ADDIS ABABA UNIVERSITY COLLEGE OF BUSINESS AND ECONOMICS SCHOOL OF COMMERCE

GRADUATE PROGRAM - MA IN PROJECT MANAGEMENT

Assessment of Project Management Office's (PMO) Maturity: The Case of Ethiopian Airlines Group's Information Technology PMO

By: Abrham Kidane

A Research Submitted to Addis Ababa University School Of Commerce For a Project Work, In Partial Fulfillment Of The Requirements For The Award Of Master Of Arts Degree In Project Management

Advisor: Adane A. (Phd)

June 2022

Addis Ababa, Ethiopia

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Declaration

I, Abrham Kidane, declare that this thesis entitled "Assessment of Project Management Office's (PMO) Maturity: The Case of Ethiopian Airlines Group's Information Technology PMO" is carried out by me with the close guidance and support of my advisor Dr. Adane Atara. I have followed all ethical standards while conducting the research and have duly and properly acknowledged all references and sources. The study is original and has not been used as a requirement for partial fulfillment for any sort of educational qualification at this university or any other.

Abrham Kidane _____ _____
Researcher Signature Date

Certification

This is to certify that this study paper titled "Assessment of Project Management Office's (PMO) Maturity: The Case of Ethiopian Airlines Group's Information Technology PMO" conducted by Abrham Kidane for the partial fulfillment of Master of Arts Degree in Project Management from Addis Ababa University School of Commerce is an original work and fit for partial fulfillment for Master of Arts Degree in Project Management.

Dr. Adane Atara	_____	_____
Research Advisor	Signature	Date

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BY

Abrham Kidane Gebrehiwot (GSD/3051/11)

Approval of Advisor and Examiners:

Name	**Title**	**Signature**	**Date**
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_____	Examiner	_____	_____
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Acronyms/abbreviations

ETAG	Ethiopian Airlines Group
IT	Information Technology
CMM	Capability Maturity Model
CMMI	Capability Maturity Model Integrated
OPM3	Organizational Project Management Maturity Model
P3M3	Project, Program, Portfolio Management Maturity Model
PM	Project Management
PM2	Project Management Process Maturity
PMBOK	Project Management Body of Knowledge
PMI	Project Management Institute
PMM	Project Management Maturity
PMMM(s)	Project Management Maturity Model(s)
PMO	Program/Project Management Office
PRINCE2	Project In a Controlled Environment
PSO	Project Support Office
SEI	Software Engineering Institute

Abstract

The purpose of this study is to find out the list of functions the PMO delivers and the level of maturity of the PMO that would ultimately help the PMO to see if its functions and structural positioning are in alignment with the PMO's mission. Level of maturity is assessed in such a way that shows the level of sophistication of delivering the 27 PMO functions. The data is collected using a questionnaire developed by Pinto, A., Cota, M., & Levin, G. (2010, July) on their study under the title "The PMO maturity cube, a project management office maturity model". Interview was also conducted with key informants to find out the PMO's mission, functions and structure. The objectives of the study and the availability of relevant information for the study dictate the use of quantitative research approach with qualitative interview.

Due to the precise nature of the research topic, the population sample consists of Ethiopian Airlines IT division staffs under Application Design & Development department and the executive level individuals who are believed to be directly involved or affected by the PMO's activities. Hence for this study all five executive level individuals, six Team Leaders, including the Team Leader for the PMO, and seven project managers under the PMO are selected through purposive sampling.

Based on the data gathered and analyzed, it can be concluded that all functions are performed in the PMO. It is also evident from the answers to the interview questions and the company documents reviewed that the PMO is expected to provide all functional approaches, i.e., strategic, tactical, and operational. The overall maturity score of the PMO is 49%. This implies that the PMO's overall maturity is "Intermediate".

For the Ethiopian Airlines Group's IT division to be successful in its external engagement it needs to evaluate the current maturity level of its PMO. Assessing PMO will help the organization identify any gaps the PMO might have in its project support functions and services. It also helps to identify if there are adequate functions which are aligned with the new direction of IT division. PMO must be structured in a way that would enable it to provide all the support its clients need and enable the PMO achieve its mission.

KEY WORDS: Project Management Office; PMO Models; PMO Functions, PMO Maturity.

Chapter One: Introduction

1.1. Background of the Study

"Project management is playing a vital role in helping to evolve business landscapes. The purpose of project management is to bring about structure in the execution of a project. A project is used to create a unique service, product or result" (Snyder, 2014). "The project as a whole has its own objectives, measurable criteria, certain quality expectation and a defined cost and time. Due to the limited timeframe for a project, the scope and resources available are also limited. The time required to complete a project also becomes important. The more time the project takes to complete, the more complex it becomes, raising the risk of failure" (Snyder, 2014).

Many organizations apply ad-hoc processes to implement projects instead of adopting formal project management methodology. The result is consistent failure to meet project objectives. Establishing an effective and efficient practice of project management continues to be a challenge for organizations. Without a good definition of the processes, it will be difficult or even impossible to achieve the expected project goals. Seeking to solve this problem, in recent years new structures have emerged in some organizations, such as the Project Management Office in order to improve project management and avoid wasting resources. "A project management office (PMO) is an organizational structure that standardizes the project-related governance processes and facilitates the sharing of resources, methodologies, tools, and techniques. The responsibilities of a PMO can range from providing project management support functions to the direct management of one or more projects." (PMI, 2017, p.48).

PMO is a structure formed by the organization in order to promote and improve project management through the adoption of appropriate methodologies to minimize risks, conflicts and achieve satisfactory levels of efficiency and effectiveness in project management. This structure has been associated with obtaining better success rates in project management, understanding success as delivering projects on time, scope and budget (PMI, 2013).

However, the mere existence of or adoption of a PMO does not guarantee a successful result in project execution. PMO's performance depends on its level of maturity on delivering the functions it is supposed to provide. Hence this study attempted to assess the maturity of a PMO at Ethiopian Airlines Group's IT division.

1.2. Background of the company

Ethiopian Airlines Group (ETAG) has rolled out back in the year 2009 a vision called vision 2025. Information Technology (IT) was one of the four pillars of the company's strategy. Accordingly this resulted in IT division being engaged in more and more IT projects, like in house system development; buying/implementing new commercial products that supports the strategic direction of the company in the areas of IT infrastructure;

automation and digitization. The increasing number of projects and their complexity required an effective and efficient practice of project management to achieve the expected project goals. Accordingly IT division introduced Project Management Office (PMO), in order to improve project management practices and avoid wasting resources.

The IT PMO has been and still is an instrumental unit that has been engaged in delivering internal projects. Since recently (around four years), IT division started stretching its reach to external customer projects in an attempt to assist and consult its strategic partners, mostly partner airlines and government institutions & agencies, on routine system and application development areas. But during 2020 when the pandemic COVID-19 devastated the travel industry, Ethiopian Airlines Group (ETAG) had to make a strategic maneuver to a survival mode to withstand the operational impact of the pandemic. In addition to ETAG's famous and successful strategic maneuver to switch from the declining passenger operation to the expansion of its cargo business, ETAG's IT division also used this opportunity to position itself to become a strategic business unit that is capable of generating revenue. Consequently through the PMO Ethiopian Airlines IT division started working on external IT projects on a regular basis. And now ET IT is on the process of revising its strategy that will help it become a successful player in the IT industry by 2035.

However in order to become a successful player in the newly found external business endeavor/revenue stream ETAG's IT division has to evaluate how mature are the delivery of PMO functions to the PMO's clients. Especially the IT PMO unit, with the increasing number of projects and the increasing complexity of external projects, has to re-evaluate its readiness to tackle the new challenge.

1.3. Statement of the Problem

Since the end of the 1990s, there has been a major movement worldwide toward the creation of PMOs (project management offices) and this has grown in intensity during the present decade (Dai & Wells, 2004, p. 524; Hobbs & Aubry, 2007, p.74). Despite the common perception that a large number of the major companies in the market have, at least one PMO in their organizational structure, Hurt and Thomas (2009, p. 55) indicated "the sustainability of PMOs is a tenuous issue."

Recent qualitative studies (Aubry, Hobbs, & Thuillier, 2008, p. 43) indicated that there is a degree of instability in the historical analysis of PMOs. This is a complex phenomenon and one that demands tools for evaluating the performance and constant reinvention of PMOs. Therefore, a maturity model, as applied to PMOs was developed and tested with the objective of helping to take an academic discussion to another level of complexity and making

it possible for PMOs to carry out their own self-assessment. On developing the model, it was concluded that the better the PMO delivers its services, and only the ones related to the needed functions, the more the PMO is perceived delivering value to its organization. The creation of these PMOs has been justified over the years by different needs, but most of them have always shared a larger common goal: to obtain better results in the projects developed by the organization. (Pinto et al, 2010)

For the ETAG's IT division to be successful and obtain a better result in its external engagement it needs to assess the current maturity level of its PMO. Assessing PMO will help the organization identify any gaps the PMO might have in its project support functions and services. It also helps to identify if there are adequate functions which are aligned with the new direction of IT division. PMO must be structured in a way that would enable it to provide all the support its clients need and enable the PMO achieve its mission.

Based on the preliminary assessment made through enquiries made to the PMO head and through reviewing PMO job descriptions, procedures and performance reports, the researcher was unable to find out any activities undertaken to evaluate the current maturity of the PMO. And there is also no procedure or policies found that requires the PMO to be assessed with regards to the alignments of its functions with the PMO's mission or the level of maturity of the way the PMO functions are performed. Hence the purpose of this study is to find out the level of maturity of the PMO that would ultimately help the PMO to see if its functions and structural positioning are in alignment with the PMO's mission.

1.4. Research Question

To address the issues mentioned under the statement of the problem, this study tried to answer the following research questions.

1. What are the functions the PMO performs?
2. What is the level of maturity of providing the functions?

1.5. Research Objective

1.5.1. General Objective

The research intends to evaluate the level of sophistication in which the PMO deploys each function by providing insight into all the functions the PMO is supposed to provide. The general objective of the study is to find out the

level of maturity of the PMO that would ultimately help the PMO to see if its functions and its structural positioning are in alignment with the PMO's mission.

1.5.2. Specific Objective

The specific objectives of the study are:

1. List the functions that the PMO performs.
2. Assess the PMO's strategic functions maturity level.
3. Assess the PMO's tactical function maturity level.
4. Assess the PMO's operational function maturity level.
5. Assess the PMO's overall maturity level.

1.6. Significance of the Study

The research is believed to help understand and benchmark where the PMO stands currently in terms of the sophistication of delivering its main functions. This in turn helps to plan for improvement of the PMO performance to the level where it is capable of effectively supporting ETAG IT Division's new vision/mission/strategy. The result of the assessment will also help as an input in the formulation of the new strategic plan of IT to become a strategic business unit. The study also aims to motivate the company to adopt a maturity model for the continuous improvement of a PMO. The result of the study will ultimately help the PMO to see if its functions and structural positioning are in alignment with the PMO's mission.

In addition to being an academic exercise to fulfill the requirement of the program, this research is believed to produce results that can help set improvement target for the PMO's support capability which in turn helps to add value by increasing project success rates. Another important significance of the study is that; the result can be used as an input for other researchers for further study with additional variables to improve or add knowledge on similar topic.

1.7. Scope of the Study

1.7.1. Geographic Scope

This research used respondents from the headquarters IT Application Design and Delivery section of the IT division to which the PMO reports and Executives of the IT division where almost all of ET IT's projects are done. And due to the nature of the projects, almost all the IT management & project managers reside in the Head

Quarter IT division. Further, this study focuses only on IT division's PMO and IT projects excluding other divisions and business units PMOs and the projects they undertake.

1.7.2. Conceptual Scope

From research published by Hobbs and Aubry (2007), the 27 most common functions of PMOs were identified. These functions are accepted as representing the major services provided by PMOs. These identified functions are the major variables for the maturity model that is used in this research. These research attempts to assess the PMO's maturity through the 27 PMO functions mentioned. To accomplish this task a model named "The PMO Maturity Cube", developed by Pinto, A., Cota, M., & Levin, G. (2010), is adopted.

