten perusteella on laadittu vastaus asetettuihin tutkimuskysymyksiin sekä suositus projektinhallintatoimiston organisointitavasta sekä projektinhallintatoimiston tehtävistä kohdeyrityksessä.

Työssä on tutkittu aiempaa tutkimuskirjallisuutta projektinhallintatoimistojen organisointitapojen, maturiteettimallien sekä niiden suorittamien tehtävien osalta ja sovellettu kirjallisuuskatsauksen tuloksia empiirisen osion perustana olleen haastattelujen haastattelurungon valmisteluun. Työn tärkein lopputulos, esitetty suositus projektinhallintatoimiston organisointitavasta, perustuu näin ollen sekä aiempaan tutkimukseen että tätä työtä varten suoritettuun empiiriseen tutkimukseen.

Työn tärkein tulos on yleinen projektinhallintatoimiston malli, joka soveltuu IT-konsultointipalveluja tarjoavaan projekti- ja palveluyritykseen jonka sisäiset prosessit ovat riittävän formalisoituja. Projektinhallintatoimiston tulisi tukea projektitoimitusta allokoimalla projektiresursseja, toimimalla koordinaattorina samaan aikaan suoritetuille projekteille, taltioimalla projekteista opitut asiat organisaation myöhempää käyttöä varten sekä vastaamalla projektinhallintametodologian kehityksestä. Työssä on myös tunnistettu uusia tutkimusaiheita projektinhallinnan tieteenalalla, joiden jatkotutkimus olisi suotavaa.

Tutkimuksen tuloksia käytetään kohdeorganisaation projektinhallintatoimiston organisointiin soveltuvilta osin. Tulokset ovat yleistettävissä vastaaviin IT- tai muiden alojen projektiliiketoimintaa suorittaviin yrityksiin, ja niitä voidaan käyttää tukemaan yritysten sisäisten toimintamallien kehitystä.

Muita tietoja

ABSTRACT
FOR THESIS

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Abstract

This thesis studies the structure of project management offices *(PMO)*, the functions they usually contain and the ways that they can be organized. The study's objective is to find out what kind of a project management office structure best supports the operations of an IT outsourcing and consulting services providing multinational company's Nordic project delivery.

The methodology chosen for this study is qualitative. The research tools are literature reviews and interviews conducted in the target organization. Based on the results of the reviews and interviews, an answer for the research questions has been composed, as well as a recommendation on the structure and tasks of the PMO in the target organization.

The basis of this study is previous literature on the way of organizing PMOs, different PMO maturity models and on the functions that PMOs contain. The literature review has been applied to the composition of an interview questionnaire which was used for interviewing employees of the target organization. The most important result of this study, the recommendation on the structure and organization of the PMO, is therefore based on both earlier research as well as on new empirical research conducted only for the purposes of this study.

The most important result of this study is a project management office model, which can be applied to IT consulting services offering project and services companies, if the internal processes of the companies are at a sufficiently formal level. The PMO should support project delivery by allocating project resources, by acting as a coordinator between parallel projects, by capturing and recording lessons learned from closed projects for later use in the organization and by developing the project management methodologies within its host organization. New research subjects for further study in the field of project management research have been identified as a result of the study.

The results of the study will be used in the target organization for the re-organization of the PMO, where applicable. The results can be generalized for companies of the same type either in IT or other project business and utilized for internal development.

Additional Information

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I wish to express my gratitude to professor Jaakko Kujala for his help and my colleagues for the interest and time they have sacrificed for the purposes of this study. This thesis is dedicated to my elders and to my loving parents.

"*Ich trödle gerne. Vielleicht jetzt nicht mehr so sehr wie in früherer Zeit"*

- L. Wittgenstein

Helsinki, 2.4.2014 Atte Niemelä

CONTENTS

1 AN INTRODUCTION TO THE STUDY

"Hard work is simply the refuge of people who have nothing whatever to do."

- Oscar Wilde

In contemporary business, projects are an often utilized method for creating change. The change can be either tangible or intangible, but the method of its delivery varies surprisingly little between different organizations: the chosen way is nearly always a project. (Dai & Wells 2004)

At their most basic, projects are characterized by three properties below (see e.g. Mandják & Veres 1998, Skaates & Tikkanen 2003):

1. projects are discreet
2. projects are unique
3. projects are complex.

Due to this very basic nature of projects, the possibility of losing the knowledge created in any given project (i.e. the lessons learned), the processes that have been created for the projects' use or any functions that have been set up to support the one-time delivery of a project are subject to a possible loss: if the results and tools created to deliver the project outcome are not recorded and maintained, an organization must constantly invent the wheel again if they wish to execute new projects.

The project management office (henceforth the PMO) is often seen as an answer to the question: "How can an organization deliver projects according to agreements and make sure that it does not lose its project delivery practices?" At the very basic level of different maturity models the PMO is seen as a one-time instance that aids in a single project's management. If one were to proceed further following a maturity model, different additional functions are appointed to a PMO: the PMO is often seen as a function that ensures quality in project work, facilitates learning between projects, aids with and acts to some capacity as a support function and performs much of the projects

administrative and supporting tasks, such as staffing, legal and project reporting. (Aubry et al. 2008) However, the view or belief that any issues that a project-delivering organization might face can be solved with an all-encompassing, all-seeing and divine-like organizatory function such as the PMO, is fascinating, but at a first glance seems to be too far-fetched to the doubtful mind.

The study for which this thesis is based on has been conducted to find out what functions and actions of the PMO people working in IT outsourcing see as beneficial in project delivery. It has been completed to understand what functions can offer support for project delivery and how they should be organized for best possible coverage from a project manager's point-of-view.

1.1 Research questions and the structure of the thesis

The aim in selecting the research questions and the structure of this study has been to construct a work that provides the reader one way for organizing an efficient and functional PMO. The focus is on IT infrastructure outsourcing and consulting as a business, but the principles and theories reviewed in the thesis work quite well for any given area of business. Furthermore, this thesis is not an in-depth study on the justification of having a PMO or support functions: the subjects of the study are the support functions offered for projects and the way that they are most efficiently organized.

After some consideration, three research questions were chosen. The objective of this thesis is to answer the questions and by doing so, also provide a way for organizing the PMO. The research questions are presented below:

1. What are the usual tasks of a PMO?
2. In what different ways can a PMO be organized?
3. What kind of support functions does an IT outsourcing and consulting company require as a support for its project delivery and how should those support functions be organized?

The approach and the structure of this thesis are quite traditional:

1. The first section will consist of a review on existing PMO theory and IT outsourcing as a business area
2. The second section provides a report of empirical findings, based on both the writer's own experience and interviews conducted with people working in the project business in the IT outsourcing industry
3. The final section is devoted for discussion and conclusions that can be drawn from the synthesis of the contents of the first section and the findings of the empirical study presented in second section.

The selection of this approach, a set fairly straight-forward research questions and a simple, yet rigorously tested structure of the work, offers two benefits. The first one is that the focus can be completely on the subject, which carries an intrinsic complexity. One could argue that by asking simple questions one gets simple answers, but that will hardly be the case. The second benefit is that of the reader's: by structuring the work clearly, the reading experience becomes less strenuous. This way time can be given on reflecting on the subject matter instead of being confused by an overly complex structure.

1.2 Why study the PMO?

Why study the PMO even though shelf meters upon shelf meters of literature have already been written on the subject? The main reason and motivator behind this exercise has been to further understand what supporting factors lie behind successful projects or vice versa, why some projects fail. It is quite easy to draw the conclusion that a project with adequate and fit-for-purpose support functions will succeed more likely than a project without support readily available, but it is a bit trickier to identify those functions or figure out how they should be arranged in an organization doing project business. After its inception, the PMO has become an umbrella-term for all project support functions. Accordingly, the moniker can be appointed organizatory entities of all shapes and sizes: a PMO can be a mass collection of brilliant, motivated and competent people who create a finely-tuned performance accelerator, or it can be a one

man show which does hardly more than answers the occasional email. Understanding this landscape is necessary when we try to find out what is needed to get the best results out of projects.

The second reason is identify how well the needed supporting functions are present and available for project managers in the target organization. This motivation stems from the author's personal experience, working first in the target organization's project management office in its starting days and after a while switching to project manager's role. An individual project manager can – and should - always learn from her engagements, but an avenue for sharing knowledge or tested best practices should be provided by the organization. Following the progress of the target organization's PMO from its incubation to its present state has been interesting and sparked a need to understand the progress and desirable end-state of the PMO's development even further.

The third and perhaps most personal motivation is to gain a better understanding of the nature of project business in the IT outsourcing business. Working as a part of multiple different teams to execute projects to different stakeholders is by default quite fast-paced and requires a fairly comprehensive understanding of IT, business requirements and customers' needs. It is necessary to understand that the view on what constitutes a successful project can be quite different from the customer's and the supplier's point-of-view. If we were to apply a bit of lean principles to project management, a project manager should simply focus on value-adding activities while performing (and trying to minimize) the related necessary-but-non-value-adding activities, and try to eliminate non-value adding activities entirely. By constituting and offering a scalable and robust support function the project-delivering organization can ease the task burden of project managers, since they can focus more on fulfilling both customer and business requirements, without using their resources on non-value adding activities.

By combining the motivators that have been mentioned here a summarization for what has been the driving force for this study would be to understand how the project management office and related support functions can enable sufficient project delivery and minimization of wasteful activities and how these functions have been arranged in the organization that is the subject for the study. The aim is to identify benchmarks from

previous research and combine this with the findings from research done in the target organization to come up with a synthesis and a recommendation on how the project support functions should be organized to align with the organizations needs.

As mentioned above, a massive amount of research has already been conducted on the PMOs. Hence, this thesis will not delve in the details or the justification for a PMO *per se.* It is also assumed that the reader has at least an elementary understanding regarding both project business and the history of the project management office as an organizational entity. However, as the theoretical basis for this thesis is on PMO and project business literature, a brief overview on the nature of both subjects is naturally provided. The main focus lies within the scope of the PMO: in the identified support functions that it provides and how they support project delivery. To support the construction of a synthesis that is sound, salient and applicable to the business context of the target organization, we will also study the characteristics of the IT outsourcing business to find the qualities of the PMO that apply both universally and only to the business of the target organization.

2 THE ROLES AND FUNCTIONS OF A PROJECT MANAGEMENT OFFICE

"*Tough and competent. Tough means we are forever accountable for what we do or what we fail to do. -- Competent means we will never take anything for granted.*"

- Gene Kranz addressing the NASA Mission Control after the Apollo 1 disaster in 1967.

A project can be seen as the planning and execution of a set of activities to effect a defined change to status quo. This change is the deliverable of the project, and can be literally anything, from a new house to a successful round-trip to the Moon. The implementation of the change is then done by the activities that the project consists of and which are constrained by financial and temporal aspects. Other characteristics are uniqueness and quite often the planning which takes place before other project activities are started. Considering this definition for a project, project management can then be seen as the administrative and supporting tasks which are required to complete the activities belonging to the project within the limited timeframe and budget. Therefore, project management is a subset of the activities included in the project, and the objective of the subset is to facilitate the actual completion of the activities and govern that the activities are executed as planned.

As projects with even the most rigorous planning phase can and do fail, it is necessary to identify the core activities of project management that can be industrialized and repeated from project to project. This way the burden of governance can be eased and in best cases the overhead caused by project management can be minimized. Offering existing, tested procedures and practices by the PMO for a project manager can be a benefit, especially in a setting where projects with similarities are executed by the organization repeatedly. Even a project organization that has been set up just for a one-time effort, a project (management) office can be of assistance by supporting adherence to quality standards and monitoring the progress against the project plan.

As the name implies, this chapter will present common best practices for organizing a PMO – what roles it should take and what functions it should include. To reach this

objective, the chapter has been divided into two subchapters. The first one will examine the usual tasks, roles and functions provided by the PMO. It will also provide a collection of the roles that are most commonly seen as important for a PMO to provide. The second subchapter will go through the different archetypes of PMO – commonly accepted ways and contexts where a PMO might be set up – and ways of organizing the PMO. The second subchapter will also examine the best practices in organizing a PMO.

2.1 The roles and functions of the PMO

Projects carry traits that are inherently uncertain. In business everything is more or less linked, so projects always carry a risk of failure both due to their own actions, but also due to the actions of others' actions around them. An event can be seemingly completely unrelated to the project itself, but can still lead to some degree of failure. For example, we can think of a project of a chemical industry company which aims to create a new artificial sweetener. Even if the project itself meets its targets within all the usual dimensions (time, budget, deliverable), a failure can result from a new stricter regulations imposed by a regulatory agency that denies the use of some base chemical in the sweetener.

In the example presented above one can quickly see that the project does not in fact fail due to an unrelated event: in this case the deliverable of the project should be a new source of revenue for the chemical company, and the project stakeholder analysis should have also contained a prediction on near-term regulatory movements, which could have helped mitigate the risk entirely by composing the sweetener from another mixture of chemicals. What we learn from this is that projects often fail even if a structured project management approach is utilized. (Jessen S 1992)

The PMO is often seen as a failsafe that ensures that at least the following dimensions are accounted for in project work:

1. following sufficient quality requirements and adheremce to quality
2. business continuity
3. information and knowledge management and maintenance

4. resourcing and staffing

The forms and flavors can vary quite remarkably: some organizations have a heavy-weight PMO with multiple dedicated teams working to monitor and control projects, and on the other hand of the spectrum we have organizations that carry a “PMO-in-name-only” or do not even have a specified PMO. However, the tasks that are usually associated with the PMO function are often in such cases distributed to other organizatory functions to enable project delivery: at the most basic level the tasks associated with a PMO, such as staffing, are required for a project to even start.

As mentioned above, we can group PMOs or other similar functions based by their organizatory weight (e.g. by head-count or delegated authority to enforce adherence to agreed processes). One could, as is common practice, also group PMOs by their perceived maturity levels, which more or less follow similar capability maturity models practices such as CMMI. And finally, one can group PMOs by the amount and scope of tasks that they are involved in. It is important to avoid the trap of looking at a PMO function merely through the lenses of existing classification criteria or capability models: an organization can possess a highly industrialized, mature project delivery competence and do it without a specified PMO. The aim of this study is to identify practices and tasks which enable or aid in project delivery, not to measure whether or not the PMO of the target organization belongs to a certain maturity level.

Regardless of the moniker, if the support functions for project delivery are collected to a one organizatory function, there are some points that are usually seen as crucial for successful implementation and actual benefits. If done wrong, a PMO implementation can have zero or even adverse effects on project quality and increase the project overheads, therefore creating further challenges for financial performance (Feldman J 2012). A PMO is not always an asset: its positive effect on value-addition and other benefits can be debatable and hard-to-find. (Hurt M & Thomas JL 2009). To ensure that a PMO implementation is successful and the PMO both sustainable and a value-adding entity, the following aspects should be factored in to the building phase:

1. PMO employees should have reasonable experience of the project and delivery context, subject-matter expertise and project management skills
2. The justification for building the PMO and the sizing of and the tasks assigned to the PMO should follow a fact-based approach: a colossal PMO should not be built just-because, the form should follow function. A continuous cycle of controlling and monitoring should be instated. The cycle needn't be too complex, for example following the Deming cycle (Plan-Do-Check-Act) can suffice.
3. The PMO should have a business case and its returns-on-investment and business justification should be tracked and forecasted on a regular basis.
4. The internal stakeholders should be identified and analyzed before the start of building a PMO. Stakeholders who can or do exert power over the functions planned for the PMO, will most likely want to influence the build or the PMO functions, or are not convinced of the need even after reasonable evidence should be convinced and won over before or during the implementation. Executive-level support is crucial to ensure organizatory backing, support and sufficient resourcing for the PMO build.

Depending on the level and organization coverage of the PMO, its function is to support projects, take partial or complete responsibility for project execution and distribute knowledge and best practices. The aim is to make sure that projects deliver on time, cost, scope and quality and to avoid situations as described in the paragraph above. Although PMO designs can differ remarkably, the basic idea is the same: a PMO is put in place to either develop existing project management capabilities or establish the project management capabilities for the organization (Andersen et al. 2007). The important question to ask then is what the PMO should do to meet the goals that are usually driving its existence. PMO functions can be grouped into 5 distinct areas of activity (Hobbs & Aubry 2007):

1. project controlling and monitoring
2. development of project management practices
3. coordination of simultaneously run projects
4. strategic planning and advisory services for strategic leadership
5. benchmarking, learning and development

If we think of these areas as such, we can see that they are closely linked with common structured project management activities, with a flavor of continuous development and strategic planning. This is unsurprising; since the two reasons for the existence of the PMO are to 1) enhance project performance by leveraging and focusing activities that would nevertheless be done by project or projects to a single organizatory entity and 2) to act as a quality assuring agent.

To understand the functions that a PMO should include, we'll examine each of these areas further to see what the contents of each area are. In addition to that a short rationale for the functions inclusion to the PMO is provided and link to project management illustrated.

2.1.1 Project controlling and monitoring

Project controlling and monitoring is a basic, yet elementary project management activity. As one characteristic of a project is that it is planned, at some point the actual deliverables and output are measured against that plan. Projects are also controlled and monitored on quality, time and cost. Usually these reporting and monitoring activities are performed in a weekly, monthly and yearly cycle, with a suitable level of tracking chosen for each cycle. The usual tasks of a PMO in the controlling and monitoring area consist of (Hobbs & Aubry 2007):

- reporting project status at predefined intervals
- tracking project performance and acting if deviations occur
- being responsible for the operation of project information systems
- maintaining a project scoreboard

If we look at the four activities listed above, it's evident that each can be performed either by a project manager or by the PMO. The PMO often acts as an advocate for enforcing agreed policies in project tracking, maintaining and implementing the reporting mechanics and also being responsible for the measurement of project metrics (KPIs) (Dai & Wells 2004).

In this area (monitoring and controlling project performance) the reason for utilizing a PMO instead of completing the work in each individual project is leveraging: by having the PMO do the operative tracking and controlling time and possibly costs are saved from the project. The project leaders can also use the saved time on project execution to shorten the project lead time.

2.1.2 Development of project management practices

The development of project management practices is an area which is usually not included in the management of a single project by default. If done as a part of a single project or program without a PMO, the development is usually done due to *ad hoc* needs or as a corrective action when issues or problems are encountered.

In a managed setting with a PMO instated, the activities executed within this area aim at developing and maintaining a standardized project management methodology. In other words, the objective is to industrialize the way of work and train project organization to work more effectively. The activities that fall within this domain are (Hobbs & Aubry 2007):

- project methodology development and implementation
- promotion of structured approach to project management
- competency development and mentoring
- providing standardized tools

If we reflect on the two *raison d´êtres* in Ch. 2.1, the activities executed as a part of project management practices development are related to continuous improvement and therefore ensuring better quality. The PMO should drive the industrialization of project management processes and be the main agent in the distribution of practices across the organization. Acting as the champion for project management practices demands a lot from the PMO, as it entails the development and management of methodologies, tools and standards (Hill 2004). Having a knowledgeable PMO in this role enables structuring an environment in which the processes, methods and tools are optimally utilized and improved upon to achieve the goals of the organization – it is not coincidence that

standardized methods have in some studies shown the highest correlation with project performance (Dai & Wells 2004).

2.1.3 Coordination of simultaneously run projects

One of the most essential activities done by a PMO is the coordination of simultaneously run projects. These projects can be either projects belonging to a same program, or they can be independent. However, since projects often have to utilize shared resources, coordination between projects run by an organization is a must.

The activities within this area are (Hobbs & Aubry 2007):

- coordination between projects
- managing the project pipeline
- program management
- portfolio management
- shared resource allocation

When these activities are grouped together and performed by the PMO, the idea is to gain either performance or cost benefits by focusing the activities to a single entity. This also helps in cascading information, since there's a single hub for transmitting and brokering information in the project organization. As the PMO has an unparalleled visibility through-out the organization, it is natural that it also performs resource integration between parallel projects (Hill 2004). Having the PMO perform the resourcing can enhance the utilization of resources or on the other hand ease resourcing conflicts, which is often difficult in a multi-project environment (Engwall M & Jerbrant A 2003).

One asset which helps in the coordination of parallel projects is the implementation of standard operating procedures and regular portfolio and program reviews. The coordination benefits greatly from project standardization and industrialization and vice versa, so by having the PMO perform project coordination can lead to a beneficial virtuous cycle (Dai & Wells 2004)

2.1.4 Strategic planning and advisory services for strategic leadership

The strategic planning and advisory services are executed by more mature PMOs. In this domain of activity the PMO has the necessary processes in place to gather data from project execution and also the sufficient knowledge to provide analyses based on said data. The activities carried out in this area consist of (Hobbs & Aubry 2007):

- advisory services to upper management
- participation to strategic planning
- benefits management
- stakeholder and market analysis

Since the PMO serves as an information hub, does knowledge management and is often responsible for PM methodology and competence building, it naturally follows that they also participate to building the vision of the organization. The PMO is therefore the place that can best communicate the developments that are likely to occur in the near-term and mid-term both in the project business of the organization (sales funnel and project pipeline) as well as in the field of project management as a practice.

Just as the PMO facilitates the starting phase of a project (Artto et al. 2011), it should also facilitate strategic management. It should be noted that to fulfill this role the PMO must be appointed the sufficient gravity and organizatory weight: if there are no capabilities for strategic analysis, the results of utilizing PMO views in strategic management can lead to mistakes. As most PMOs are relatively young when measured in the career lengths of their employees, this role can be a difficult one to carry properly. Right leadership and employees should be picked in the implementation phase of the PMO to ensure that the PMO can support and advise leadership at a strategic level (Collins 2001).

2.1.5 Benchmarking, learning and development

As the PMO is the focal point for project execution, it has the usually the best visibility on the learning and development needs of the organization and also a viewpoint that

enables it to check best practices both internally and from other sources. This allows the PMO to provide benchmarks and create best practice methods for itself.

The activities that PMOs carry out in this area are both internal PMO performance monitoring and distributing information between projects via lessons learned and best practices gathered (Aubry & Hobbs 2007):

- monitoring and controlling internal (PMO) performance
- managing project documentation archives
- gathering best practices and lessons learned from project teams
- managing risk and lessons learned databases

As the PMO performs these activities, it is doing the work of a quality assurance agent and driving continuous improvement. The position of the PMO allows it to gather and capture knowledge that is essential for project execution, which is the reason that PMO is usually trusted with this task. There is a relationship between knowledge management processes supporting the project execution and the likelihood of a project being successful, although the causality can be difficult to pinpoint (Aramo-Immonen & Vanharanta 2009). As learning from past projects is an integral part for an organization that performs projects continuously, the performance of the PMO should be regularly monitored and measured against set objectives (Desouza & Evaristo 2006)

2.1.6 PMO as a risk mitigator

The list of activities for the PMO presented in the previous subchapters is quite exhaustive, although it does miss out some activities that are beneficial for a project organization. A PMO should, at least to some degree, participate in business continuity planning and mitigation of risks. Such activities are, of course, not easily scoped, since they cover quite many areas, depending on the grouping. For example, the different risks of a single future event might be mitigated either by cancelling the actions leading to it and therefore withholding the activity altogether, or some other activities might be carried out to cover the position of the organization.

To understand different types of risks a single event or sequence of events carries, let us focus on the happenings within the Strategic Air Command of the United States Armed Forces during the Cold war in the year 1958. Within a month the SAC managed to burn one live Mark-35 hydrogen bomb on a runway in Sidi Slimane, Morocco and drop another one (luckily coreless) Mark-35 bomb to the backyard of an unsuspecting North Carolina family. To add insult to injury, the Department of Defense and Atomic Energy Commission had issued a joint statement, declaring the possibility of an accidental nuclear explosion as negligible (Schlosser 2013).