Compared to the other models, "The PMO Maturity Cube" model is selected because it takes in to consideration the scope and functional approach of PMOs while performing their duties. According to Pinto, A., Cota, M., & Levin, G. (2010), the ***scope*** dimension of a PMO comes with three mutually exclusive possibilities: the **project-program PMO**; the **departmental PMO**; and finally the **corporate or enterprise PMO**. The ***Approach*** dimension refers to the way the PMO provides each service which is categorized as providing the functions **strategically, tactically, or operationally**, or it may operate with all three simultaneously Pinto, A., Cota, M., & Levin, G. (2010).

As discussed above the PMO maturity Cube takes in to consideration almost all concepts of a PMO in terms of exhaustive list of functions and a widely accepted categorization of the functions in to three approaches and further considers the three levels of PMO scope based on their service reach within the company. Hence the current study adopted the PMO maturity Cube model to assess the IT PMO's maturity.

1.8. Limitation of the Study

The research assessed only IT's project management office (PMO) Maturity. As a result, the outcome of this study may not represent the overall organizational PMO maturity of ETAG. Also, geographical limitation is another limitation. The current study only considers projects undertaken at the head office particularly in IT. In addition, lack of relevant studies on the research topic on Ethiopian Airlines Group's PMO is another constraint.

1.9. Definition of Terms

Project: A temporary endeavor undertaken to create a unique product, service, or result.

Project Management: The application of knowledge, skills, tools, and techniques to project activities to meet the project requirements.

Project Management Office (PMO): A management structure that standardizes the project-related governance processes and facilitates the sharing of resources, methodologies, tools, and techniques.

Project Management Office (PMO) Maturity: The degree of sophistication with which the PMO provides each service for which it is responsible.

1.10. Organization of the study

The research is organized into five main chapters. Chapter one is a general introductory part of the study that contain background of the study and the company studied, statement of the problem, research questions, research objectives, significance of the study, limitation and scope of the study. Chapter two deals with literatures relevant to the study, it briefly informs readers of what is already known in this area of study and discusses concepts on Projects & Project management, PMO Types and Models, PMO Functions and Maturity, ETAG's IT PMO, reviews of emprical studies on the topic and the conceptual framework of the study. Chapter three discusses the methodology employed in the study, including, research design, research approach, sample size, data source and collection method, procedure of data collection and method of data analysis. Chapter four presents the analysis and interpretation of the collected data using the proposed instruments. Finally, Chapter five presents general conclusions and recommendations along with future research directions based on observations and results from the study.

Chapter Two: Review of Related Literatures

2.1. Project and Project Management

Various researchers and professional bodies around project management have defined project and project management on their publications. A project is more or less defined on almost all publications as a specific activity that consumes resources to produce service/product which has a beginning and an end. According to (PMI, 2008) "A project is a temporary endeavor to create a unique product or service in a given periods of time with a determined budget". PMBOK (PMI, 2013, p. 35) defined project success as follows: Since projects are temporary in nature, the success of the project should be measured in terms of completing the project within the constraints of scope, time, cost, quality, resources, and risk as approved between the project managers and senior management.

Without well-defined processes, it is very difficult or almost impossible to achieve project's objectives (Liberato, Varajão & Martins, 2015). To an organization, project failures often lead to financial loss, including significant losses in opportunity, competition, productivity, and employee morale (Williams, 2005). In order to avoid project failures, there must be ways to ensure projects achieve their intended goals. Managing project is one of the oldest and most respected accomplishments of mankind. This is highlighted by the achievement of the builders of pyramids, the architects of ancient cities, the mason and craftsmen of Great Wall of China and other wonders of the World (Peter 2001). The accomplishment of project through the application and integration of a process of initiation, planning, executing, monitoring, controlling and closing, is known as project management. Project management integrates these functions progressively through the project life cycle with the aim of satisfying the stakeholders and constituents according to the project's established requirements (Akewushola, Olateju, & Hammed, 2012).

Every project, has its own objectives, measurable criteria and a defined cost and time and quality requirement. Due to the limited timeframe for a project, the scope and resources available are also limited. The time required to complete a project also becomes important. The more time the project takes to complete, the more complex it becomes, raising the risk of failure (Snyder, 2014). Establishing PMO in the organization is one approach toward improving overall project management effectiveness that leads to successful project outcomes. (Kwak, & Dai, 2000).

2.2. Project Management Office (PMO)

The Project Management Institute (PMI) defined a PMO as "An organizational body or entity assigned various responsibilities related to the centralized and coordinated management of those projects under its domain. The responsibilities of the PMO can range from providing project management support functions to actually being responsible for the direct management of a project" (PMI, 2004). Another study defined PMO as "an organizational entity established to assist project managers, teams and various management levels on strategic matters and functional entities throughout the organization in implementing PM principles, practices, methodologies, tools and techniques" (Dai & Wells, 2004).

(Giraudo & Monaldi, 2015) linked the origins of the PMO to the implementation of the scientific management method, first introduced by Frederick Taylor about a century ago, and the increase in the number and complexity of projects managed by single organizations. Crawford & Cabanis-Brewin, (2010) stated that it was probably in 1930 that the expression project office was used by U.S. Air Corps to monitor aircraft development.

The structures underlying the traditional PMO can be dated back to the U.S. military's development of complex missile systems in the 1950s. During the 1980s, the project office concept was exported to construction, IT, and other sectors due to, among other things, to the boost of computer technology (Giraudo & Monaldi, 2015).

The need for a coordinated and standardized approach to manage projects within the organization has been a key factor for the diffusion of modern PMOs. As the PMO concept was introduced across the globe, different "flavors of PMO" started to proliferate. The use of a single, simple acronym for multiple purposes has become increasingly confusing and inappropriate given the breadth of contexts. It is therefore important to clarify what a PMO is, what it is supposed to do, and where it should be positioned within an organization.

There is a growing view from the point of organizational aspects in project management that using project office entity form is valuable to the organization (Lullen & Sylvia 1999). Recently, many organizations show interest in establishing Project Management Office (PMO) to support and manage information systems/information technology projects. According to Dietrich, P., Artto, K. A., & Kujala, J. (2010) research and studies have put enormous efforts into defining and clarifying the concept of PMO, however the fact that researchers have not been able to develop a unified and commonly accepted definition for a PMO reflects the complexity of the phenomenon that is studied.

The responsibilities of a PMO can range from providing project management support to being responsible for the direct management of one or more projects (PMI, 2013, p. 10). According to PMI, (2013) PMOs can be categorized based on their (a) influence and (b) position within the organization.

(a) Based on the influence and degree of control they have on projects within the organization, PMOs can be categorized as:

Supportive: Supportive PMOs provide a consultative role to projects by supplying templates, best practices, training, access to information and lessons learned from other projects. This type of PMO serves as a project repository. The degree of control provided by the PMO is low.

Controlling: Controlling PMOs provide support and require compliance through various means. Compliance may involve adopting project management frameworks or methodologies, using specific templates, forms, and tools, or conformance to governance frameworks. The degree of control provided by the PMO is moderate.

Directive: Directive PMOs take control of projects by directly managing them. Project managers are assigned by and report to the PMO. The degree of control provided by the PMO is high.

(b) Based on the position they have within the organization, PMOs can be categorized as:

Individual PMO or "Project Management Office": Individual PMOs typically provide functional support (e.g., infrastructure, document management, training, etc.) to a single complex project or program. They set basic standards and oversee planning and control activities for a single project.

Departmental PMO or "Business Unit PMO": Departmental PMOs provide support for multiple projects at a department or business unit level. Their primary challenge is to integrate projects of different sizes within a division (e.g., IT, Finance) from small, short term initiatives to multi-year programs with multiple resources and complex integration of technologies.

Corporate PMO or "Enterprise PMO": Corporate PMOs create standards, processes, and methodologies to improve project performance within an organization. They are typically responsible for allocating resources to different projects across the organization.

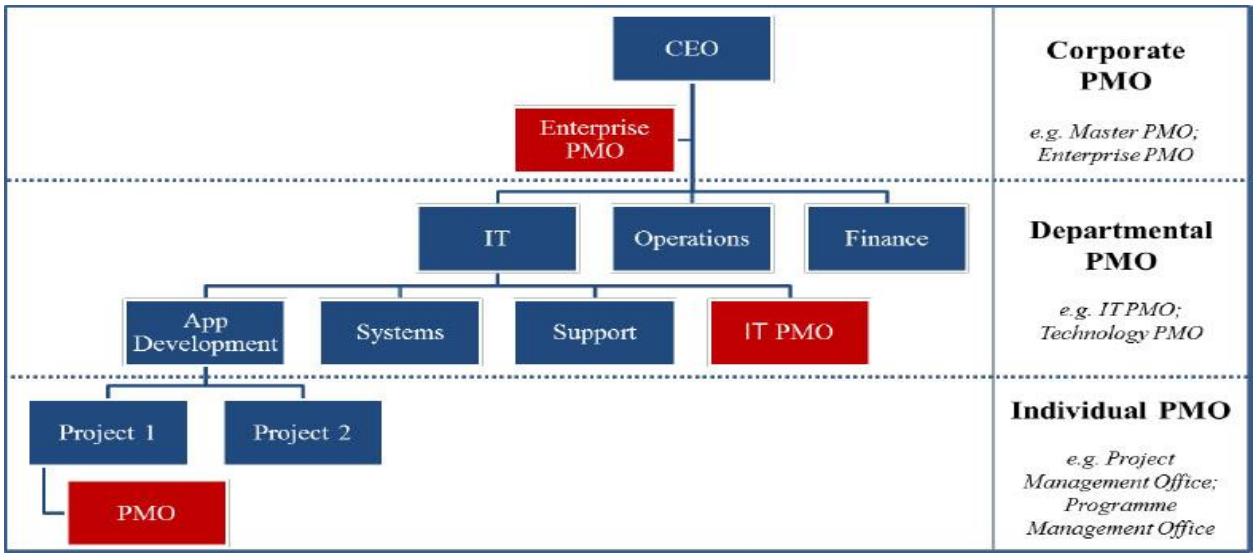

Figure 2 1 Individual, departmental, and corporate PMOs. Source (Giraudo & Monaldi, 2015).

According to (Wysocki, 2011, p. 493), there are at least four reasons why an organization would choose to implement a Project Support Office (PSO). They are as follows:

- As the organization grows in the number and complexity of the projects in its portfolio, it must adopt formal procedures for managing the volume. To do this, the organization establishes the procedures that are followed for initiating, proposing, approving, and managing projects.
- With increased volume comes a need for more qualified project managers. Those who would like to become project managers will need to be identified and trained. Those who are already project managers will need additional training to deal effectively with the increased project complexity. The PSO is the depository of the organization's skills inventory of current and developing project managers. Because managers using the PSO are aware of the types and complexity of current and forthcoming projects, the PSO is the entity that is best prepared to identify the training needs of project managers and their teams.
- A lack of standards and policies leads to increased inefficiencies and compromises productivity. The increasing failure rate of projects is testimony to that fact. Through the establishment and enforcement of standards and practices, the PSO can have a positive impact on efficiency and productivity.
- The increased complexity and number of projects places a greater demand on resources. It is no secret that the scarcity of information technology (IT) professionals has become a barrier to project success. By paying attention to the demand for skilled project teams and the inventory of skilled team members, the PSO can maintain the proper balance through training.

According to Philbin, S. P. (2016, October) there are a range of different types of PMOs and organizations have implemented PMOs to varying levels of success. PMOs have now been set up in a range of industries that have

requirements for technology and engineering projects, such as telecommunications, aerospace and construction. PMOs also support the development of strategic projects and have been viewed as an enabler to ensure strategic alignment of projects with corporate strategy.

2.3. PMO Typologies and Models

There are several typologies of PMOs in the literature according to Monteiro, A. (2017), which makes it difficult to identify the models and functions that are useful to implement in a given organizations. Additionally, Hobbs and Aubry (2007) saw that there was a significant variation in the structure, the roles assumed, and the perceived value of PMOs, demonstrating the instability and the diversity of PMOs.

As stated by Merriam Webster, a 'typology' is "a system used for putting things into groups according to how they are similar." The descriptions of PMOs in the literature are often summarized in typologies comprising few models. The most common typologies have three to five types of PMO models. Any model is necessarily a simplification and a reduction of the complexities of organizational reality. (Hobbs & Aubry, 2008).