To draw a corollary between the Cold War shenanigans and project business, many risk-mitigating actions that a PMO should follow would have saved the SAC from a lot of embarrassment. A timely, honest informing of stakeholders during issues goes a long way. Also, the quality assurance function of the PMO also acts in a double role of risk-mitigation: when things are done in a pre-determined, standardized way, the risks associated with the uncertainty of project business can to some extent be effectively countered. The role of the risk mitigator follows from the focusing of control, coordination and monitoring practices to the PMO. As the PMO is an integrator in the project organization, it is also in a great position to manage risk (Hill 2004).

2.1.7 The benefits of utilizing a PMO approach

Although the amount of activities and functions carried out by the PMO is quite broad and aims at the improvement of the organizations functionality, it is not a given that the utilization of the PMO gives measurable benefits. There are many pitfalls that need to be avoided so that the PMO actually benefits the organization and improves its project execution (Hurt & Thomas 2009).

The aim for utilizing a PMO is to reduce project overhead and ensure better project performance and quality of deliverables. For example, in a multi-project environment projects often suffer from too low level of activity in project and portfolio management, low level of resources and competences and gaps in information management (Elonen & Artto 2003). By grouping support tasks to the PMO, projects can be executed more reliably, with a shorter lead time and a better cost and quality. However, the PMO is not a catch-all solution to project performance issues. A properly implemented PMO can

improve project performance via standardization and cutting project overhead, but the same results can be obtained via other measures or support functions. It should be evident that the moniker is not important, but what the activities carried out in support of different projects, programs and project portfolios are. Therefore to understand the importance of PMO (or related support) one can think of a PMO not as an organizatory entity, but as a set of activities that an organization carries out either in a centralized or decentralized setting.

The projects benefit from a PMO in many different ways. The project managers get training and help with standards and methodology from the PMO can get reporting assistance from the PMO and consult previous project experiences from the knowledge base and lessons learned archives maintained by a PMO. The organization that is the host of the projects benefits from having a PMO due to more efficient use of available human resources and knowledge, better coordination of simultaneously run projects, better project compliance to organizatory process and quality standards, and the availability of more accurate market and project environment information for strategic planning (Dai & Wells 2004).

One important factor for the benefits gained from a PMO is the economics of scale. By having the PMO perform repeatable and standardized project tasks in larger volumes, some cost benefits by getting the same output with a slightly smaller input. A more important effect of the centralization of standardized tasks is that a single project team can focus on completing the project activities needed to construct the project deliverables instead of administrative tasks. This way project lead times can effectively be shortened in quite significant amounts. The effect of having an experienced PMO perform the administrative tasks instead of the project manager is also notable: in projects of small scale the efficiency gained can mean quite a lot, since saving even a few days worth of administrative work can relatively have a large effect on the project performance from the cost perspective.

2.1.8 What should a PMO do?

Even though there are common ways for organizing the PMO, there’s little consensus on how and what the PMO should actually be responsible for. Aside from penicillin,

there is no medicine that cures all ailments. The same applies for project business and the PMO as well: the way the PMO is organized has to be applied on a case-by-case basis. The structure, roles and organizatory weight given to the PMO has to be (and surely is) based on the organizatory culture: either to reinforce it or to change it (Hobbs & Aubry 2007; Singh et al 2009).

Regardless of the way the PMO is organized, there is still a set of best practice activities identified which should to at least some extent be carried out by some organizatory function, if not the PMO. In the previous subchapters we have identified a set of activities that the PMO should carry out. Of these, some are more important than others for successful project support, and will be presented below. This list is a set of tasks that the PMO should execute to achieve the most important objective it has: project support (Santos do Valle et al. 2008). Much more can and is done by PMOs, but without these tasks a PMO really isn't a PMO. To support projects, a PMO should

- Execute resourcing
- Execute knowledge management
- Perform portfolio management and parallel project coordination
- Resolve conflicts between projects
- Offer guidance and ensure standard way of work.

The most important benefit of having a PMO instead of executing the needed support tasks in other organizatory functions is centralization. However, the benefits gained in knowledge management should not be neglected either: organizational knowledge is born through the collecting information and combining, internalizing, externalizing and sharing knowledge (Nonaka 1995). Without this cycle, no new knowledge is distributed or created from the previous experiences of different projects. Previous research has revealed that PMO facilitates organizational learning by capturing lessons learned and embedding the experiences into the project management methodology of its host organization (Julian 2008). The execution of organizational learning is crucial, as organizational learning and knowledge integration are major components of project success, as with effective knowledge management past experiences can be utilized for resolving issues in current projects (Söderlund 2012; Liebowitz & Megbolugbe 2003).

If the PMO is trusted with the above tasks, it becomes an instance in the organization that has complete visibility on project situation, their dependencies and conflicts, lessons learned and existing project knowledge in the organization. Without a hub this organizational visibility is nearly impossible to achieve.

2.2 Ways of organizing the PMO

PMOs can be organized in a multitude of ways. The PMO setup will always depend on different factors and will resemble the organizatory context. (Hobbs et al. 2008) The way the PMO is setup is subject to organizational tensions and politics, and PMOs' structure evolves with the organization. Still, it is possible to identify archetypes and categorize different PMO setups.

In this chapter the intention is to provide the reader an understanding of different PMO archetypes, different ways of organizing the PMO and the effects that the PMO setup has on the support it provides.

2.2.1 Archetypes of PMOs

What a PMO does is directly dependent on the organization it belongs to. The tasks that the PMO executes, monitors or manages are often decided on another level, within the management layer of the organization. This decision is usually done the first time when the PMO is first set-up and can be changed as time passes and the role of the PMO in the organization's project delivery is wanted to be different either in the scope or scale of the activities it carries out. No definitive configurations exist: the type of the organization dictates the type of the PMO. However, archetypes can and have been identified. (Hobbs & Aubry 2007)

Depending on the needs of the organization, the type of the project management office can vary from a project office (or program office), which is set up to manage a specific project or a series of project, headed by a project manager. A project management office carries a larger mission: its reason for being is to assist project management and project teams throughout the organization in following a structured project management

approach, using the correct tools, helping the project managers to communicate with other management levels and facilitate overall project execution. (Dai & Wells 2004) In addition to these, the PMO carries an important role in ensuring that projects are undertaken with a uniform approach throughout the organization (or part of the organization) that executes projects. (Martin et al. 2007)

First one has to understand all the dimensions and levels on which the PMO can operate. A PMO can have a function at an operational, tactical or strategic level. Furthermore, it can operate in a multitude of roles, which constitute the dimensions in which the PMOs domain exists. Existing literature has a tendency to plot PMOs to different kind of archetypes and maturity models, or in some cases even claim that the degree of authority is directly dependent on the archetype to which a PMO under examination maps to (Desouza & Evaristo 2006). In practice the degree of authority, either delegated or unofficial, depends on multiple different factors and drawing a corollary between archetypes and degree of authority would simply mean that an archetype would correspond to some observed level of PMO maturity. A PMO works in a multitude of roles and can naturally have varying maturity levels in each role (Hobbs & Aubry 2007). Furthermore, depending on the level of industrialization, the shape of the organization and leveraging of best practices, an organization with multiple PMOs can have individual PMOs on different levels in process maturity and of a different archetype, even though the underlying formal support processes are exactly the same. Identified archetypal PMO configurations are (Desouza & Evaristo)

- supporter
- information manager
- knowledge manager
- coach

In addition to examining the archetype or organizational level of the PMOs operation and the roles it fulfills, the PMO can and must also be categorized based on its relative organizatory weight. In literature this grouping is done by dividing PMOs either into light-weights or heavy-weights. A lighter PMO is easier to setup and can function with relatively smaller executive support or PMO charter when compared to the heavy-

weight PMO. Additionally, a light-weight PMO demands lesser resources to implement. When comparing the roles of the PMOs with a different weight, a light-weight PMO tends to operate more as a support and training agency for providing project managers with best practices, whereas the heavier counterpart takes a more complete role in the execution of the projects and can even be held entirely accountable for project success (Singh et al. 2009). As PMOs usually go through an evolutionary cycle, it is quite commonplace to start with a lighter PMO and move towards a heavier setup either as the result of demonstrated benefits, due to office politics or as a part of the evolution of the organization. (Hobbs et al. 2008)

The archetype of PMO is usually seen to be dependent from the organizatory maturity, but there are other factors that contribute. Seeing as many PMOs are young in the experience of their staff, it is really hard to claim that a young PMO can act as a coach for the whole project business organization. If one wishes to categorize PMOs into archetypes, it is quite necessary to understand that the archetype that the PMO represents must be a factor of two things: the maturity of the underlying processes as well as the maturity and subject-matter expertise of its staff. In addition, the size and organizatory weight surely contributes to the way a PMO acts and how it should be categorized: a small or short-handed PMO can rarely act as a center of excellence, if it is overwhelmed with menial and administrative project support tasks. If an organization wishes to reinvent its project delivery with a PMO, it must dedicate sufficient capacity for the PMO. Furthermore, the managerial support (or PMO charter) has to state and delegate authority clearly to leave no gray areas on the roles and responsibilities of the PMO. The different aspects that contribute to the archetype of the PMO have been presented for clarity in Figure 1 below.

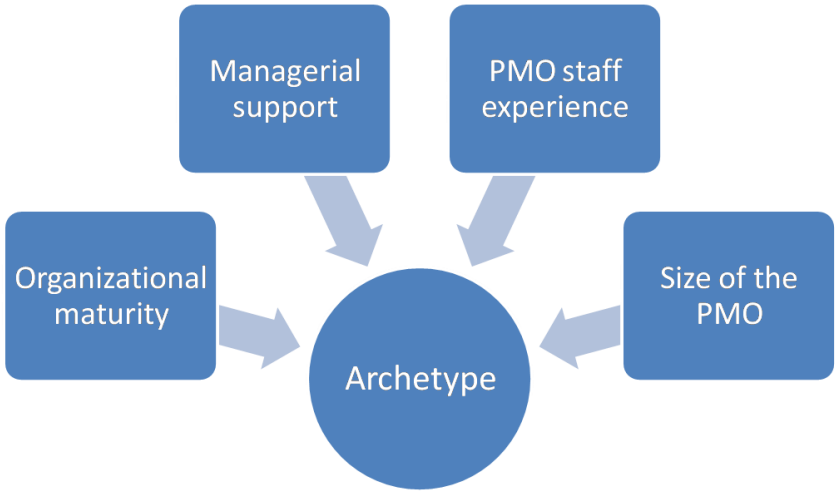

Figure 1. Contributing factors to the PMO archetype

To illustrate this further, we can consider how a PMO should actually be categorized into an archetype. A PMO can be evaluated with a capability maturity model, just as any other function or process. Whether a continuous or staged model (see for example the CMMI model for reference), the natural arch of evolvement is from a single project office to a center of excellence. An example of a capability maturity model for PMOs is presented below in Figure 2 (after Hill GM 2004):

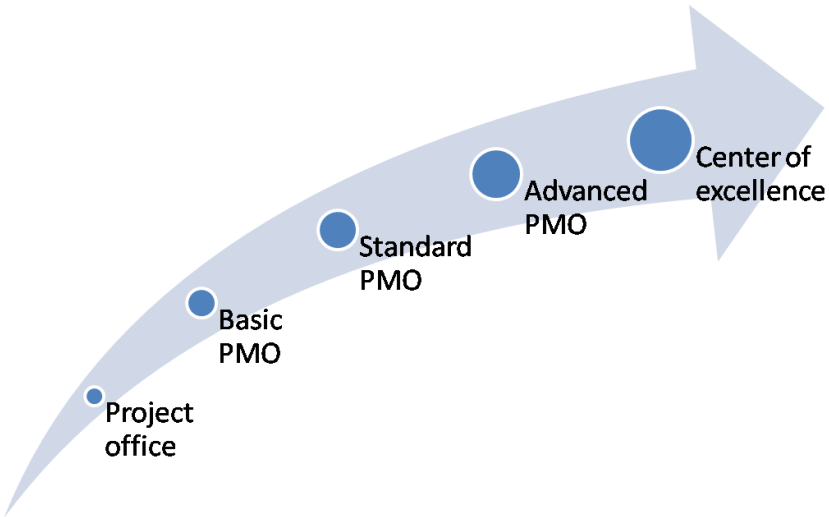

Figure 2. Stages of project management office maturity

The factors that contribute to the PMO setup and therefore its archetype are intertwined with the host organization, as the two are strongly linked: they go through evolution together and changes in one tend to affect the other (Aubry et al. 2008). In the maturity model presented above a project office is lead by a single PM for managing the delivery of basic objectives, a basic PMO is the first step towards repetition and industrialization, a standard PMO offers support and governance and drives a managed project environment, an advanced PMO applies project management capability with a dedicated staff to achieve business objectives and the center of excellence manages continuous improvement and cross-organization collaboration to achieve strategic goals. The maturity of the PMO is enabled by its staff and the organizational mandate that allows it to act in the project delivery environment. So, in the case of a coach archetype, the project organization needs a stage 4 or stage 5 (advanced or center of excellence) PMO, with an experienced and dedicated staff, sufficient delegated authority. On the other hand if we are talking of a project office, i.e. a PMO with only part-time staff and a single project manager that aims at achieving project objectives, the PMO archetype is clearly that of a supporter.

The benefit of categorization is not immediately evident for purposes other than a scientific pastime. But if one thinks of the evolution of the PMO and the drive to develop an organization's project management practices continuously, the categorization and classification becomes relevant. Measurement is the key activity for feedback and development, and the first step that an organization wishing to develop its capabilities further is to identify, classify and categorize the actions that it executes in support of projects, either in the PMO or outside of it. To put it shortly, the organization must identify its PMO archetype, define objectives for the PMO and then measure how well the PMO performs against the set objectives. This measurement activity is the basis for PMO development and should be the yardstick with which to study if the PMO is performing well enough and if the set activities that the PMO executes are the ones that the organization needs. A Deming cycle is a useful tool for PMO evaluation and development, but it is merely the start. Other quality models exist and can be utilized for more comprehensive measurement and evaluation. A fact-based approach to PMO

measurement and evaluation should be established in the starting phase of PMO implementation: without a business case to justify the current PMO setup, an organization should not carry on with the same way of work. Even though one would think that a fact-based approach would be self-evident for organizations implementing a PMO, it is actually quite uncommon. Organizations tend to disregard formal metrics and rely on subjective indicators of the PMO's functionality (Singh et al. 2009). This path is risky and can easily lead to a PMO that is mere dead-weight.

2.2.2 Comparing different ways for organizing the PMO

There are virtually unlimited options for organizing the PMO. The factors to consider when organizing or re-organizing the PMO are

- centralization: should the PMO act as a single organizational entity with delegated authority
- size and authority
- level of involvement and support for project execution
- underlying standard processes
- the functions that the PMO should execute

For the purposes of this study, it is useful to focus on organizatory weight and size, and centralization. The functions that the PMO carries out vary from organization to organization and should always be considered in the organizational context: one should not draw generalizations on that front to avoid giving the impression that there is a definitive PMO configuration that works as a master key solution for each project execution related lock. It is important to understand that the underlying organizatory standard processes play a significant role on how different issues in project execution are resolved. The employees of the PMO should understand the underlying processes of the organization (Johnson et al. 2002). Regardless of the functions actually executed by the PMO, it is crucial that the roles are clearly defined to avoid any misconceptions or misattributions of accountability (Kaufman & Korrapati 2007).

The term *centralization* in PMO context refers to the relative amount in which project management processes are centralized to the PMO. A centralized PMO is a PMO type

which usually involves a lot of dedicated capacity in the form of technical and project management resources and is responsible for overall project delivery in some form. This type of a solution requires that the project management methodologies are at a sufficient level, and it also requires a sufficient level of authority and responsibility to be appointed to the PMO (Santosus 2003).

A decentralized PMO approach is the opposite of a centralized PMO in the sense that the supporting activities of project management are mostly carried out within individual projects and their project offices. This type of a setting does not require much of capacity, but the administrative and supporting project execution tasks have to be carried out in all projects separately. The benefit is that single project teams can come up with efficient ways of working, but the standardization and leveraging of project experiences might suffer. Also the coordination of parallel projects will cause additional overhead, since there is no single hub with a transparency of the whole project landscape. A good example of a decentralized PMO is the virtual PMO, in which administrative tasks such as project tracking and reporting are done by a single entity, but the rest of project management activities and coordination is executed by the project manager.

A tempting strategy for PMO implementation is to appoint a PMO with few workers and have them perform project support and administration to some extent. It is unfortunate that the vision for PMO is usually a bit hazy, and the PMO is not designed to the organization's needs. This can lead just as easily to implementing a PMO that is too big for its project environment. To avoid any mishaps in the sizing of the PMO, the organization has to study the needs it has. A large PMO can help quench resourcing issues if it has the sufficient capacity to lend hands for project execution, and it can focus more on development of the project management methodologies and quality assurance. If, however, the need for PMO is not due to an objective to develop internal performance, it is better to start small and use the PMO as leverage to perform basic project administration and support tasks. The key factor for deciding the size of the PMO is the need(s) that the organization has. It is easier to tailor the PMO to suit the organization than the other way around (Singh et al. 2009).

Hand in hand with the size of the PMO we have the organizatory weight. Relatively larger PMOs tend to carry a larger organizational weight, both due to increased cost of operations, but also due to a larger amount of activities and responsibilities. In principle there are two ends on the spectrum from light- to heavyweight PMO. A light-weight PMO is one with limited responsibilities (usually *ad hoc* support and aid for projects, training and best practices distribution) and the heavy-weight PMO encompasses the whole project organization, with a proactive role and overall responsibility for project delivery. The benefit of the light setup is that it is easier to implement: it is relatively small overhead for projects and does not require as much of managerial support or stakeholder commitment, due to its small organizatory weight and limited responsibilities. The heavy PMO is much more complex to setup, since it requires experienced staff that are always in demand throughout the organization and also due to its relatively larger overhead. Politics play a significant role in the setup as well, since moving responsibilities from one organizatory entity to another tends to lead to internal conflicts. The main benefit of the heavy PMO is that it makes the project context of the organization a bit more straight-forward, since one entity is responsible for overall project execution and delivery, as well as the support functions, continuous development and project management standardization. In the light PMO setup the standardization and industrialization is easier to neglect and also more difficult to pull through, since there is no single accountable entity for project management excellence. It is worth noting that the evolution of PMO usually starts from a light setup but tends to gravitate towards a heavier, single-entity accountability solution (Singh et al. 2009).

2.3 Recap of PMO functions and organization

Before moving on to the next chapter, it is useful to summarize the findings from PMO literature presented in this chapter: what the PMO can do and how it can be organized. At this point it should be obvious to the reader that these two things are closely linked. What the PMO does follows closely how it is organized, yet the PMO's organization has to enable the PMO's desired functions.

A PMO can perform tasks starting from project support to quality assurance. The role and amount of significance that the PMO has in the organization is dictated by the

amount of responsibility that the PMO is appointed. The tasks that a PMO should perform are

- project reporting, monitoring and tracking
- project support
- project methodology standardization and development
- inter-project coordination
- conflict resolution
- project management
- managerial support
- quality assurance
- stakeholder and market analysis
- project staffing and resourcing

Depending on which tasks of the above the PMO performs, it can either be setup as a light or heavy PMO (alternatively de-centralized or centralized PMO). The de-centralized, light PMO only takes on some administrative and support tasks from the projects, whereas the heavy PMO has more responsibilities such as development, quality management, stakeholder analysis and strategic managerial support. The setup of the PMO should evolve alongside the host organization and be initially setup according to the needs that the organization's project execution has. Measures for evaluation and processes for continuous performance improvement of the PMO should be established at the same time the PMO is setup and the organization should rely on a fact-based approach when determining the ROI that the PMO has instead of subjective metrics.

3 IT INFRASTRUCTURE OUTSOURCING AS A BUSINESS

"There is no reason anyone would want a computer in their home."

- Ken Olson, president, chairman and founder of Digital Equipment Corp. in 1977.

The invention of the computer did not at first seem to be a ground-breaking event. As compared to the situation in contemporary business, computers were noisy, large, expensive, and in some case infested - hence the term *bug*. Few people predicted the evolution of computing and the whole subject was seen as a fad, more or less. However, some early pioneers predicted, if not the scale at which computers would affect every-day life, at least the developments that the computers would take. Gordon Moore famously commented in 1965 that the component density and performance of integrated circuits would double every two years more or less constantly (Moore 1965). In 1950, Alan Turing, a victim of his own time, predicted that by the turn of the millennium we would have computers with a storage capacity of 10^9 bits, i.e. gigabits (Turing 1950).

After the pioneers' era computers were adopted at a staggering pace. It is nearly impossible for a person born today to live through her life without at some point interacting with a computer. And that is the most extreme scenario: for most of mankind, computers have become ubiquitous. They are everywhere around us and integrated to everyday devices we use so seamlessly that we might use a computer without even realizing it. IBM chairman Thomas Watson famously predicted in 1943 that there is a world market for "maybe 5 computers". Making predictions is a pastime usually doomed to go utterly wrong for people not of the clairvoyant sort, which the esteemed Watson's quote quite sufficiently demonstrates for us viewing things in hindsight. While the personal computer broke through and made its way to every household, computing and IT took an arguably even more important role in business. Some traditional industries are not any more supported by IT - their whole business is based on it. For example, an ERP or a business intelligence system can make or break a company: given that market information is nowadays produced in stellar volumes and

distributed at staggering velocity, the functionality of business systems can be the only way to gain competitive advantage.

Compared to everyday life, the role that computing has taken in contemporary business is even more significant. The use of computers has enabled and created even more demands for data collection, accurate and timely predictions, extensive communications and the overall automation of business processes. As such, this demand for computing has created a new business in IT outsourcing: as computing progresses and evolves, businesses require more support for developing and maintaining their business systems and have more demand for computing capacity. This development began when the personal computer was adopted into business use. With the growth in the use of IT and the focus on core competencies, businesses utilize outsourcing as a way to drive IT-related spending down, while having an access to the newest technology. There's a good justification for this kind of a *modus operandi*. A wholly internal IT function can easily fall off the wagon in development, if it does not have enough of resources to pool and use for IT. Organizations that have resources to pool can innovate and create new business opportunities, a good example of this being Amazon with its Amazon Web Services department, but having an internal IT department with resources to innovate is an exception rather than a rule. With the steps taken in computing technologies the cost of hardware is in a downward trend, but that trend is accompanied with a growing amount of different technologies that require specialized skills to operate and utilize.

While in the early phases of IT outsourcing it is quite easy to start by leasing hardware and having external consultants as support staff, the industry is now experiencing a shift towards different parts of IT infrastructure delivered with X-as-a-Service models, which has also created a need for service integration. Most commonly the move to outsourcing is done by an organization to ensure that both quality and cost goals are met, so in order to meet these goals an organization might use multiple vendors as partners to whom it out outsources some portion of the IT services it needs. In this scenario someone has to be able to integrate all the different services. The service integrator role can either be fulfilled by the organization's own IT department, or it can be outsourced as well. The way of organization with inter-company boundaries is presented below in Figure 3. In this figure the customer-vendor interface is presented with two boundaries. In the first

case the service integrator role is provided by an external entity (denoted by Boundary [1]), in the second case the service integrator role is fulfilled by the organization that is buying the outsourcing services from different vendors (denoted by Boundary [2]).