According to Monteiro, A., Santos, V., & Varajão, J. (2016), the PMO model, in general, is a type of business-oriented organizational structure that supports the enterprise's business strategy and business development, and describes the rationale for how a project-portfolio management organization, project-program management organization, and/or project management organization – collectively PMOs – initiate, create, capture, and deliver value within an enterprise. Overall, it is an organizational structure design based within and upon both project management and business management (Hubbard & Bolles, 2015) Cited on Monteiro, A., Santos, V., & Varajão, J. (2016). Several authors developed different typologies of PMO. These typologies, supported by models, are the simplification and reduction of reality, being useful to support research and studies (Hobbs & Aubry, 2007).

Monteiro et al. (2016) processed and reviewed 47 PMO models from 12 relevant typologies from publications by well-known publishers to answer the question 'What models of PMO are currently proposed by researchers and practitioners?". The PMO typologies reviewed by Monteiro et al. (2016) have a time span ranging from 2003 to 2015. Although there are common elements across the different typologies, the diversity of the concepts clearly appears. These models often insert PMOs into the hierarchy of the organization by their degree of **authority, acceptance, adoption, and autonomy**. Authors evaluated the PMO models by their frequency in typologies and found that Enterprise PMO, Project Management Center of Excellence (PMoCE), Project Office, Project Support Office, Business Unit PMO, Program Management Office are the most often used terms (Szalay, I., Kovács, Á., & Sebestyén, Z. 2017).The below Table shows some of the dominant PMO models.

Typologies and Models in the Literature

Authors	PMO Models				
Englund, Graham & PC Dinsmore, (2003)	Project Support Office	Project Management Center of Excellence	Program Management Office		
Kendall & Rollins, (2003)	Project Repository	Project Coaching	Enterprise PMO	"Deliver Value Now"	
Garfein, (2005)	Project Office	Basic PMO	Mature PMO	Enterprise PMO	
Craig Letavec, (2006)	Consulting PMO	Knowledge (Strong PMO)	Standards (Blended PMO)		
Kevin Desouza & Roberto Evaristo, (2006)	Supporter	Information Manager PMO	Knowledge Manager PMO	Coach PMO	
Gartner Research Group, (2008)	Project Support Office	Program Management Office	Project Management Center of Excellence	Federated PMO Program Offices	Enterprise PMO
Gerard M. Hill, (2008)	Project Office	Basic PMO	Standard PMO	Advanced PMO	Project Management Center of Excellence
Kerzner H., (2009)	Functional PMO	Customer Group	Enterprise PMO		
J K Crawford, (2011)	Project Office	Business Unit PMO	Enterprise PMO		
Unger N, Gemünden G, & Aubry M, (2012)	Supporter	Controller	Coordinator		
PMI, (2013)	Project Office	Departmental / Business Unit PMO	Project Support Office	Enterprise PMO	Project Management Center of Excellence
Dennis L. Bolles & Darrel G. Hubbard, (2015)	Project Office / PMO	Project Support Office	Departmental / Division / Business Unit PMO	Enterprise PMO	Project Management Center of Excellence

Table 2 1 Typologies and Models in the Literature (Source: Monteiro et al. (2016)

Considering the definitions for strategic, tactical, and operational approaches, based on the academic and professional experience of the authors, and experienced PMO leaders, Pinto, Cota, and Levin (2010b) proposed a classification of each service in two aspects: if it was applicable to each and every type of scope of influence of a PMO, that is, if it was valid for enterprise, departmental, and project-program PMOs; and if it was a service of a strategic, tactical, or operational nature. This being the case, Pinto, Cota, and Levin (2010b) conclude that there are 21 possible types of PMOs, considering the three mutually exclusive scopes (enterprise, departmental, project-program) and the seven possible approaches (strategic, strategic-tactical, strategic-operational, tactical, tactical-operational, operational and strategic-tactical-operational). What, therefore, defines the type of PMO is a

combination of its scope and one of the seven possible different approaches resulting from the services offered to its customers. This study will adopt this classification for the assessment of the PMO.

2.4. PMO Functions & Roles

PMO functions represent all formal and informal activities and practices in which the PMO directly or indirectly is engaged with projects. Hobbs and Aubry (2007) identified 27 PMO functions based on the empirical data and categorized these different functions into eight groups. The roles of PMOs can be segmented into three levels: strategic; tactical; and operational (Desouza & Evaristo, 2006). At an operational level, a PMO provides basic centralized support to individual projects and ensures professionalism and excellence in applying widely accepted principles and preferred project management practices to each project. At a tactical level, PMO services provide further added value through multi-project coordination and the management of cross-project dependencies. This may include resource integration across projects and ensuring that project management disciplines are adhered to. Finally, the strategic PMO involves all aspects of an operational and tactical PMO and is also equipped with the authority to prioritize projects in relation to corporate objectives and strategies and advise senior management on the viability of project investments (Desouza & Evaristo, 2006).

Organizational structures, political factors, and cultural influences affect the ability to manage multiple activities and resources associated with projects that occur simultaneously. In order to facilitate such management a clear alignment of the project team is essential and one of the best ways to achieve this is to have a clear definition of the roles and functions of the PMO (Dinsmore & Cabanis-Brewin, 2010) as cited in (Monteiro, Santos & Varajão, 2016).

According to some authors (Artto et al., 2011; Crawford, 2010; Desouza & Evaristo, 2006; Hurt & Thomas, 2009), several responsibilities have been mentioned for PMOs: Aligning projects with organizational strategies; developing standards, processes, and methods; Facilities and Equipment Support in order to optimize organizational resource usage; monitoring project measures; monitoring and controlling organizational project; managing organizational projects risks; project portfolio management; capturing and utilizing lessons learned; training and mentoring project managers.

Hobbs & Aubry (2007) provide the most grounded exploration of the functions PMOs perform in organizations. Using a comprehensive list of functions developed from the literature and from a previous phase of the research project, their research proceeded through a multistep process of refinement. The study surveyed 500 respondents with a variety of roles, but most were project managers or working in the organization's PMO. The respondents reported the importance of each function for their PMO using a scale ranging from 1 ("not important at all") to 5 ("very important"). Based on this research, Monteiro, A. (2017) reiterated that 27 important functions were

identified. These 27 functions represent the most common services provided by PMOs and have been used by several authors in their research. And same is used in this study to answer the research questions regarding the maturity of the PMO to be assessed in this paper. Table 2.2 below shows the 27 list of functions identified with their order of importance and their functional grouping.

PMO Functions by order of importance and their functional grouping

Functions	% PMOs where important	Functional Group
Report project status to upper management	83%	*Group 1: Monitoring and Controlling Project Performance*
Develop and implement a standard methodology	76%	*Group 2: Development of Project Management Competencies and Methodologies*
Monitor and control project performance	65%	*Group 1: Monitoring and Controlling Project Performance*
Develop competency of personnel, incl. training	65%	*Group 2: Development of Project Management Competencies and Methodologies*
Implement and operate a project information system	60%	*Group 1: Monitoring and Controlling Project Performance*
Provide advice to upper management	60%	*Group 4: Strategic Management*
Coordinate between projects	59%	*Group 3: Multi-Project Management*
Develop and maintain a project scoreboard	58%	*Group 1: Monitoring and Controlling Project Performance*
Promote project management within organisation	55%	*Group 2: Development of Project Management Competencies and Methodologies*
Monitor and control performance of PMO	50%	*Group 5: Organizational Learning*
Participate in strategic planning	49%	*Group 4: Strategic Management*
Provide mentoring for project managers	49%	*Group 2: Development of Project Management Competencies and Methodologies*
Mange one or more portfolios	49%	*Group 3: Multi-Project Management*
Identify, select, prioritise new projects	48%	*Group 3: Multi-Project Management*
Management archives of project management documentation	48%	*Group 5: Organizational Learning*

Manage one or more programs	48%	*Group 3: Multi-Project Management*
Conduct project audits	45%	*Group 5: Organizational Learning*
Manage customer interfaces	45%	*Manage Customer Interfaces*
Provide a set of tools without effort to standardise	42%	*Group 2: Development of Project Management Competencies and Methodologies*
Execute specialised tasks for project managers	42%	*Execute Specialized Tasks for Project Managers (e.g., Prepare Schedules)*
Allocate resources between projects	40%	*Group 3: Multi-Project Management*
Conduct post-project reviews	38%	*Group 5: Organizational Learning*
Implement and manage database of lessons learned	34%	*Group 5: Organizational Learning*
Implement and manage risk database	29%	*Group 5: Organizational Learning*
Benefits management	28%	*Group 4: Strategic Management*
Networking and environmental scanning	25%	*Group 4: Strategic Management*
Recruit, select, evaluate, and determine salaries for project managers	22%	*Recruit, Select, Evaluate, and Determine Salaries for Project Managers*

Table 2 2 PMO Functions by order of importance and their functional grouping. Source: (Ferreira, 2019)

According to Pinto, A. (2012), acting in a strategic way involves offering services that have a link with strategic issues of the organization, such as how to manage the organization's portfolio; provide information to top management for decision-making purposes; prioritize the portfolio and rebalance it as required; and monitor and implement strategy. Acting in a tactical way involves providing services for a group of projects or individuals, such as developing a project management methodology, providing project management tools, and training managers and teams. Acting in an operational way involves providing services for a project or individual, such as supporting project planning and control, coaching/mentoring, managing a strategic project, and recovering projects.

2.5. PMO Maturity Model

2.5.1. What is a PMO maturity?

The Amercan Heritage Dictionary defines mature as “having reached full natural growth or development (n.),” or “to bring to full development (v.).” To define and measure maturity in Project Management we must specify levels of growth and development in the requisite skills. To understand what maturity means in the context of project management and consequently the PMO it is therefore necessary to define the specific level of growth development, associated stages, and requisite skills (Crawford, 2011). When we come to PMO maturity, Pinto, A., Cota, M., & Levin, G. (2010) described the maturity of the PMO as the degree of sophistication with which it is capable of performing its functions and reaching its objectives.

2.5.2. Project Management Maturity Models

Over the past decade many well-known authors such as Kerzner (2001), Crawford (2002, 2011), Hill (2004), including professional bodies such as the Project Management Institute, Software Engineering Institute (SEI) (2002), and public bodies like UK Government Office of Government Commerce have developed organizational project maturity models. The objective of the models is to help organizations with improving their process maturity through providing a "roadmap", or stages, to be followed which is based on best practices, that would ultimately lead to continues process improvement endeavors (Ferreira, 2019). In order to measure project management maturity & PMO maturity of a project organization, researchers have developed a variety of models, some of which include:

1. Capability Maturity Model Integrated by Software Engineering Institute (SEI-CMMI)
2. Project Management Maturity Model by H. Kerzner
3. Project Management Maturity Model by PM Solutions
4. Organizational Project Management Maturity Model by Project Management Institute
5. Project, Program, Portfolio Management Maturity Model (P3M3) by Office of Government Commerce (OGC)
6. Project Management Process Maturity (PM)2 by Kwak and Ibbs
7. Prince2 Maturity Model
8. PMO maturity cube by Pinto, Cota and Levin
9. PMO maturity model (PMO Continuum) by Hill

Capability Maturity Model Integration (CMMI)

The first ever version 1.0 of Capability Maturity Model (CMM) was first presented by Software Engineering Institute (SEI) division of Carnegie Mellon University in 1991 (Mateen, 2015). This model was later replaced by its successor, the Capability Maturity Model Integration (CMMI) in 2002, the year of publication of the first version 1.1 (SEI, 2006). According to SEI (2006), the latest version of CMMI (2.1), released in 2006, comprises a framework that allows the generation of multiple models. CMMI for development is one of those models: it provides guidance for managing, measuring, and monitoring software development processes and help organizations to improve their software development processes for both products and services by describing characteristics of best practices. CMMI offers five maturity levels that can only be reached one after the other in order to stage the process improvement effort (SEI, 2006).

Level 1- Initial: In this level processes are unpredictable, poorly controlled and reactive to situations.

Level 2- Managed: Processes are planned, documented, performed, monitored and controlled at the project level. This stage is often reactive.

Level 3- Defined: During this maturity level, processes are well characterized and understood. Processes, standards, procedures, tools, etc. are defined at the organizational level. This stage is a proactive level.