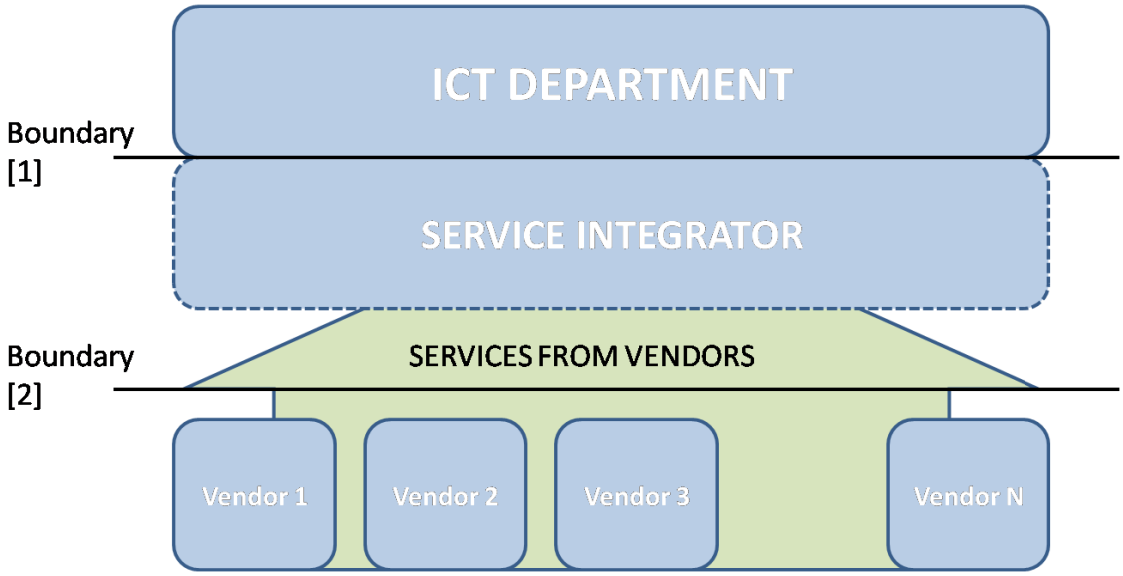

Figure 3. Boundary between customer and vendors in X-a-a-S models

From a customer's point-of-view the outsourcing of services can take up resources to ensure that quality and cost goals are met, but usually outsourcing relationships are successful. To understand the nature of the business from outsourcing companies' point-of-view, we can deduce some points from the previous paragraphs where the situation has been described from the customer's point-of-view:

1. Organizations are looking for outsourcing partners who can produce good quality with a reasonable price. This also means that all outsourcing partnerships are discrete: at some point in time the outsourcing deal will be won by another outsourcing company who is able to deliver better quality or lower prices.
2. Outsourcing partnerships are under constant pressure from other competitors. Competing vendors already in a partnership with the same customer are usually willing to broaden their service offering and new vendors are usually seeking to establish a relationship with the customer by offering a better deal for the same outsourcing service.

3. Just as an organization might work with multiple vendors, an outsourcing company must be willing to work with multiple different customers. This brings in pressure to either have very robust and scalable internal structure or willingness to tailor the service offering to the customer's requirements.

In this chapter the focus is on the nature of IT infrastructure outsourcing. The objective is not to explain why companies choose IT infrastructure outsourcing or if there is a justification for it, but to offer a brief overview on what services the outsourcing and consulting companies offer and on the overall nature of the business and the market. After this chapter the reader should have a basic understanding on what services an IT infrastructure outsourcing company could offer, how the IT infrastructure market is structured and what are the prevailing trends in the IT infrastructure outsourcing business.

3.1 The nature of the business

To understand the market, a person must first understand the components that it consists of. In practice, the IT infrastructure outsourcing market can be divided into two components: the outsourcing of the IT infrastructure and the advisory and consulting services that often accommodate the outsourcing offering. The advisory services play a role in the early phase of the infrastructure outsourcing lifecycle, consulting and the outsourcing are services that are linked together and play a part until the end of the outsourcing relationship. The actual outsourcing of the infrastructure is heavily competed and offers relatively few opportunities with new players: market entry requires significant capital for initial investments for the hardware capacity to offer hardware provisioning to customers, and the market offers relatively small profits due to the high volume –nature of the business. There is a trend among the players to try to gain a foothold in the advisory and consulting services niche, since it offers better profits and requires less investment. The advent of different X-as-a-Service models such as Hardware-as-a-Service, Infrastructure-as-a-service and Platform-as-a-service from a public or hybrid cloud allows the businesses that outsource their IT infra to scale their IT expenditures according to their use, which means that the outsourcing component is moving more and more towards pay-as-you-go models of pricing, with less focus on

selling a fixed amount of capacity to a customer. This means from the outsourcing companies' point-of-view that the revenue gained from outsourcing is subject to change and can change relatively quickly (Doelitzscher et al. 2011).

The market is divided among usual lines: there are major market share holding enterprises and niche filling smaller companies (one example being outsourcing and consulting firms that offer localized services, e.g. for public sector customers that have provisioning rules that require a domestic provider). This division pretty much also gives us a selection of companies that have a standard offering (e.g. IBM with its hardware provisioning and consultation) and companies that are either willing to provide a major level of customized services to its clients (e.g. the Finnish Nebula) or that offer a specialized, niche infrastructure service (e.g. the security company F-Secure's Younited secure cloud). A look at the top 10 Platform-as-a-Service providers gives one a glimpse of familiar names such as Amazon, Microsoft, IBM, Google and Red Hat (Burns 2012).

3.2 Trends

The advances in computing performance have allowed the move to the use of virtualized servers as a platform for most businesses' needs. To explain virtualization for a layman, in virtualization a powerful platform server or mainframe acts as a host for logical virtual systems, or virtual servers. In this kind of a setting multiple servers for different purposes can be hosted on a single physical device or set of devices, which allows for a reduction in capital investments, since a system does not require its own physical platform to reside on. A related trend in IT infrastructure budgeting are decreasing capital expenditures, but rising operational expenditures (Wittman 2010). Major providers have their own solutions with slightly different target markets, examples being Microsoft's Hyper-V or IBM's LVM, but anyone can familiarize themselves with virtual machines e.g. by the arguable market leader VMWare's ESXi system. With increased computing power the virtualization has also made its mark on enterprise usage, with the go-to solution for platforms nowadays being a virtualized solution. The breakthrough of virtualization allowed for the first major step in infrastructure outsourcing to happen, since it enabled customers to provision services on

an H-a-a-S basis, buying only for the usage. What this meant for the customers was an increase in flexibility and scalability, coupled with a decrease in capital expenditures for IT infrastructure. However, it also meant that the operational expenditures experienced an increase, since although automation has made provisioning for example a group of servers very simple, optimizing and getting the best out of the infrastructure requires advisory services, which most companies on the market are more than happy to offer (Wang et al. 2010).

With hardware provisioning maturing and supported by Software- and Data-as-a-Service models, it is more common for providers to move towards the Platform-as-a-service model. The relationships between the mentioned X-a-a-S models have been depicted below in Figure 4.

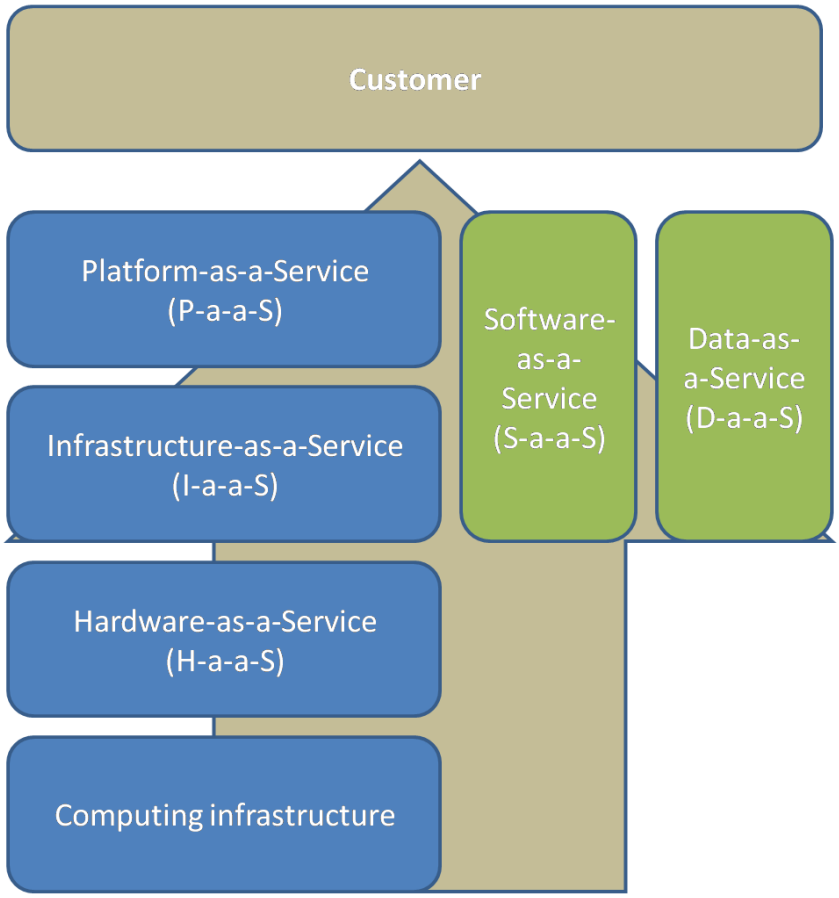

Figure 4. Service components in X-a-a-S models and their relationships

In the P-a-a-S model, the infrastructure outsourcing provider offers a standardized solution stack for the customer to use, often with accompanying consulting services. It is also quite noteworthy to understand that with the development and offering of public clouds (such as Amazon, Eucalyptus and Microsoft's Azure, to mention a few), automated monitoring solutions and enhancing system integrations, outsourcing companies can take a role as a service integrator and advisor even if the actual infrastructure is outsourced to another provider. The largest cloud providers are often quite happy to compete against each other and leave the service integration layer to other consulting companies, since they wish to focus on what they do best, or in other words their core competence (Porter 1979). The customer-provider boundary in X-a-a-S can reside virtually anywhere within the service dimension, as the customer can choose to only outsource its infrastructure, choose an H-a-a-S, I-a-a-S or P-a-a-S solution and also combine it with S-a-a-S and/or D-a-a-S if necessary. The role of the service integrator can also be done either by an external consultant organization or in some cases by the customer itself (see Figure 3. Boundary between customer and vendors in X-a-a-S models).

3.3 The nature of the market

As with all outsourcing engagements, the most defining aspect of IT outsourcing relationships is their discrete nature. Partnerships start in some form or another, usually after an organization wanting to re-structure its IT function has devised an outsourcing strategy. If the business that seeks to outsource its IT function to some degree does not at first perform an internal study on what functions it actually can or should outsource, the relationship will at some point face issues.

As with all areas of business, the IT infrastructure outsourcing business can be characterized with decreasing unit costs due to technological breakthroughs such as virtualization and automation, but also fragmentation and specialization which require investments to human capital and development, as well as knowledge retention: an infrastructure outsourcing organization has to be able to offer advisory services at least to some extent, if it does not wish to compete in scale economics with the largest cloud providers. The organizations that participate in the infrastructure outsourcing business

can be categorized to three distinct categories: pure infrastructure companies, pure advisory services and consultation providers and hybrid players that offer server and infrastructure provisioning either from their own infrastructure or in alliance with a pure infrastructure company.