Level 4- Quantitatively Managed: In this stage, processes are controlled using statistical and other quantitative techniques.

Level 5- Optimizing: Once an organization reaches this level, process performance is continually improved through incremental and innovative technological improvements.

Project Management Maturity Model (PMMM by H. Kerzner)

According to Kerzner (2014), models can be used to assist corporations in performing strategic planning for project management and achieving maturity and excellence in a reasonable period of time. The foundation for achieving excellence in project management can best be described as the project management maturity model (PMMM) that can be used as a foundation for achieving excellence in project management. The model is comprised of five levels, each level representing a different degree of maturity in project management.

Level 1- Common Language: In this level, the organization recognizes the importance of project management and the need for a good understanding of the basic knowledge on project management, along with the accompanying language/terminology.

Level 2- Common Processes: In this level, the organization recognizes that common processes need to be defined and developed such that successes on one project can be repeated on other projects. Also included in this level is the recognition that project management principles can be applied to and support other methodologies employed by the company.

Level 3- Singular Methodology: In this level, the organization recognizes the synergistic effect of combining all corporate methodologies into a singular methodology, the center of which is project management. The synergistic effects also make process control easier with a single methodology than with multiple methodologies.

Level 4- Benchmarking: This level contains the recognition that process improvement is necessary to maintain a competitive advantage. Benchmarking must be performed on a continuous basis. The company must decide whom to benchmark and what to benchmark.

Level 5- Continuous Improvement: In this level, the organization evaluates the information obtained through benchmarking and must then decide whether or not this information will enhance the singular methodology (Kerzner, 2014).

According to Kerzner (2014), these levels do not need to be performed sequentially, rather, some of the above levels can and do overlap. Although overlapping does occur, the order in which the phases are completed cannot change. For example, even though Level 1 and Level 2 can overlap, Level 1 must still be completed before Level 2 can be completed (Kerzner, 2014).

Project Management Maturity Model (PMMM by PM Solutions)

Like the CMM and PMMM by Kerzner, the model also follows the five levels of process maturity and PM knowledge areas from the Project Management Institute's PMBOK guide. The model is helpful to measure an organization's project management maturity and to direct organizations towards important PM capabilities that organizations should acquire in order to achieve project management growth and excellence. The five levels of PM Solutions (2014b) are depicted below

Level 1: Initial Process - Not established practices or standards. Metrics and project documentation are informally collected.

Level 2: Structured Process and Standards - Basic metrics and project documentation are present but no organizational standard is set.

Level 3: Organizational Standards and Institutionalized Process - All projects use organizationally institutionalized formal standards.

Level 4: Managed Process - Metrics are used to manage projects, and integrated into other corporate systems to maximize overall organizational performance.

Level 5: Optimizing Process - Lessons Learned is routinely studied to improve PM processes.

Organizational Project Management Maturity Model (OPM3)

Developed by PMI, the Organizational Project Management Maturity Model (OPM3) is a framework that provides an organization-wide view of portfolio management, program management, and project management to support achieving best practices within each of these domains (PMI, 2008).

An OPM3 assessment evaluates the degree of an organization’s ability to meet their strategic objectives through successful delivery by using recognized Best Practices to manage portfolios of programs and projects (PMI, 2008). An OPM3 Maturity Assessment is flexible enough to be used to assess maturity in these different focus areas:

1. Specific domains (project, program, and/or portfolio),
2. Organizational Enablers, or
3. Specific stages of process improvement (standardize, measure, control, or continuously improve).

OPM3 framework cycle constitutes following steps for measuring maturity: Acquire Knowledge, Perform Assessment, Manage Improvements, and Repeat the process.

Acquire Knowledge - this component of OPM3 cycle requires preparation for assessment of project management maturity. A good understanding of OPM3 contents is developed before carrying out assessment. Also, understanding of organization for project management practices is developed (PMI, 2008).

Perform Assessment - involves gathering all the data required for measurement of maturity assessment. For this purpose, the PMI has devised a set of self-assessment method (SAM) questionnaire that enables an organization perform a high-level and a comprehensive assessment of its project management practice. The results of data are formulated in a form of graph which depicts organization's maturity level for project, program and portfolio management (PMI, 2008).

Manage Improvements - the results from perform assessment stage are compared against best practices standard of project, program and portfolio management. This best practice standard defined by PMI provides basis of improvement. The outcome of comparison between existing practices and best practices allows recommendation for improvement (PMI, 2008).

Structure of Organizational project management maturity model (OPM3) has five steps as discussed below.

OPM3 is conducted using an online tool (Product Suite) that includes: forms to start assessments, database of best practices, and electronic version of OPM3 knowledge foundation book and improvement plans based on completed assessments.

The OPM3 Knowledge Foundation book is used as the first step of OPM3 process. It includes an explanation of how OPM3 should be conducted and the best practices related to it.

The second step is performing the assessment using OPM3 Product Suite or performing anonline self-assessment. The scope of the assessment is defined in the beginning and it can cover detailed assessment of best practices and capabilities of an organization.

The third step is putting the plans to improve best practices and capabilities that were weak according to the performed assessment in order to get a higher maturity level. The improvement path is extracted from the Product Suite through a report.

The fourth step is to execute the improvement plans to increase the organizational project management maturity level. And finally the fifth step is to redo the assessment again and go through the same process to determine if the improvements affected the maturity of the organization or not (OPM3 Online, Executive guide to OPM3 by PMI).

Project, Program, Portfolio Management Maturity Model (P3M3)

The Portfolio, Program & Project Management Maturity Model (P3M3) is an enhanced version of the Project Management Maturity Model, based on the process maturity framework that evolved into the Capability Maturity

Model (CMM) (OGC, 2006). Like CMM and PMMM, this model has a five-level maturity, each depicting different maturity levels. The Portfolio, Program & Project Management Maturity Model (P3M3) can be used as the basis for improving portfolio, program and project management processes (OGC, 2006).
Later on another version of the P3M3 was developed by the OGC (OGC, 2008). The latest P3M3 is an overarching model containing three individual models:

- Portfolio Management Maturity Model (PfM3)
- Program Management Maturity Model (PgM3)
- Project Management Maturity Model (PjM3) (OGC, 2008)

Although connected, there are no interdependencies between these models, which allows for independent assessment in any of the specific disciplines (OGC, 2008). The P3M3 recognizes not only the program and project management activities being carried out at the individual program and project level, but also those activities within an organization that provide focus and help sustain effort to build a program and project infrastructure of effective program and project approaches and management practices (OGC, 2006). The structural components constituted under the five levels and that comprise the P3M3 can be characterized as follows

Project Management Process Maturity (PM)2

The $(PM)^2$ model is developed by Kwak and Ibbs (2002) by integrating previous maturity models that measure the PM levels of different companies and industries. The model becomes the basis to evaluate and position an organization's current PM maturity level. It illustrates a series of steps to help an organization incrementally improve its overall PM effectiveness (Kwak and Ibbs, 2002). The $(PM)^2$ model breaks PM processes and practices into nine PM knowledge areas and five PM processes by adopting PMI's PMBOK. Each PM maturity level contains key PM processes, organization's characteristics, and focus areas as depicted in the following table. The primary use of the $(PM)^2$ model is as a reference point or yardstick for an organization applying PM practices and processes. The $(PM)^2$ model and its assessment methodology have been applied successfully to different organizations and industries and are proven to be very effective (Ibbs and Kwak 1997 in Kwak and Ibbs, 2002).

The PMO Maturity Cube (a Project Management Office Maturity Model)

Pinto, De Matheus Cota, and Levin developed a maturity model that focuses on PMOs maturity named The PMO Maturity Cube. The PMO Maturity Cube, as its name suggests has three dimensions and their own categories. The dimensions are Scope of the PMO (Enterprise, Departmental or Program/Project PMO); Approach (Operational, Tactical or Strategic PMO) and Maturity (Basic, Intermediate or Advanced) (Pinto et al, 2010).

The proposal of this model sums up the main standard ways of typifying PMOs in essentially two principal dimensions: scope and approach (Pinto et al, 2010). The scope of a PMO comes from how wide reaching its actions within the organization are. Basically, there are three mutually exclusive possibilities: the project-program PMO, the scope of which covers just one of the organization's projects or programs; the departmental PMO, which covers an area, department, directorship, or business unit, i.e., just a part of the organization; and finally the corporate or enterprise PMO, which covers the organization as a whole (Pinto et al, 2010).

Approach has to do with how the PMO operates. This may be strategically, tactically, or operationally, or it may operate with all three simultaneously (Pinto et al, 2010). The authors also suggested that the driver of the approach of a PMO must be its mission, which will define how strategic, tactical, or operational it should be.

The third dimension is the maturity of the PMO in which the authors define as the degree of sophistication it provides to each service for which it is responsible (Pinto et al, 2010). By considering the twenty seven roles of PMOs put forward by Hobbs and Aubry (2007), the authors analyzed as to their possible different levels of sophistication for carrying them out, from the most trivial way to the most complicated. This determines the degree of maturity when carrying it out (Pinto et al, 2010).

The PMO Maturity Cube results from unifying these three concepts, which have all been consolidated into one specific model for evaluating the maturity of PMOs for any type of organization.

Project Management Office (PMO) Continuum

According to Hill (2008), a project management methodology provides a standard, repeatable process to guide project performance from concept to completion. This "project management methodology" function enables the Project Management Office (PMO) to:

- Establish the standard approach to project management that is to be used by all project managers within the relevant organization.
- Introduce project management practices incrementally, beginning with those that have the greatest impact on project and business success.
- Achieve consensus for implementing a common project management life cycle across the relevant organization's technical and business areas.
- Provide for collection of pertinent project data used in individual and aggregate analyses of project performance.
- Identify and incorporate technical and business processes into the project management methodology (Hill, 2008).

Hill (2008) stated that the PMO and the project management methodology evolve through five stages. He called these PMO stages "PMO competency continuum". Along these stages, the project management methodology of the PMO is characterized by:

- Development and implementation of increasingly more complete and comprehensive project management processes and practices
- Increased integration of technical and business process activities
- Wider cross-functional influence at advanced stages of the continuum, in association with the broader oversight authority and responsibility for project management prescribed by the methodology

Successful PMOs are constantly being challenged to find the best way to ensure that their practices continuously mature. This observation shows that, generally speaking, the perception of the value of those PMOs that are not capable of evolving tends to diminish over time, because as the organization itself matures, there is a demand for a PMO that is aligned with the new needs arising from this process of organizational evolution (Pinto, Cota and Levin, 2010).

2.6. Ethiopian Airlines Group IT PMO

Ethiopian Airlines Group's (ETAG) Information Technology (IT) division is organized as one of the functional divisions that report directly to the Group CEO. And, in turn, IT division has four departments under its wing, which are Head Group IT Services Operation, Head Group IT Application Design & Delivery, Head Group IT Infrastructure Design & Delivery and Head Group IT Security & Compliance (Figure 2.2). The two Application & Infrastructure Design & Delivery departments are considered to be project oriented departments. However by its nature once an infrastructure development projects are deployed they tend to serve relatively longer periods and as such are not the kind of projects that are deployed/changed frequently.

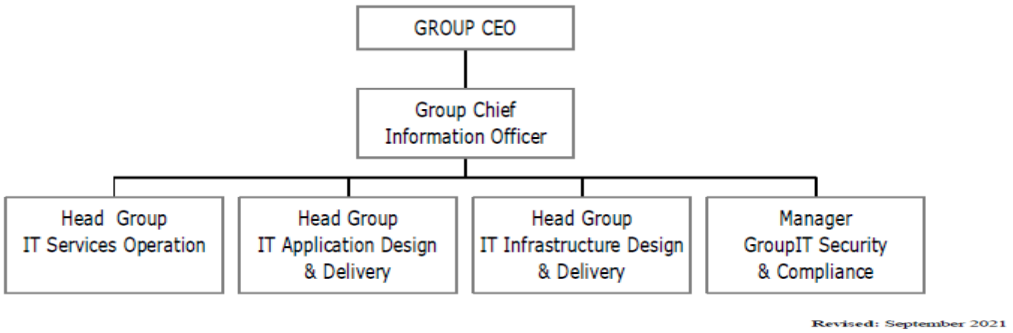

Figure 2 2 Organizational Structure of Group Information Technology Division

However, the Application Design & Delivery department as compared to the Infrastructure Design & Delivery section is the most project intensive department in IT division. As a result the Application Design & Delivery department has established a PMO. The PMO is one of the six sections that the Application Design and delivery department manages (Figure 2.3).