The markets are quite mature, with many established companies competing on the market. For a new company a market entry is least difficult as a pure advisory services company, since the investments required are quite low and no established market standards exist. However, breaking into the advisory services niche requires the attraction of experienced professionals, who bring a gravitas with them and provide the new market member with an air of competence. To provide an understanding of the infrastructure market participants, below is a figure representing major I-a-a-S market players according to their relative position (Leong et al. 2013):

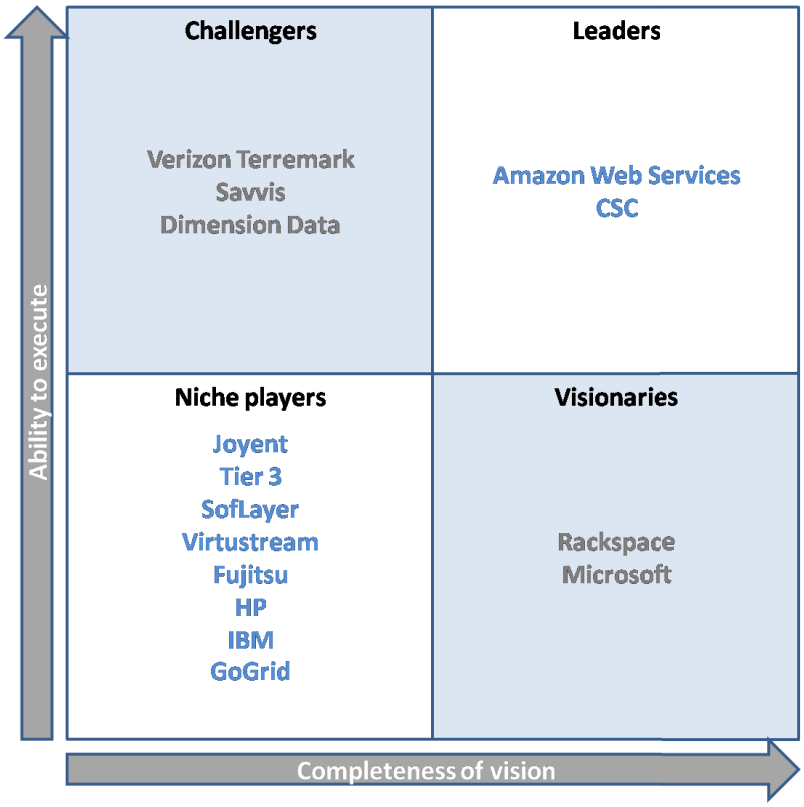

Figure 5. IaaS providers market position

As a yardstick we can examine the company market capitals: for example, the combined market capital of IBM and Microsoft alone totals over 500 billion dollars, so a company willing to enter the market has to have a significant advantage in either technology or financing if it wishes to make its stay on the infrastructure market permanent as a pure I-a-a-S player. However, by offering a more diversified service portfolio and focusing on advisory and consulting services, a company can enter the infrastructure outsourcing market with less capital expenditure, since it doesn't have to compete directly with the large I-a-a-S, or public cloud, companies. The offering of services serves also balances the revenue streams of an IT consulting company: the revenues that a project generates are temporally limited, so by offering services a firm has at least some steady sources of revenue (Artto et al. 2008). In a sense, the organization that prepares for entry or is already on the market has to address the same questions as all companies when defining a business model: how will it create value, what are its target segments, what should its market position be, what its profitability will be and how will it secure a competitive advantage. By factoring in the facets of project business to the company's business model, one can deduce the potential for the business performance of a project-delivering company (Kujala et al. 2009). The same principle applies for IT infrastructure outsourcing companies.

4 THE PMO IN AN IT INFRASTRUCTURE OUTSOURCING ORGANIZATION

"Nothing so needs reforming as other people's habits."

- Mark Twain

The objective of this study has been to gain an understanding on the current state of the organization of project support functions in an IT infrastructure outsourcing organization and how they benefit project execution. The motivation for the study has been to further understand the processes that a project needs for a successful delivery and performing well, as well as getting to understand the project business more in-depth.

The target organization is a France-based publicly traded consulting company that offers technology consulting, IT outsourcing and business process outsourcing as parts of its portfolio. The scope of the study has been the Nordic area and the organizational entity under investigation the IT infrastructure outsourcing business unit.

The study started in the year 2013, with the first rounds of literature reviews and development ideas being completed in the spring. After a short break in the activities, the writer got the idea to broaden the scope and scale of the study to cover more aspects. In the autumn this idea was formulated into a research plan and another round of literature reviews was performed. After the second round was completed, an interview frame was composed in December. At the start of the year 2014 a round of interviews was completed with people working directly in or in support of infrastructure outsourcing projects. The interviewees have a varying background and amount of experience, but the common denominator is that they all participate in the infrastructure outsourcing business in the Nordic area (Finland, Sweden, Norway & Denmark). After the interviews, a synthesis was composed based on the findings of the literature reviews and the results of the interviews.

The methodology of the study is quite traditional for its purposes. Based on the literature, interview questions were formulated (Appendix) and interviews carried out with a select number (n = 6) of people to identify how project support functions are offered to infrastructure outsourcing projects, how PMOs are organized in the project landscape and what areas of development there are from the interviewees' point-of-view. The underlying hypothesis is that although PMO practices in the infrastructure outsourcing organization are based on tested, verified and validated, highly mature project management processes that can be scaled-up and scaled-out, the setup and the role of PMO varies throughout the target organization and to gain more results from PMOs, a more fact-based and unified approach to PMO implementation would be beneficial.

The results of the interview study are presented in three parts: the first subchapter presents the identified project support functions; the second subchapter presents the identified roles of PMOs in the organization and the third subchapter presents the areas of development found from the interviews. Based on the literature review and the results presented in the three subchapters the objective is to answer to the fourth research question: what kind of support functions does an IT outsourcing and consulting company require as a support for its project delivery and how those functions should be organized.

4.1 The identified project support functions

The project support functions found from the interviews are quite common and in line with those examined in the literature review. It is not far-fetched to say that IT infrastructure outsourcing projects do not carry such unique characteristics that they would necessarily require any specialized project support functions. As other projects, infrastructure outsourcing projects also require HR, legal, quality management, risk management, procurement, change management, market research and financial management. These activities are either carried out in project support functions, the PMO or in some cases, by the project itself. It is important to understand that a project support function can be produced by the project itself: in such a case the support

function is done by the project to enable the execution of the value-adding project tasks and completing the deliverables.

An easy example of this is a construction project, which installs the scaffoldings required for painting itself – an IT infrastructure outsourcing project can in the same way take the responsibility of providing the support for its own needs. However, it is important to realize that this causes additional project overhead and could be done more effectively in a dedicated support function or PMO.

Depending on the outsourcing relationship, the project support function delivery does vary a bit. In some relationships a PMO executes a broader range of activities, in some it does only a selection of the activities and the rest are offered by the line organization. The defining aspect of the support functions is that it is more effective and efficient to offer them from a dedicated source. This can be either due to cost benefits saved from centralization (having more in-depth knowledge of the underlying processes makes the support function more capable of execution, e.g. a first-line support IT service desk) or due to the specialized nature of the support function's branch (such as legal services) which are quite commonly centralized in all organizations.

The project support functions brought up in the interviews were

- financial
- legal
- staffing
- quality assurance
- procurement
- change management
- risk management
- tools and procedures ownership and development

It is noteworthy that although the interviewees had experience of the same support functions aiding project execution, the way that these have been organized through-out the projects differs. What this tells us is quite intuitive when thinking in the project and

consulting context: the way that projects are carried out and how they are supported depends not only on the scope, scale or nature of the project, it is also inherently affected by the relationship, or the customer who is seeking to outsource: with different customers projects are executed with different approach, and due to this the way that the project support functions are organized will also have some inherent variance.

4.2 Identified roles of PMOs

The PMOs that the interviewees have interacted with are setup differently and have differing roles. The usual setup is one where the PMO keeps track of some financial aspects and aids in project reporting, i.e. makes sure that project reporting follows the agreed interval and format. The PMOs do not have a large authority and do not execute project activities directly or carry the authority and responsibility for project delivery.

For comparison, it is good to examine the 5 PMO activity areas presented in the literature review (Hobbs & Aubry 2007):

1. project controlling and monitoring
2. development of project management practices
3. coordination of simultaneously run projects
4. strategic planning and advisory services for strategic leadership
5. benchmarking, learning and development

Based on the interviews the current state of PMO activities is focused mainly on project controlling and monitoring and the coordination of simultaneously run projects. The PMOs currently do staffing and resource management and assist in project portfolio management and project controlling. In addition to this, some PMOs also participate in project tracking to make sure that the projects are on target with time and budget. The main role of the PMOs is to facilitate project delivery. Development of practices, quality assurance, learning and development or quality assurance is not a major part of PMO activity. The PMOs have brought with them the standardization of certain project procedures, but large-scale standardization is not yet driven or implemented. Project and portfolio managers and line organization management are responsible for coordination,

planning and learning and development. The PMOs do not act in the strategic dimension at the moment and are mainly service organizations for projects. The PMO roles are that of the facilitator, supporter and coordinator.

The benefits of a more coherent and extensive PMO approach that were identified were in line with those of literature review. The interviewees saw that a PMO, when properly implemented, can help minimize administrative overhead and wasteful, non-value-adding project activities by acting as a coordinator in a multi-project setting. It can also act as a conflict-resolver between projects and streamline the project delivery, which in turn benefits project portfolio performance. The position of the PMO allows it to act as a risk-mitigator, since the visibility to the project portfolio gives it a complete understanding on the needs and requirements for the different projects to succeed. When given sufficient responsibility on project execution, the PMO has also the option to enforce adherence to standardized practices – one example being the offering of quality assurance and reporting services. In the first case the PMO expects deliverables from the projects in a standardized format, which allows it to see whether the project has followed the practices and quality systems that are in place. The second possibility are reporting services, where the weekly or monthly project reporting is done according to pre-defined format, based on project actuals and forecasts. Having a standardized project reporting offering the PMO encourages the projects to track and forecast project execution in the dimensions that are crucial for project execution. This, in turn, gives the PMO a possibility to guide project execution to the correct direction and also allows it to act as a whistle-blower in case of a project that is no longer in control by its project manager. It is important to understand that by having a small service offering, or a PMO-in-name-only not many benefits are gained. To get the most out of a PMO, it should have the responsibility and accountability on project management and execution, not only do basic project administrative tasks.

4.3 Areas of development

The identified main areas of development refer to both the scope of support functions offered by the PMOs to the way that the functions are offered to the projects and the way that the PMO acts as a knowledge manager. In the current situation it is not always

clear to project managers what the PMO offers and what functions are provided from elsewhere. Also, the lack of single-point-of-contact in project-related matters such as resourcing and procurement can cause unnecessary work and therefore administrative overhead for the projects. The identified areas of development have been listed below:

- variance in PMO support offering to projects and lack of standardization
- knowledge management and lessons learned distribution
- scope of project support
- scope of PMO execution
- PMO participation to quality management
- PMO participation to project competence and project tools development
- PMO tasks at entry/basic level
- PMO capabilities and development
- lack of a single-point-of-contact or hub between projects and line organization

Based on the interviews, the PMO should have a more active role in project execution, offer a wider range of project support and operate at a higher level than in the current situation where PMO tasks are at a basic level. The quality management aspects, internal development and the development of PMO capabilities are also seen as areas needing further development, as well as the experience level of the PMOs. In addition to this, the lack of having a PMO which acts as a single-point-of-contact between all active projects and also between the project organization and the line organization was seen as a stream needing more development. However the arguably most important development need is in knowledge management and lessons learned distribution processes, which according to the interviews are currently mostly neglected. When one thinks of the three distinct characteristics of projects – uniqueness, complexity and non-continuity – the importance of capturing, reviewing and distributing lessons learned from previous projects is extremely important.

4.4 A proposed PMO setup for IT infrastructure outsourcing organization

Based on the findings from the literature review on PMO, the nature of IT infrastructure outsourcing and the interviews conducted within the organization, one can deduce some characteristics, way of organizing and areas of activity that a PMO should possess to aid infrastructure projects reach their goals within the dimensions of time, budget and scope and complete the agreed deliverables.

Based on the study, the areas of activity that the PMO should carry out in an infrastructure outsourcing context follow closely those presented in the literature review, with one omission: strategic leadership and advisory for higher management is not an activity that the PMO should first and foremost focus on. By focusing the activity to more hands-on execution, an organization gets more support and more tangible results from having a PMO. Therefore, the areas of activity for an IT infrastructure outsourcing PMO should be:

1. project controlling and monitoring
2. development of project management practices
3. coordination of simultaneously run projects
4. benchmarking, learning and development

By focusing on these activities the PMO's set of activities is more applicable to different customer relationships, since the omission of the strategic dimension means that the PMO does not necessarily need business-specific expertise. The focus is on core PMO activities, with the addition of preparing benchmarks and making sure that the project organization and the PMO perform continuous development of competence, tools and procedures.