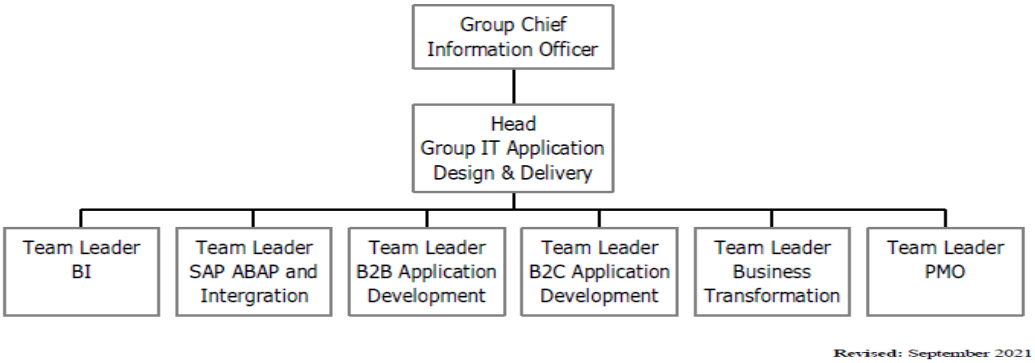

Figure 2 3 Organizational Structure of Group IT Application Design & delivery

2.7. Conceptual Framework

Having considered the various PMO types and their functions identified in the literature, and for the purpose of simplification, the study used the 27 functions identified by Hobbs and Aubry (2007) in order to assess the sophistication of delivering the functions. Since the PMO under study is departmental PMO, it will be assessed through the functions that the literature indicated to be delivered by a departmental PMO. The assessment takes into consideration both the scope of the PMO and approach of delivering the functions, which includes strategic, tactical, and operational level (Desouza & Evaristo, 2006), which broadly aligns to what happens in the industry in general and ETAG in particular. The conceptual framework is depicted in the following figure.

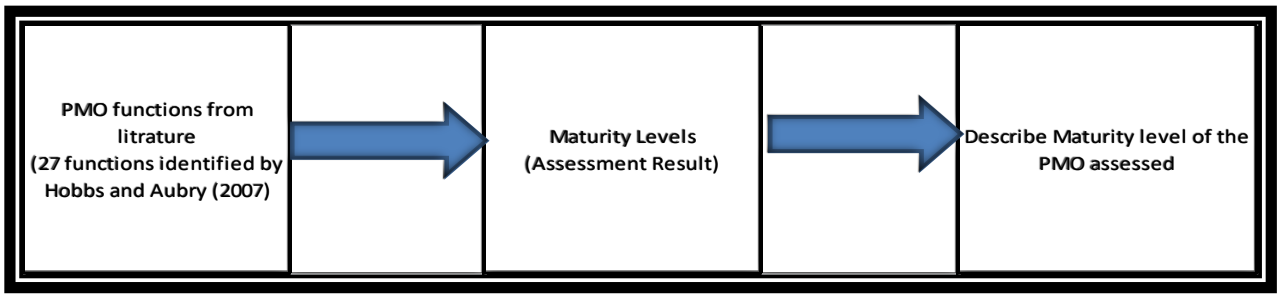

Figure 2 4 Conceptual framework of the study (Source: Own)

The PMO Maturity Cube model developed by Pinto, Cota and Levin (2010) assesses the maturity of PMO by making use of the 27 PMO functions which are believed to be exhaustive by most in the literatures. The model further categorizes the functions in to Operational functions, Tactical functions and Strategic function which will help identify the functional focus area of the PMO which in turn helps to see the alignments of the functions with its mission.

Chapter Three: Research Methodology

3.1. Description of the Study Area

The study was conducted at Ethiopian airlines IT division. Under IT Division there is an Application Design & Development section which manages all computer application related IT projects. The maturity assessment was limited to only ETAG's IT project management office (PMO). The study only considered projects undertaken at the head office.

3.2. Research Approach

In this research, Ethiopian Airlines Group's IT PMO is assessed to find out its level of maturity. Level of maturity is assessed in such a way that shows the level of sophistication of delivering its PMO functions. The data is collected using a questionnaire developed by Pinto, A., Cota, M., & Levin, G. (2010, July) on their study under the title "The PMO maturity cube, a project management office maturity model". Interviews were also conducted with key informants to find out the PMO's mission, functions and structure. The objectives of the study and the availability of relevant information for the study dictate the use of quantitative research approach. Quantitative research is a formal, systematic process that describes variables and the relationships among variables. Quantitative method emphasizes objective measurements and enables the statistical, mathematical or numerical analysis of data collected through survey.

3.3. Research Design

Cooper and Schindler (2014) summarize the essentials of research design as an activity and time-based plan. Always based on the research question, it guides the selection of sources and types of information. Since the main objective of this research is to assess the maturity of the PMO, Descriptive research design is appropriate. As a result, to analyze the assessment data quantitative type of research design will be deployed. As a result, this design enables to assess and explain the level of maturity of the PMO.

Different research works reviewed suggests adopting a survey questionnaire that is tested and proven to work instead of developing a new one. Hence the questions used in the survey are adopted from the work of Pinto et. al (2010), which was used in the development of the PMO Maturity Cube. And the questionnaire is customized to suit the assessment of the PMO. So, in order to meet the objective of the study, and to answer the given research question the study will apply Quantitative research method.

Through the literature review, the current study identified & selected the maturity model (PMO Maturity Cube) developed by Pinto et. al (2010), a model which also included a readily useable questionnaire. The questionnaire suited the criteria to meet the research objectives in that it is:

- Based on best practices
- Recently developed.
- Grounded in academic research and validated within industry.
- Simple to use.

3.4. Target Population & Sample

Target population refers to the entire group of individuals or objects from which the study seeks to generalize its findings (Cooper and Schindler, 2014). Due to the precise nature of the research topic, the population sample consists of Ethiopian Airlines IT division staffs under Application Design & Development department and the executive level individuals who are believed to be directly involved or affected by the PMO's activities. Hence for this study all five executive level individuals, six Team Leaders, including the Team Leader for the PMO, and seven project managers under the PMO are selected through purposive sampling. A questionnaire was sent to the relevant individuals after ensuring that they have intimate knowledge of both the PMO and PMO functions. This technique is chosen in order to identify and select samples with rich information and to maximize efficiency and validity of the study.

3.5. Data Sources and Types

The study used both primary and secondary sources to obtain relevant data and information. In order to realize the objective, the study adopted interview with current and former PMO Team Leaders & questionnaire survey as best instrument to gather primary data from the selected samples. In addition, the study used secondary data such as: reports related to project management, PMO, project management working manual of the company and other relevant documents like journals and published and unpublished materials that will help to strengthen the study.

3.6. Data Collection Procedures

Questionnaire is used as a primarily data collection instrument. It is recommended to use questionnaires for its potential to reach out to a large number of respondents within a short time; ability to accord respondent's adequate time to respond; offers a sense of privacy and confidentiality to the respondent. Therefore, this instrument is selected as a quick and cost-effective way to collect data.

The questioners were distributed through Google form by the researcher after adopting the questionnaire to the Google form platform and follow up was conducted through email & extension telephone. The completed questionnaires were readily available on Google form on real time from which the data was easily extracted. The data collected using the questionnaire were logged in and tracked on an Excel application. Eventually, Excel application Software were used to analyze all the data based on the objective of the study.

3.7. Conceptual Model

The conceptual model brings together research from both industry and academic resources. It combines existing models, secondary, and primary research data to support effective analysis to help answer the primary and research data. Through the literature review, the author identified a maturity model (PMO Maturity Cube) developed by Pinto et. al (2010), and the associate research also included a readily used questionnaire. The questionnaire suited the criteria to meet the research objectives in that it is:

- Based on best practices
- Recently developed.
- Grounded in academic research and validated within industry.
- Simple to use.

The questionnaire is designed in a way that enables the study to measure the level of sophistication of delivering each function. It asks the participants to select one of the degrees of service delivery sophistication levels for each PMO functions. The result of which is evaluated with three levels of maturity; Basic, Intermediate or Advanced. The level of maturity of Operational functions, Tactical functions and Strategic function is determined through the aggregate score of each questions under each approach. And the aggregate score of the three approaches will determine the overall maturity level of the PMO. This in turn helps to answer the research questions.

Figure 3.1 below depicts the conceptual framework of the model. Since the current study is focused on one PMO which is departmental in scope it will only adopt the departmental questionnaire out of the three questionnaires shown in the figure. And from internal company manuals, reports, interview with key individuals and the researchers personal experience from working closely with the PMO, it is determined that the PMO is expected to adopt both strategic-tactical-operational approaches while delivering its services. Hence the current assessment exercise evaluates all departmental functions to determine the level of the PMO's maturity as Basic, Intermediate or Advanced.

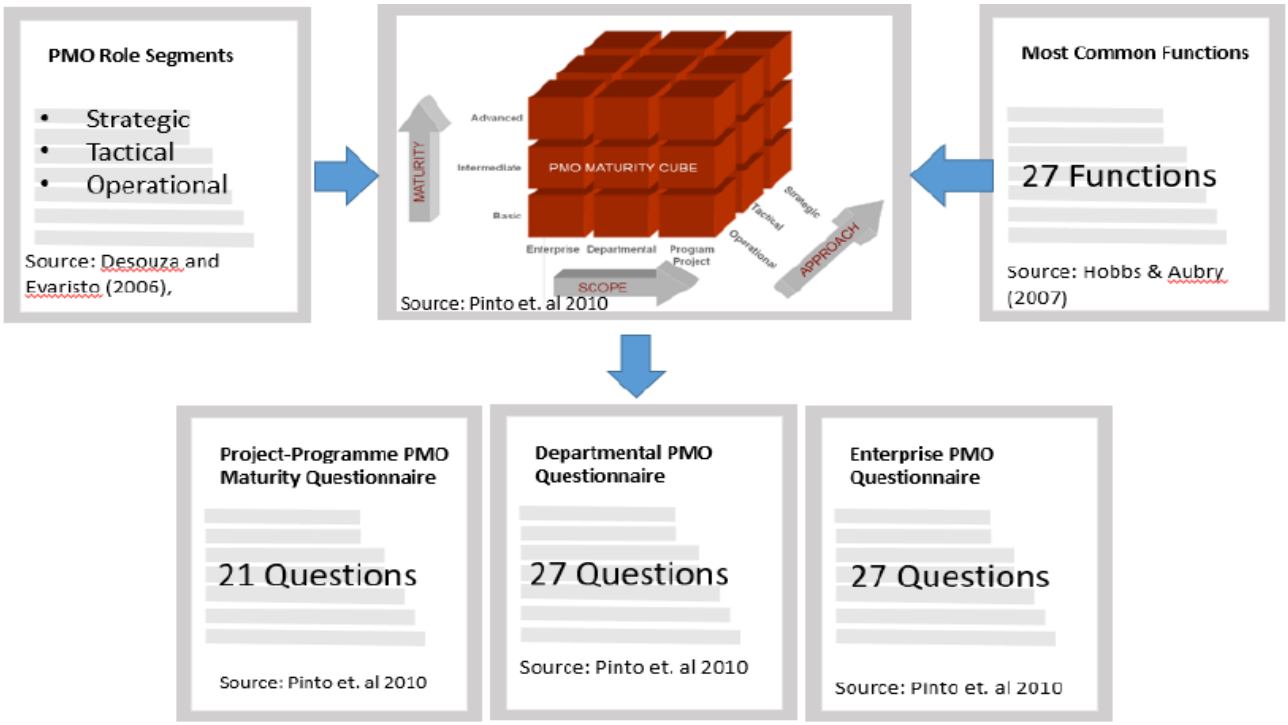

Figure 3. 1 Conceptual Framework of PMO Maturity Cube (Source: Ferreira, R. (2019))

The data analysis section below provides a breakdown of the conceptual model and its inner-working, and how the data was analyzed to determine the maturity levels at both functional and PMO level.