The tasks that the PMO should execute within these areas are:

- resourcing of projects
- monitoring projects' schedule, financials and scope
- project reporting

- inter-project facilitation
- substituting project managers
- executing project tasks if required
- competence development for staff
- process development
- capturing, recording and distributing lessons learned
- developing project management methodology and project management tools
- quality assurance and quality management
- project portfolio risk and issue management

This set of tasks enables the PMO to fulfill its role as a project facilitator, quality auditor and also in the dimension of portfolio management. The combination aids projects with their administrative overhead, allows the PMO to have visibility throughout the project delivery landscape and also act as a mediator within the project portfolios. The tasks and their corresponding activity area are mapped below in Figure 6.

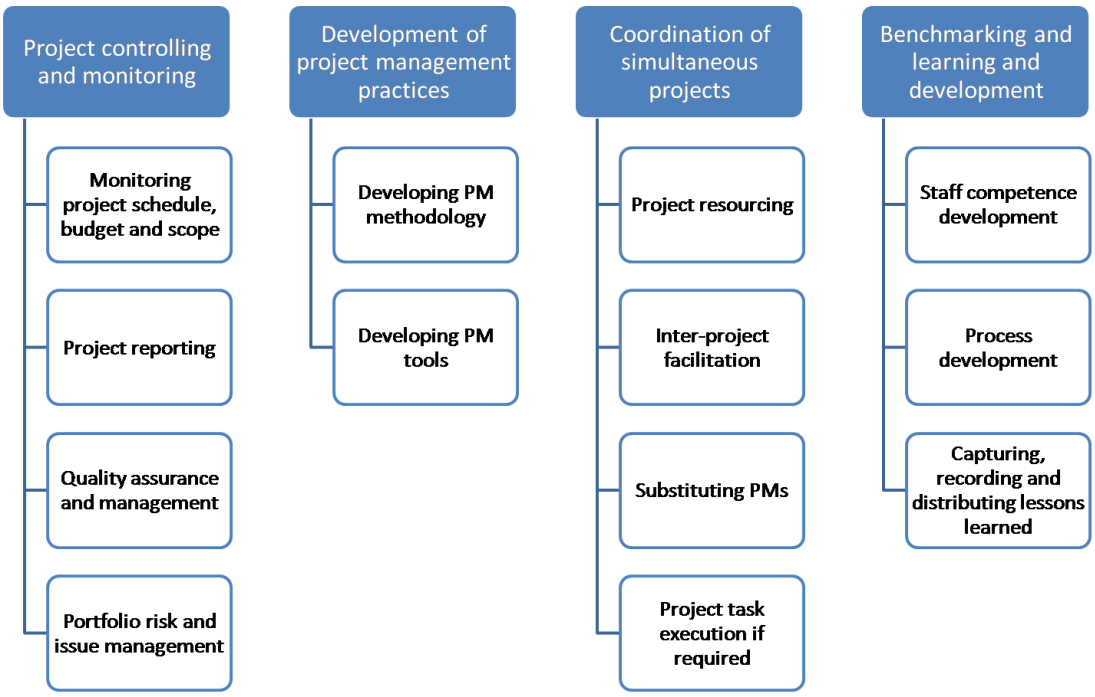

Figure 6. PMO activity areas and tasks

By carrying out these tasks and activities, the PMO is scalable to different customer requirements and can be tailored in size to suit outsourcing project relationships of different durations and volumes. It is also important to understand, that regardless of its size these tasks give the PMO a role which enables it to have an authority within the project organization that allows it to carry a part of the responsibility in project delivery. In this sense, a heavy-weight PMO is not required to have a mature PMO process, nor is it required to fulfill all the levels in different PMO maturity models to have a PMO that is both scalable and fulfilling the needs of different projects. The most important thing is to have a standardized basis offering regardless of the circumstances – by having standardized processes which can be treated as modules, the organization has also room to tailor the PMO into specific needs.

4.4.1 PMO structure

The structure of the PMO is not necessarily as easy to construct as one would imagine. Since the ideal PMO in this case is to a standardized and scalable solution, the PMO needs a suitable staffing to work in different settings and also a well defined profile for each of its roles, so that they can be filled if the PMO needs to be expanded. To fulfill these requirements, the PMO needs a strong leadership role and a balanced team of seasoned PM experts and more junior staff.

The PMO should have people working at least in the following capacities. It should be noted that one person can act in more than one role:

- a knowledge manager, whose responsibility is to capture and distribute lessons learned and maintain knowledge repositories
- a process manager who develops and maintains project management tools and processes
- project management experts who are responsible for project tracking for budget, scope and schedule, coordination of parallel projects and the staffing of projects
- technically experienced people who can provide consultation and advisory services

- junior consultants who can run basic administrative tasks and report based on readily-produced figures
- an experienced project manager as a team leader, who can assign PMO personnel to different tasks and act as the final authority e.g. in project conflict situations

As stated, the expertise level of the PMO staff should be of different levels. In addition to having a varied set of tasks, which demand different levels of competence, the PMO can be utilized as a project manager incubator of sorts, by having new project management recruits start in a PMO role at first, and once they are well-versed in the tools, processes, methodology and business, continue either on the PMO track or move into full-time project management. In Figure 7 below the roles are mapped into experience levels in both technical and project management dimensions:

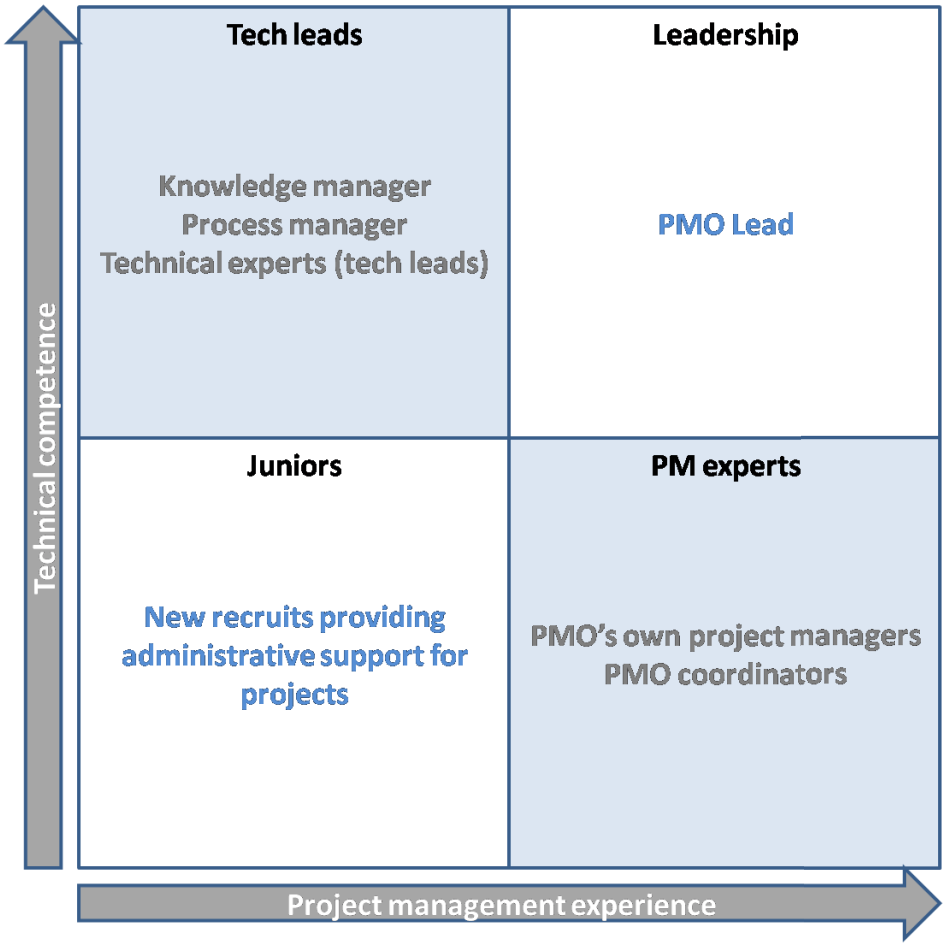

Figure 7. Experience levels mapping to PMO organization

Choosing this kind of a PMO setup does place on constraint on project business: it leaves the marketing, pre-sales and sales phases virtually without PMO support, since the PMO does not participate in the actions taken in the strategic dimension. Stakeholder and market analyses have to be performed elsewhere, and the PMO provides indirect support for the sales function, e.g. by providing information on the resourcing situation and previous experiences from projects. The phases of a project and the role of the PMO in different project phases have been presented below in Figure 8.

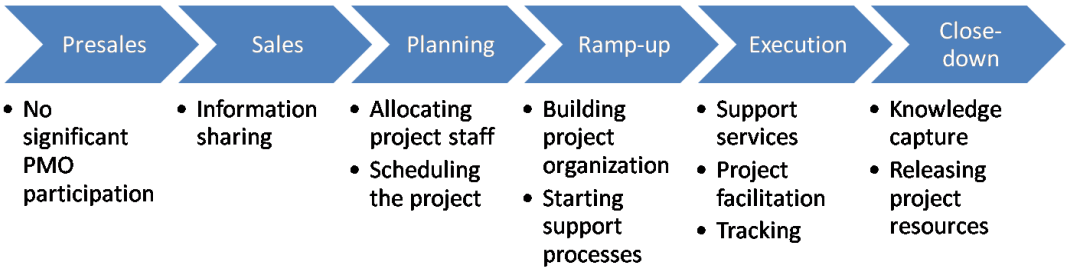

Figure 8. PMO participation to different project phases

It is understandable that in the Nordic area the strategic participation and sales are left to dedicated personnel. Since the business is relatively small and the types of contracts can vary, the use of a separate sales function makes sense. The same applies to the execution of strategic leadership: since businesses are usually on the smaller side, it is useful to have the same group as the leaders for both service and project organizations on a strategic level.

4.4.2 Implementation

To implement a PMO as described in this chapter an IT infrastructure organization has to assess its needs and position further and take some decisive steps further. As the PMO model presented above is a generalization, any organization that wishes to investigate and possibly implement it should figure out whether such a PMO is fit-for-purpose and fit-for-use.

The first required step is a detailed analysis of status quo encompassing all customer relationships and analyzes the common factors between these relationships. The building block of a unified way of work and PMO is to find out what are the components in outsourcing delivery that can and should be standardized.

After the first step, the organization should build a business case with the support and approval of top management for the PMO by analyzing the administrative and non-value adding overhead that projects usually carry and figure out what are the activities that should be still executed by the projects, what are the activities that should be executed by the PMO and finally, what are the activities that should be eliminated as unnecessary non-value adding activity, i.e. waste.

After the project value chain has been studied and the decision to implement the PMO has been done, the first step is to decide on the PMO lead. Preferably this person is someone who has participated in the feasibility studies leading to the implementation decision. The PMO lead, with some support, should be the person who drives the PMO implementation and recruits the staff, either internally or externally, who occupy the PMO. A recommended way to approach the implementation is to start with a relatively light-weight PMO structure and pilot its use in some customer relationships before a wider roll-out. The preferred end state should, however, be a standardized PMO that participates to the project delivery of all customers in a structured, standardized manner.

The PMO performance should, after implementation, be measured at a regular interval and should the PMO fail to meet its goals, it should either be restructured or dissolved. The key factors to bear in mind for a successful PMO implementation are a fact-based approach, executive level support and starting small and demonstrating benefits. By using these factors as the basic elements and as the underlying PMO philosophy, the most common pitfalls of PMO implementation can be avoided.

5 DISCUSSION

"*We favor the simple expression of the complex thought.*"

- Mark Rothko

The aim of this study was to compose a way of organizing the PMO in an IT infrastructure outsourcing company. The findings follow closely those of existing PMO literature, of which one can deduce that the most visible issues or development areas in project business are quite universal. If one ponders on the definition of a project presented in the introduction - a project is a unique temporally and financially constrained set of activities that aims to fulfill pre-defined deliverables - this might seem paradoxical at first, but is after all quite intuitive: the intrinsic uncertainty of projects themselves causes the organizations undertaking a project to battle with the same issues. More often than not the troubles are related to overrunning the scope, schedule or budget, due to the inherent uncertainty and uniqueness of a project. By definition a project is always something that has not been done before, so there are always some unknowns that remain, even if the planning is carried out diligently.