3.8. Data Analysis

The data is collected and analyzed using quantitative data analysis methods. The data analysis for the questionnaire is conducted using Microsoft Excel application. Numerical code is given to each response paper. Microsoft Excel is selected for the reason that it is readily available and user-friendly analysis tools with which the researcher is familiar with. Descriptive statistics such as mean, percentage, and frequency is used to summarize the responses. The collected data from the study is presented in tabulated form to make all the data readable and understandable by all concerned parties.

Some of the conceptual model was explained in the previous section. The focus of this section is to explain in detail the analysis aspects of the data derived from the model.

Respondents were presented with 6 demographic and 27 functional questions to determine the level of sophistication of delivering each function of the departmental PMO. Apart from the demographic questions, each question represented one of the 27 functions identified by Aubry and Hobbs (2007) in the academic literature.

Every question provides the respondent with a set of answers from least sophisticated to most sophisticated. Level-0 implies that a service is not provided, whereas, depending on the choice levels, Level-2, Level-3 or Level-4 suggests that a function/service is provided at the most sophisticated level, or has reached its highest level of maturity. When an answer is selected, a score is generated as outlined below. For instance, if a service is at its most mature level, a score of 4 or 3 or 2, depending on its maximum number of choices, is generated.

Maturity Levels	Score Allocated
Level - 4	4
Level - 3	3
Level - 2	2
Level - 1	1
Level - 0	0

The questions are further categorized into strategic, tactical & operational categories. When all the questions are answered, a total score is calculated for each category of functions. The table below demonstrates the categories of functions and the maximum score that can be achieved. A PMO that is at the highest possible maturity level in terms of its functions will have a maximum maturity score of 82.

Categories of Functions Being Assessed	Total Maximum Score (100% Maturity)
Strategic Assessment	30
Tactical Assessment	29
Operational Assessment	23
Maximum Maturity Score	82

In order to calculate the level of maturity for the PMO at functional category level and the total maturity, the total actual scores are calculated by taking the total average percentage score of responses for each question based on the collected data, and then dividing it by the maximum achievable score (which is the figure on the above table) for each of the functional category assessed.

Calculating the average percentage score of PMO maturity level is derived from the total of the average percentage scores produced by all respondents for each function in the functional category and dividing it by the maximum achievable score (which is the figure on the above table) for each of the functional category assessed. The below table shows how the calculation is actually done:

Maturity Measure	How the maturity score % is calculated?
Strategic Assessment	Your Score / Max Strategic Assessment Score = %
Tactical Assessment	Your Score / Max Tactical Assessment Score = %
Operational Assessment	Your Score / Max Tactical Assessment Score = %
Overall Maturity Assessment	Your Total Overall Score / Max Overall Score = %

Once the level of maturity has been calculated the final scores are matched with a range as per below to assign an overall maturity calculation. As an example, if the overall maturity assessment score equated to 50%, the PMO will be classified as having an INTERMEDIATE level of PMO maturity.

PMO Maturity Level	Range:
BASIC level of Maturity	0-33%
INTERMEDIATE level of Maturity	34% - 66%
ADVANCED level of Maturity	67% - 100%

3.9. Ethical Consideration

Throughout the research process, the research followed a process that is ethically and morally acceptable. The data were collected with the full consent of the participants and information will not be available to anyone who is not directly involved in the study. In order to safeguard the rights of the participants, the benefits of the study is explained to the participant. In addition, the study used a proper citation, followed truthful collection and analysis of data, maintained data confidentiality, obtained the consent of the case organization and staffs and kept the identity of respondents unanimous based on their consent in order to meet the ethical obligations of the research.

3.10. Validity and Reliability

3.10.1. Validity

All possible efforts are exerted to make the data collection instruments easily understandable by the respondents so that the intended information can be collected thereby increasing trustworthiness of the ultimate findings. Also, subject matter experts were chosen, and constructive comments were collected. Accordingly, the questionnaire is adopted as is with slight modification of the format to make it fit for online data collection. In addition, it was

shared to the research advisor and senior project managers prior to the data collection to examine the instrument for the content validity and ethicality.

3.10.2. Reliability

Empirical data was collected from project management leaders holding roles such as Executive, Heads, Frontline Supervisors and Project Managers/Officers that has worked in the IT section project area for over five years. The target sample therefore has the knowledge, experience, and authority to understand the subject matter, and necessary skills to answer the presented questions effectively and accurately.

The questionnaire is grounded in academic literature and the associated questions and answers where developed through an extensive review of existing literature and research, and have been validated by industry professionals. The questionnaire is grounded in the work of Hobbs and Aubry (2007) based on the research of 500 PMOs globally to identify the most important functions, and earlier work of Desouza and Evaristo (2006) who identified the role dimesions of the PMO (strategic, tactical, and operationa). Both these studies are well-known in academic research and commonly referred to by most re-knowned academic researchers in the field.

Chapter Four: Data Analysis & Interpretation

4.1. Introduction

This section deals with presentation, analysis and interpretation of data collected from the survey questionnaire and interview with two key individuals. Responses for the measures on the questionnaire are summarized and presented using tables and graphs to facilitate easy understanding. It also deals with presenting the results of the Interviews conducted with two individuals; the current and former team leaders of the PMO to shed light on the overall mission of the PMO; the functions the PMO delivers and the structural position of the PMO.

From the 18 questionnaires distributed, 16 filled out questionnaires were collected. Out of which, one overrated response (scored top to all measure) was identified and excluded from consideration. This response has lowered the number of filled out questionnaires to 15 which gives a response rate of 83%. According to Mugenda (2003) a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent; therefore, this response rate is adequate for analysis and reporting.

The functional questions used in the survey were derived from the work of Pinto et. al (2010), which was used in the development of the PMO Maturity Cube. Respondents were presented with a questionnaire, representing Departmental PMO. Individual questionnaire consisted of prescriptive list of 27 functions. Each of the questions presented a prescriptive list of answers from which the respondents selected the most appropriate answer reflecting the current level of sophistication (Level 0 – Level 4) in which the function is performed. The questions were grouped into three dimensions (strategic, tactical, and operational). All fields in the questionnaire were mandatory to ensure completeness and consistency of answers. Ten questions were prepared for the interview. The interview questions were sent through email for the respondents to fill their answers under each question. The questions are open ended. Follow-up questions were also sent to the respondents after examining their first answers.

4.2. Data Obtained from Questionnaires

4.2.1. Demographic characteristics of respondents

Below is a presentation of the gender, age, educational level, overall work experience and project work experience of the survey questionnaire respondents.

4.2.1.1. Gender & Age distribution of respondents

As can be seen on the below Table 4-1, majority of the respondents (n=12) are male comprising of 80% of the respondents and 20% are female (n=3). This shows that when compared to male there are low numbers of females

on the studied project area, IT division; the position of one of the female respondent is a team leader and the remaining two are project managers. In addition, majority of the male respondents (n=7) fall in the age group of 31–35 years' old. Generally, 60% of the respondents are below the age of 35 which shows that the work force is composed of mainly young employees and an adequate number of experienced and senior staffs comprising of the remaining 40%, which is an advantage for the company in terms of knowledge sharing.

Gender of Respondents by Age Group

Gender	Age Group				Total
	26-30	31-35	36-40	Above 40	
Male	1	7	1	3	12 (80%)
Female		1	1	1	3 (20%)
Total	1 (6.67%)	8 (53.33%)	2 (13.33%)	4 (26.67%)	15 (100%)

Table 4. 1 Gender of Respondents by Age Group (Source: own survey)

4.2.1.2. Educational Qualification of respondents

The below Figure 4-1 shows that 7 respondents (46.7%) have a Bachelor's degree and 8 respondents (53.3%) have Master's degree. This shows that majority of the respondents are educated to a level of Master's degree. With regard to the respondents' educational background, it shows that respondents are qualified enough to understand and answer the research instruments correctly.

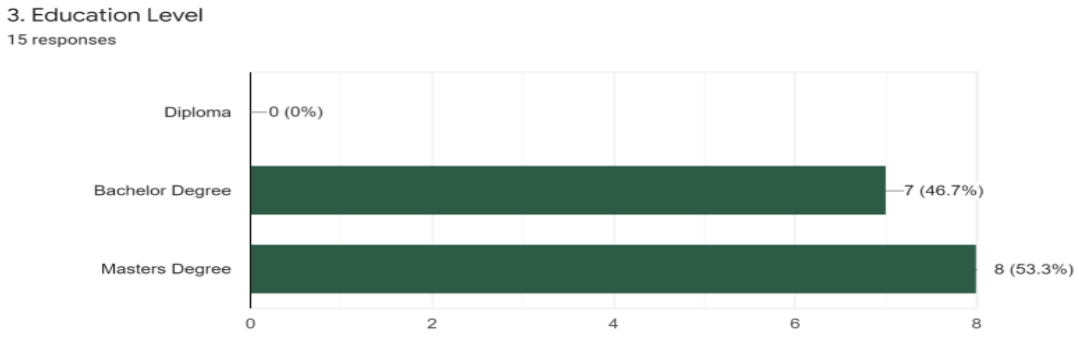

Figure 4. 1 Educational level of respondents (Source: own survey)

4.2.1.3. Work Experience and Experience in a Project in the Company

The last two part of the demographics section asked the respondents about their overall experience in the company and their project experience in order to understand the level of their experience and how that might influence their response to the questionnaire. The results on the below Table 4-2 showed that all respondents served the Airline for more than six years out of which five individuals served for more than 15 years. The table

further shows that 60% of the participants have adequate experience in projects ranging from 6 to 15 years. 4 individuals, i.e., 27% of the participants have a project experience of less than five years and 2 individuals, ie, 13% of the participants have a project experience of more than 15 years. Overall 73% of the participants have project experience more than five years.

The target sample consisted of IT and project leaders with in the IT division. The individuals held roles that can be described as Higher Executive Officers, Middle Management, Front line Supervisors (Team Leaders), and Senior Officers (Project Managers/Officers), and has worked in the IT division for more than 6 years. The individuals represented in the target sample therefore have the authority, experience, and knowledge to accurately answer the research questions. The research, from participants' adequacy perspective to give relevant feedback, is therefore reliable.

Work Experience in ETAG and Experience in project area

Experience in project area	Experience in Ethiopian Airlines				Total
	< 5 Years	6-10 years	11–15 years	>15 years	
< 5 Years	-	1	2	1	4 (26.67%)
6-10 years	-	5	1	1	7 (46.67%)
11–15 years	-	-	1	1	2 (13.33%)
>15 years	-	-	-	2	2 (13.33%)
Total	-	6 (40%)	4 (26.67%)	5 (33.33%)	15 (100%)

Table 4. 2 Work Experience in ETAG and Experience in project area (Source: own survey)

4.2.2. Analysis of Maturity of PMO functions

4.2.2.1. Introduction

The individuals that participated in the research should be given credit, as their role contributed towards formulating the maturity level of the PMO under study at strategic, tactical, and operational level. However, the research found that ETAG IT PMO on average had an "Intermediate" level PMO maturity with an overall maturity score of 49%. In other words, the functions/services being provided are not yet fully optimized, suggesting there are still opportunities to significantly contribute towards a more efficient and effective PMO performance which will ultimately enhance the project management performance. In order to maximize value though (through improving PMO maturity levels), there is a need for an urgent attention on the areas of operational and tactical functions where the maturity levels of few functions found to be at "Basic" level.

However, it should be highlighted that out of the total 27 functioned assessed 11% of the PMO functions are classified as having a basic maturity level, 78% an intermediate maturity level, and 11% an advanced maturity level.

4.2.2.2. Strategic Functions Maturity

Looking at the strategic functions' maturity Table 4-3, the maturity score is 51% putting it at an "Intermediate" level of maturity. The sophistication level of service delivery for the ten strategic functions ranges from 42% to 60%. This shows that there is a room for improvement especially if the PMO works on the four functions on the lower side of the score.