5.1 Support functions and the organization of the PMO

What, then, can the reader learn from this study? At a basic level the most important lesson is that an organization participating in project business can always develop its ways of working further. By making a list, the results can be summarized by the following statements:

- An organization can utilize a PMO to lower project overhead
- Project monitoring and controlling, parallel project coordination, project management methodology development and knowledge management are among the most sought-after functions in a PMO for the target organization
- Acting on the strategic level is not a priority function for a PMO
- Having a PMO act in the strategic dimension is not necessary, but does result to the pre-sales and sales phases having little PMO support.

- Implementation should be based on a feasible business case and facts-based approach
- Project managers wish that project support functions were offered in a standardized manner
- PMOs relying on the same formal internal processes can have a different degree of authority

Are these results surprising? Given the scope of the study, no. However, if the same study were conducted within a different organization, the results might differ. Even though the project business has universal tenets, an organization has its own culture which effects all operations and ways of thinking. In an organization where formalization and quality management is given less focus, the PMO might be seen as a futile effort. Vice versa, in an organization with stricter quality management practices, the current authority of the PMO could be seen as laughably insufficient.

5.1.1 Tasks of the PMO

A PMO has always some tasks that it is accountable for executing. If this is not the case, one is not truly talking about an organizational entity that carries any significance related to the host organization's project business.

Let's revisit the areas of activity that PMOs often carry out. Hobbs and Aubry (2007) list controlling and monitoring, project management practice development, inter-project coordination, strategic planning and advisory services, and benchmarking and organizatory development as the most often found areas of PMO activity. Santos do Valle et al. see resourcing, knowledge management, portfolio management and inter-project coordination, conflict resolution, and standardization of work as the most important PMO tasks.

If we compare these earlier findings to the results of the interviews carried out during this study, we see that the tasks carried out by the PMO in the target organization are of a smaller scale and scope. The PMOs that the interviewees work with provide support in financial tracking and monitoring, coordinate parallel projects, and contribute to project reporting at a basic level. The authority of the PMO to execute project activities

independently is limited and the PMOs carry little if any responsibility of the overall project delivery. Participation to internal development, quality assurance or project management methodology development is not in the scope of these PMOs. Standardization is a part of basic project management methodology within the organization, but PMO is not an enforcing or driving agent in the standardization of work.

5.1.2 Factors in PMO organization

The structure of the PMO and the authority that it carries is linked with the host organization of the PMO (Hobbs & Aubry 2007; Singh et al. 2009). In the case of our target organization each of the different interviewees worked within a different project organization, which in turn all had a slightly different PMO setup. The one common factor that the PMOs had was the relative inexperience of their staff: the PMO staff could in all cases be deemed young in their experience and lengths of their careers in consulting and project business.

If one thinks of the categorizations of PMOs, the result of this study is that the PMO setup most utilized in the organizations is a light-weight, centralized PMO (Santos do Valle et al. 2008, Santosus 2003). Light-weight due to the amount of staff and the scope and scale of PMO activity and centralized due to an appointed, dedicated PMO servicing the project organization.

To understand why the PMOs in the target organization seem to carry these traits, it is useful to revisit the nature of IT consulting and outsourcing in the Nordics: the projects carried out are usually relatively small and the competitiveness of the market means that investing heavily in a PMO can be seen as a risky endeavor, since a competitor can capture the business which would mean on a short interval that the return on investment to developing ways of working within an engagement would be low. Therefore the PMOs are usually light in terms of organizatory weight. IT is also quite popular as among people seeking entry-level positions, and appointing new employees to a PMO is seen as a relatively easy way of onboarding new recruits. Therefore the PMO staff is most of the time quite young.

5.1.3 What kind of support functions do project require

One important finding of the study is that even though in the project organizations the PMOs participated with a varying degree of responsibility and authority, the support functions that the project organizations utilized were virtually universal. All projects require support in financial management, legal matters, staffing, quality assurance, procurement, change and risk management, and procedures and tools development.

If compared against the support that in previous studies have been as PMO tasks, for example the 5 activity areas of PMOs identified by Hobbs and Aubry (2007), it seems that even though the set of support functions grouped under the PMO can vary from organization to organization, the support functions that projects actually utilize are more or less the same, depending to some degree, of course, on the scale of the project. What this implies is that despite the uniqueness of projects, their building blocks and therefore the support functions that they require are quite similar. What this means for an organization seeking to improve its project execution is that the most effective step is to make sure that the required support functions exist and are offered to the project organizations. Whether the support functions are grouped within a PMO or not seems to be a secondary priority: their overall offering to projects is what matters.

5.2 Implications

The most important implication of this study is the conclusion that PMO maturity models and archetypes do not necessarily cause a higher degree of authority for PMO. An old saying states that you what you measure, but drawing a causality between highly-refined processes and degree of organizational authority, or between the PMO archetype and the process maturity of the PMO, is a hasty conclusion. A correlation has been identified in previous studies, but the mentioned characteristics can coexist without a causal link. A PMO can quite simply hold a low influence even if it is highly mature, or it can have a misplaced high influence in the project organization with a low level of process maturity. The latter setup is a recipe for causing project overhead and can occur when the PMO is not implemented with a rationalized, measured approach.

For the organization that was the subject of this study these results should encourage an evaluation on the way that project support functions are currently organized. If a need for PMO restructuring is identified, then an implementation process should be started, with the steps outlined in Ch. 4:

- Perform a value chain analysis for current project support structure and project execution. Decide the activities that are transferred to the PMO scope.
- Appoint a PMO lead.
- Recruit PMO staff and formalize PMO support processes.
- Pilot the PMO in a limited scope
- Roll-out the now-standardized PMO to all projects if the pilot proved successful
- Evaluate PMO performance continuously

This experiment should be doable with relatively light investments, as only human capital is required in the starting phase. After a successful roll-out the PMO can be scaled according to the demand quite easily.

5.2.1 Identified research subjects

The research subjects that could be further examined in succeeding studies delve mostly in the consulting context. Based on this study, possible avenues for further studies in IT outsourcing context are the applicability of current maturity models to PMOs setup in outsourcing and consulting relationships, the optimization of the PMO structure in a multi-client atmosphere, the effect of PM methodology standardization in consulting context and finally, the possibility to align project deliveries in a multi-client atmosphere to a single standardized delivery model.

From the options presented above, the maturity models and project standardization are quite well researched. The research for the optimization of PMO structure could provide a remarkable opportunity to better understand project delivery in a consulting context. Historically PMOs tend to go through many stages of development, with different combinations tried out to find an optimal structure (Aubry et al. 2008).

To execute such a study with some originality and sufficient salience, the first step would be to identify the research subjects from a pool of IT consulting companies working e.g. in the Nordics and screen them in such a way that the set of research subject would represent the consulting market demographic evenly. One way to study PMO optimization would be to gather project performance and PMO data from the subject companies and based on that data create an agent-base model where the effect of different PMO setups could be examined via simulation. The approach should be quantitative and the main method of execution would be simulation, which would somewhat differentiate the study from the bread-and-butter research, where in-depth quantitative studies are relatively scarce. Although PMO literature quite often focuses on the quantifiable benefits of a PMO in the financial sense (e.g. return-on-investment), the approach is usually based on the figures that the organizations report and left at that (Aubry et al. 2007). The interesting aspects of a simulation study would are whether the project-business can be simulated to a sufficient degree and if its results can be utilized in deciding actual PMO configurations.

5.3 Reflection

The nature of the study is entirely qualitative. Since performing a study based on quantitative analysis is difficult in a single-organization setting due to insufficient data points, the choice for qualitative method was quite natural However, choosing a qualitative method carries some inherent problems. It is almost impossible to verify and validate the results of this study, or more accurately, the degree to which this study presents an accurate picture of the *status quo* and the degree to which these results can be scaled-out to the whole field of project management as a science. Even with these identified weak links, the methodology chosen for this study suits well for this kind of research, but as stated it does carry some problems that have been quite difficult to avoid given the scope and scale of the study.

The study is based on interviewing the peers of the author, and the results presented in this study are based on the results of said interviews. In this kind of an approach we can easily point out four distinct biases: the bias of the author, the bias of the interviewees,

the bias caused by the context of the study (the target organization) and the bias of the directors and stakeholders of this study.

The first one causes the study to inherently veer away from neutral. To borrow Kantian concepts, we have *das Ding an sich*, or the accurate, objective truth, and *das Ding für uns,* how the author has perceived the representation of this truth. Critical approach was taken throughout the study to avoid the author's obvious biases, but to eliminate all the sources of the bias of the author this work should subjected to peer-review.

The second bias is the bias that the interviewees hold and have quite likely not reflected upon to filter their responses to the study. Based on the individual interviewee's own experiences, her responses might represent the situation of PMO implementation and maturity in the target organization at a higher or lower level than would in reality be merited. It is also quite likely a possibility that a single interviewee reflects on the whole project management and PMO experience of her career while giving a response, while the subject should only be that of the target organizations.

The third bias is that of the context of the study, or the bias of the target organization. Since the business of IT outsourcing in the Nordic countries is comparatively small in scale, the ways of executing a project have evolved to suit the market. If a similar study was carried out in a larger market, e.g. the United States or one of the major European economies, the results might be somewhat different even though the subject of the study would be identical. This follows closely from the fact that the culture people have grown up in and identify with also encompasses the way people work. Traditions and local practices are tightly-knit with the way that projects are executed (de Bony 2009).

The last identified bias - that of the stakeholders of this study - is quite similar to the first two biases. The stakeholders have their own experiences from both project management and scientific research, which might cause them to subconsciously direct the study, even if by a little bit, to a direction that they prefer. Since the stakeholders are quite experienced in both areas, we can assume that the bias they possibly is minuscule and does not have a significant effect on the outcome of this study.

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APPENDIX

Interview questionnaire

Project support functions and the way of their organization in infra projects
Background
How long have you been working in ICT infrastructure project management? If you have previously worked in project management or related discipline in other branches of business, please indicate both.
Support functions
1. What kind of support functions can you identify/have utilized in the execution of infrastructure projects? (A support function can be either included in PMO or be another organizatory support function. Includes the likes of legal, staffing, HR, administrative etc. functions)
2. What kind of responsibities does the PMO have in the infrastructure projects you are/have been involved in?
3. In your opinion, how does the PMO or other support functions help in project management?
4. What kind of benefits have you seen/do you see in the utilization of a PMO in infrastructure projects?

Current way of organization

1. Below are five different activities that are usually seen as ones that a PMO should drive. If not the PMO, which support functions or who are responsible for the following activities in projects you are/have been involved in?

1. Project tracking and management
2. Development of project management competence and ways of working
3. Coordination of parallel projects
4. Strategic management and leadership

Organizational learning/Knowledge management

2. In your opinion, are the support functions required by project execution offered to the project managers in a clear way? If not, how would you develop the offering?

3. How are lessons learned from previous projects captured? Are they distributed throughout the project teams and if so, how?

4. Which functions do you see as crucial for facilitating project management and execution?

5. Which support functions needed in project execution are currently offered from the PMO and which are delivered otherwise, e.g. from the line organization?

Areas of development

1. What kind of areas for development do you see in the current PMO model?

2. What kind of positive aspects do you see in the current PMO model?

3. How would you develop the way that support functions are offered to projects?

4. Which ones of the support functions that you have mentioned in your answers would you like to see grouped under the PMO and which ones would you keep as separate functions?

Organization of the PMO
1. Please describe the way that the PMO you are currently working with/work in is organized.
2. Please describe the headcount and the level of both project management and infrastructure expertise of the PMO.
3. In your own words, how would you organize the PMO if you had an option to build a PMO of your liking? (You can list out the tasks and roles the PMO would take, its size, experience level, etc.)