Maturity of Strategic Functions

PMO Functions	Functional Approach	Function's Standing in Questionnaire	Average (Mean) Score	Maturity Score (Degree of Sophistication of service provision in %)	Individual Functions Maturity Level	Average Maturity Score (Strategic Functions)	Strategic Functions Maturity Level
Develop and maintain a strategic framework of departmental projects and programs (scoreboard)	Strategic	3	1.27	42%	Intermediate	51%	Intermediate
Promote project management awareness in the department	Strategic	4	1.27	42%	Intermediate		
Participate in the department strategic planning process	Strategic	6	1.27	42%	Intermediate		
Manage one or more departmental portfolios	Strategic	7	1.73	43%	Intermediate		
Provide advice to the department senior management	Strategic	1	1.60	53%	Intermediate		
Manage the benefits of the departmental projects and programs	Strategic	9	1.07	53%	Intermediate		
Monitor and control its (PMOs) own performance	Strategic	5	2.20	55%	Intermediate		
Coordinate and integrate the department's portfolio	Strategic	2	1.67	56%	Intermediate		
Identify, select and prioritize new departmental projects and programs	Strategic	8	1.80	60%	Intermediate		
Map the relationships and the environment of projects and programs in and out of the department	Strategic	10	1.20	60%	Intermediate		

Table 4. 3 Maturity of strategic functions (Source: own survey)

4.2.2.3. Tactical Functions Maturity

Looking at the tactical functions maturity Table 4-4, the overall maturity score is 47% putting it at an "Intermediate" level of maturity. Though the tactical functions overall maturity level is the same as that of the strategic functions the score is 4% less than that of the strategic and operational scores. The sophistication level of service delivery for the nine tactical functions ranges from as low as 20% to a higher score of 73%. This shows that there is a room for improvement especially if the PMO works on the two functions (Implement and Manage the Risk Database & Implement and Manage the Lessons Learned Database) with "Basic" maturity level and the "Intermediate" maturity level functions with a low score. The function "Managing interfaces with customers" has scored 73% putting it on the "Advanced" maturity level.

Maturity of Tactical Functions

PMO Functions	Functional Approach	Function's Standing in Questionnaire	Average (Mean) Score	Maturity Score (Degree of Sophistication of service provision in %)	Individual Functions Maturity Level	Average Maturity Score (Tactical Functions)	Tactical Functions Maturity Level
Implement and manage the risk database	Tactical	18	0.60	20%	Basic	47%	Intermediate
Implement and manage the lessons learned database	Tactical	17	0.93	31%	Basic		
Implement and manage project information systems	Tactical	13	1.13	38%	Intermediate		
Develop and implement the departments project management methodology	Tactical	11	1.67	42%	Intermediate		
Develop skills in project management	Tactical	12	1.73	43%	Intermediate		
Select, manage, and evaluate project managers	Tactical	19	1.60	53%	Intermediate		
Allocate and share resources between departmental projects	Tactical	16	1.73	58%	Intermediate		
Provide a set of tools for project management	Tactical	15	1.93	64%	Intermediate		
Manage interfaces with customers	Tactical	14	2.20	73%	Advanced		

Table 4. 4 Maturity of tactical functions (Source: own survey)

4.2.2.4. Operational Functions Maturity

Looking at the operational functions maturity Table 4.5, the overall operational functions maturity score is 51%, the same level as the strategic functions maturity, putting it at an "Intermediate" level of maturity. Though the operational functions overall maturity level is the same as that of the strategic functions, there is one operational function (Conduct Project Audit) with a low score of 24% putting it at "Basic" level of maturity. The sophistication level of service delivery for the eight operational functions ranges from as low as 24% to a higher score of 87%. This shows that there is a room for improvement especially if the PMO works on the one function with "Basic" maturity level and the "Intermediate" maturity level functions with a low score. The operational function "Managing one or more projects or programs" has scored 87% putting it on the "Advanced" maturity level.

Maturity of Operational Functions

PMO Functions	Functional Approach	Function's Standing in Questionnaire	Average (Mean) Score	Maturity Score (Degree of Sophistication of service provision in %)	Individual Functions Maturity Level	Average Maturity Score (Operational Functions)	Operational Functions Maturity Level
Conduct project audits	Operational	26	0.73	24%	Basic	51%	Intermediate
Provide mentoring for project managers	Operational	23	1.07	36%	Intermediate		
Conduct post-reviews of project management (lessons learned)	Operational	27	1.07	36%	Intermediate		
Manage and collect project files and documentation	Operational	24	1.33	44%	Intermediate		
Provide specialized services for the project manager	Operational	20	0.93	47%	Intermediate		
Monitor and control project/program performance	Operational	22	1.87	62%	Intermediate		
Provide information to senior management of the status of projects that are under way	Operational	21	2.07	69%	Advanced		
Manage one or more programs or projects	Operational	25	2.60	87%	Advanced		

Table 4. 5 Maturity of operational functions (Source: own survey)

4.2.2.5. Overall PMO Functions Maturity

Looking at the overall PMO functions maturity Table 4-6, the aggregate maturity score of the 27 functions is 49% putting the PMO at an "Intermediate" level of maturity. The sophistication level of service delivery for the entire

27 PMO functions ranges from as low as 20% to a higher score of 87%. This shows that there is a room for improvement especially if the PMO works on the three functions with "Basic" maturity level and the "Intermediate" maturity level functions with a low score. The two operational functions "implement and manage the risk database" and "Implement and manage the lessons learned database" and the operational function "Conduct project audits" has scored the lowest level of service provision sophistication score making them the three functions with "Basic" level of maturity.

The operational function "Managing one or more projects or programs" has scored a higher level of maturity of 87% putting it on the "Advanced" maturity level. Tactical function "Manage Interface with Customers" has scored the second highest maturity score of 73% putting it on the "Advanced" level of maturity. The last function to achieve an "Advanced" level of maturity is the operational function "Provide information to senior management of the status of projects that are underway" with a score of 69%.

Maturity of Overall PMO Functions

PMO Functions	Functional Approach	Function's Standing in Questionnaire	Average (Mean) Score	Maturity Score (Degree of Sophistication of service provision in %)	Individual Functions Maturity Level	Average Maturity Score (All PMO Functions)	Overall PMO Maturity Level
Implement and manage the risk database	Tactical	18	0.60	20%	Basic	49%	Intermediate
Conduct project audits	Operational	26	0.73	24%	Basic		
Implement and manage the lessons learned database	Tactical	17	0.93	31%	Basic		
Provide mentoring for project managers	Operational	23	1.07	36%	Intermediate		
Conduct post-reviews of project management (lessons learned)	Operational	27	1.07	36%	Intermediate		
Implement and manage project information systems	Tactical	13	1.13	38%	Intermediate		
Develop and implement the departments project management methodology	Tactical	11	1.67	42%	Intermediate		
Develop and maintain a strategic framework of departmental projects and programs (scoreboard)	Strategic	3	1.27	42%	Intermediate		
Promote project management awareness in the department	Strategic	4	1.27	42%	Intermediate		
Participate in the department strategic planning process	Strategic	6	1.27	42%	Intermediate		
Manage one or more departmental portfolios	Strategic	7	1.73	43%	Intermediate		
Develop skills in project management	Tactical	12	1.73	43%	Intermediate		
Manage and collect project files and documentation	Operational	24	1.33	44%	Intermediate		
Provide specialized services for the project manager	Operational	20	0.93	47%	Intermediate		
Provide advice to the department senior management	Strategic	1	1.60	53%	Intermediate		
Manage the benefits of the departmental projects and programs	Strategic	9	1.07	53%	Intermediate		
Select, manage, and evaluate project managers	Tactical	19	1.60	53%	Intermediate		
Monitor and control its (PMOs) own performance	Strategic	5	2.20	55%	Intermediate		
Coordinate and integrate the department's portfolio	Strategic	2	1.67	56%	Intermediate		
Allocate and share resources between departmental projects	Tactical	16	1.73	58%	Intermediate		
Identify, select and prioritize new departmental projects and programs	Strategic	8	1.80	60%	Intermediate		
Map the relationships and the environment of projects and programs in and out of the department	Strategic	10	1.20	60%	Intermediate		
Monitor and control project/program performance	Operational	22	1.87	62%	Intermediate		
Provide a set of tools for project management	Tactical	15	1.93	64%	Intermediate		
Provide information to senior management of the status of projects that are under way	Operational	21	2.07	69%	Advanced		
Manage interfaces with customers	Tactical	14	2.20	73%	Advanced		
Manage one or more programs or projects	Operational	25	2.60	87%	Advanced		

Table 4. 6 Maturity of overall PMO functions (Source: own survey)

4.2.2.6. Maturity Analysis by Position

As can be seen from the below table on all positions the maturity level shows that the PMO is on an "Intermediate" level. However the average scores of each position ranges from 45% to 64%. The Team Leader of the PMO under study scored the PMO's maturity as 64%. But the average score of the other position groups put the PMOs performance less than what the PMO's own score. The other team leaders' average score is 55%, the IT executives score given to the PMO is an average score of 47% and the Project Managers/Officers' score given to the PMO is an average score of 45%. The result clearly shows how differently the customers of the PMO perceive its maturity as compared to how the PMO perceives its own maturity.

Assessment Result as Per Position/Roles of Respondents

Position/Role of Respondents	Strategic Functions Maturity Score	Tactical Functions Maturity Score	Operational Functions Maturity Score	Overall Maturity of PMO Score	Overall Maturity Level of PMO
Team Leader PMO	64%	63%	65%	64%	Intermediate
Team Leader Non-PMO	54%	49%	60%	55%	Intermediate
IT Head & Above	47%	47%	46%	47%	Intermediate
Project Mgr/Officer	49%	42%	45%	45%	Intermediate

Table 4. 7 Assessment result as per position/Roles of respondents (Source: own survey)

4.2.2.7. Maturity Analysis – Functional Group

To further understand the impact of the level of maturity of each individual function on functional group, the answers were further analyzed. The questions were grouped into 5 functional groups as identified by Hobbs and Aubry (2007):

Group 1: Monitoring and Controlling Project Performance

Group 2: Development of Project Management Competencies and Methodologies

Group 3: Multi-Project Management

Group 4: Strategic Management

Group 5: Organizational Learning

Table 4.8 below depicts the maturity results aggregated as per the five functional groups. In the functional group analysis most of the respondents scored "Group 5 -Organizational Learning" as having the lowest maturity score as compared to the other functional groups. Organizational Learning is a group of functions comprising of the following functions: "Monitor and control the performance of the PMO", "Manage archives of project documentation", "Conduct post-project reviews", "Conduct project audits", "Implement and manage a database of

lessons learned", and "Implement and manage a risk database". The three functions with the lowest maturity score are found in this group, which shows why the group's over all maturity is the lowest. On the contrary "Group 3 – Multi Project Management" has scored the highest maturity score of 61%. This shows that the PMO manages relatively well the functions under this group, functions like, "Manage one or more departmental portfolios", "Coordinate and integrate the department's portfolio", "Allocate and share resources between departmental projects", "Identify, select and prioritize new departmental projects and programs", and "Manage one or more programs or projects".

Group 3: Multi-Project Management 61%

Group 1: Monitoring and Controlling Project Performance 53%

Group 4: Strategic Management 52%

Group 2: Development of Project Management Competencies and Methodologies 45%

Group 5: Organizational Learning 35%

Maturity Scores Per Functional Grouping

PMO Functions	Maturity Score (Degree of Sophistication of service provision in %)	Average Percentage per Group	Functional Groups
Implement and manage project information systems	38%	53%	Group 1 - Monitoring and Controlling Project Performance
Develop and maintain a strategic framework of departmental projects and programs (scoreboard)	42%		Group 1 - Monitoring and Controlling Project Performance
Monitor and control project/program performance	62%		Group 1 - Monitoring and Controlling Project Performance
Provide information to senior management of the status of projects that are under way	69%		Group 1 - Monitoring and Controlling Project Performance
Provide mentoring for project managers	36%	45%	Group 2 - Development of PM Competencies and Methodologies
Develop and implement the departments project management methodology	42%		Group 2 - Development of PM Competencies and Methodologies
Promote project management awareness in the department	42%		Group 2 - Development of PM Competencies and Methodologies
Develop skills in project management	43%		Group 2 - Development of PM Competencies and Methodologies
Provide a set of tools for project management	64%		Group 2 - Development of PM Competencies and Methodologies
Manage one or more departmental portfolios	43%	61%	Group 3 - Multi-project Management
Coordinate and integrate the department's portfolio	56%		Group 3 - Multi-project Management
Allocate and share resources between departmental projects	58%		Group 3 - Multi-project Management
Identify, select and prioritize new departmental projects and programs	60%		Group 3 - Multi-project Management
Manage one or more programs or projects	87%		Group 3 - Multi-project Management
Participate in the department strategic planning process	42%	52%	Group 4 - Strategic Management
Provide advice to the department senior management	53%		Group 4 - Strategic Management
Manage the benefits of the departmental projects and programs	53%		Group 4 - Strategic Management
Map the relationships and the environment of projects and programs in and out of the department	60%		Group 4 - Strategic Management
Implement and manage the risk database	20%	35%	Group 5 - Organizational Learning
Conduct project audits	24%		Group 5 - Organizational Learning
Implement and manage the lessons learned database	31%		Group 5 - Organizational Learning
Conduct post-reviews of project management (lessons learned)	36%		Group 5 - Organizational Learning
Manage and collect project files and documentation	44%		Group 5 - Organizational Learning
Monitor and control its own performance	55%		Group 5 - Organizational Learning

Table 4. 8 Maturity scores per functional grouping (Source: own survey)

4.3. Data Obtained from Company Document Review and Interview

According to the company's manual on job descriptions, the PMO office is responsible to administer change programs and monitor projects such that cost, quality, plan time and benefit realization are controlled and achieved, through ensuring that all projects adhere to the best practices and standard approaches for project management. The PMO manager develops and implements best practices to enable the successful delivery of a broad range of IT and business change projects to stakeholders across the business. Main responsibilities of the PMO include scope and business case management; programme vision and blueprint development; benefit and quality management; stakeholder management; portfolio management; programme, tranche and project planning including milestone management; risk and issue management; and vendor management. Integral to delivering these responsibilities will be financial management, maintaining risks, issues, assumptions, actions log.

A ten-question interview was also conducted with two subject matter experts on ET's IT PMO. One of the interviewees is the current Team leader of the PMO under study and the second interviewee is the former Team leader of the same PMO (the Interview questions are included as Appendix-xx). The aim of the interview in general is, in addition to the company manuals/documents, to clarify, explain the mission of the PMO; the functions it performs; its perceived customers; where, structurally, the PMO is located; its team composition; its scope of service; number of projects undertaken by the PMO and projects undertaken in the other sections parallel to the PMO; and short comings/obstacles the PMO is experiencing.

According to the interview the mission of IT PMO is leading a successful project in terms of Costs, Timescales, Quality, Scope, Risk and Benefits. It provides an enterprise-wide approach to identify, prioritize, and successfully execute a technology portfolio of initiatives and projects that are aligned with the organization. It oversees the administration of projects to ensure support of the standards, methodology and technology defined by the organization. The IT PMO is in charge of creating procedures and best practices that will help operations: Go smoothly; Complete on time; Result in quality deliverables. The interviewees explained in detail that in terms of functions the PMO provides Resource planning in projects, Work planning and effort estimation, Coordination of project manager / team leader, Resource allocation and conflict resolution, Maintenance and planning of skills and Strategic capacity planning at portfolio level. The PMO adopted the PRINCE2 project management methodology to be used on all IT projects.

The interviewees stated that the PMO considers every section/division within the organization, which needs system implementation/ enhancement as the customer of the PMO. But in terms of scope the PMO is located, structurally, under one of the four divisions of the IT department. There are only project managers, other than the team leader, in the PMO assigned to lead various internal and external projects. But the PMO utilizes the

Administrative Assistance of the division head as a project support personnel. As a mandate PMO team is expected to give support to all projects but practically it is giving support to only PMO led projects which are estimated to be more than 80 internal and external projects. And there are more than 33 projects that are managed within IT but outside of the PMO's control.

The interviewees identified challenges in the areas of process, people, technology and standards. Both interviewees also mentioned the lack of clear demarcation with other IT sections that are also engaged in project delivery such as Business Transformation section. The following are the detailed list of challenges mentioned by the respondents.

Process Challenge

- *Multiple projects requests and no prioritization criteria's*
- *Project scope creep*
- *Shifting organizational priorities*
- *Change management*
- *Lack of accountability between Users, Dev, Ops and Security*
- *Unrealistic deadlines*
- *Limited engagement of stakeholders*
- *no clear demarcation with other sections*

Technology and Standard Challenge

- *Software Quality problem (Bug, Security, rework)*
- *Lack of or outdated Development standard*
- *Older legacy systems and background services*
- *No official application template for Web, Mobile.*
- *Lack of common use APIs and Libraries*
- *Lack of automated testing tools*
- *Manual application deployment(no approvals, issue etc.)*

People Challenge

- *Inadequate technical expertise*
- *Limited in-house technical resource*
- *Lack of project management skills*
- *Lack of business knowledge and impact*
- *Communication problem*
- *Difficulty attracting and retaining applicable talent*

As the result of the review of the company manual on PMO and the focal person's interview, the researcher compiled the functions the PMO set out to accomplish and the corresponding functions from the literature. Table 4.9 shows the PMO functions on one side and the expected functions as per the mission of the PMO on the other side. And this table makes the base line on which to assess the maturity of the PMO. As can be seen from the table the PMO is expected to deliver strategic, tactical and operational functions.

Ethiopian Airlines IT PMO's Functions

Source	Expected Activity/Responsibility of PMO From Company Manual & Interview with Two Key Informants	Approach	Corosponding Functions from Litrature
Company Manual	programme vision and blueprint development;	Strategic	Develop and maintain a project scoreboard
Company Manual	portfolio management;	Strategic	Manage one or more portfolios
Interview	provide an enterprise-wide approach to identify, prioritize, and successfully execute a technology portfolio of initiatives and projects (INTERVIEW)	Strategic	Identify, select and prioritize new projects
Company Manual	benefit and quality management;	Strategic	Benefits management
Company Manual	stakeholder management;	Strategic	Networking and environmental scanning
Company Manual	Ensure cross-programm dependencies are managed and the dependency log is accurately maintained	Strategic	Coordinate between projects
Interview	ensure support of the standards, methodology and technology defined by the organization(interview)	Tactical	Develop and implement a standard methodology
Company Manual	risk and issue management; and	Tactical	Implement and manage risk database
Company Manual	Provide and maintain a capacity planning and resource tracking service accrossthe programm	Tactical	Allocate resources between projects
Company Manual	maintaining risks, issues, assumptions, actions log.	Operational	Execute specialized tasks for Project Managers
Company Manual	scope and business case management;	Operational	Execute specialized tasks for Project Managers
Company Manual	vendor management.	Operational	Execute specialized tasks for Project Managers
Company Manual	financial management;	Operational	Execute specialized tasks for Project Managers
Company Manual	programme, tranche and project planning including milestone management;	Operational	Provide mentoring for project managers
Interview	It oversees the administration of projects (interview)	Operational	Manage one or more programs or projects
Interview	leading a successful project in terms of Costs, Timescales, Quality, Scope, Risk and Benefits (interview)	Operational	Monitoring and control of project performance
Company Manual	Monitor program reporting and assistthe head of programmes in reporting to senior management	Operational	Report project status to upper management

Table 4. 9 ETAG IT PMO's Functions (Source: own survey)

From the researchers experience and the results of both the interview and the company manual review, there is no categorization as to the approach of service delivery in terms of operational, tactical or strategic approaches. According to the company manuals and the result of the interview, the scope of the PMO is departmental since it is accountable to a single department under an IT division. And from the list of services it is expected to deliver, one can see that it provides services ranging from operational to tactical and strategic functions. On top of that significant number of functions in the questionnaire were rated more than zero (if the respondent believes the function is not performed by the PMO, he/she gives a score of zero to that particular function). This can be taken as additional testimony that the PMO tries to provide all functions. Hence the maturity assessment is conducted

on all departmental level functions by considering that the PMO perceives itself providing all departmental functions.

4.4. Discussion

The responsibilities of a PMO can range from providing project management support to being responsible for the direct management of one or more projects (PMI, 2013, p. 10). According to PMI, (2013) PMOs can be categorized based on their (a) influence and (b) position within the organization. (a) Based on the influence and degree of control: **Supportive, Controlling, Directive.** (b) Based on the position they have within the organization: **Individual PMO**, **Departmental PMO, Corporate PMO**. Based on the findings the PMO under assessment is more of a supporting and to some extent controlling in terms of influence and degree of control. The PMO provides a consultative role, to projects outside of its direct control, by supplying templates, best practices, training, access to information and lessons learned from other projects. However, the below-average score on the two functional groups Organizational Learning and Development of PM Competencies and Methodologies shows the PMO's influence and control over the projects is low.

PMO models often insert PMOs into the hierarchy of the organization by their degree of **authority, acceptance, adoption, and autonomy**. Authors evaluated the PMO models by their frequency in typologies and found that Enterprise PMO, Project Management Center of Excellence (PMoCE), Project Office, Project Support Office, Business Unit PMO, Program Management Office are the most often used terms (Szalay, I., Kovács, Á., & Sebestyén, Z. 2017). According to the feedback from the interview, The assessed IT PMO functions as both Project Support Office and Business Unit PMO. From the finding the fact that the PMO only supports one functional unit it is appropriate to label it departmental PMO based on the position it has in the organization.

Pinto, Cota, and Levin (2010b) conclude that there are 21 possible types of PMOs, considering the three mutually exclusive scopes (enterprise, departmental, project-program) and the seven possible approaches (strategic, strategic-tactical, strategic-operational, tactical, tactical-operational, operational and strategic-tactical-operational). What, therefore, defines the type of PMO is a combination of its scope and one of the seven possible different approaches resulting from the services offered to its customers. The PMO model under study is departmental in scope with a strategic-tactical-operational approach.

According to the interview the mission of IT PMO is leading a successful project in terms of Costs, Timescales, Quality, Scope, Risk and Benefits. It provides an enterprise-wide approach to identify, prioritize, and successfully execute a technology portfolio of initiatives and projects that are aligned with the

organization. It oversees the administration of projects to ensure support of the standards, methodology and technology defined by the organization. The IT PMO is in charge of creating procedures and best practices that will help operations: Go smoothly; Complete on time; Result in quality deliverables. The interviewees explained in detail that in terms of functions the PMO provides Resource planning in projects, Work planning and effort estimation, Coordination of project manager / team leader, Resource allocation and conflict resolution, Maintenance and planning of skills and Strategic capacity planning at portfolio level. The PMO adopted the PRINCE2 project management methodology to be used on all IT projects. The survey also found out that the PMO rolled out various methodologies and tried to have it adopted in all projects but with below-average success on this area.

The interviewees stated that the PMO considers every section/division within the organization, which needs system implementation/ enhancement is the customer of the PMO. But in terms of scope the PMO is located, structurally, under one of the four divisions of the IT department. There are only project managers, other than the team leader, in the PMO assigned to lead various internal and external projects. As a mandate PMO team is expected to give support to all projects but practically it is giving support to only PMO led projects which are estimated to be more than 80 internal and external projects. And there are more than 33 projects that are managed within IT but outside of the PMO's control. The survey result also shows a 53% maturity level score for the group Monitoring and Controlling Project Performance. The average score for the Monitoring and Controlling functional group can be attributed to the lack of dedicated staffers at the PMO that monitors and controls the performance of those projects outside of the PMO.

The interviewees identified challenges in the areas of process, people, technology, and standards. This is adequately reflected with a low score on functions surveyed. Specially the below-average survey score on functions like: Promote Project Management Awareness in the department; Participate in the departments Strategic Management Process; Develop and Implement the Departments Project Management Methodology; Provide Mentoring for Project Managers; Implement and Manage Information Systems corroborates the interviewees challenge on process, people, technology and standards. Both interviewees also mentioned the lack of clear demarcation with other IT sections that are also engaged in project delivery such as Business Transformation section.

Chapter Five: Summary, Conclusion and Recommendation

5.1. Introduction

In previous chapter, data analysis and interpretation has been presented. In this chapter, major findings are going to be summarized and the subsequent conclusions will be made. Based on the conclusion, recommendations are forwarded in relation to literatures reviewed to better enhance the PMO's maturity. Finally, the research limitation and recommended areas for further research will be given.

5.2. Summary of findings

The study targeted a total of 18 respondents and 18 questionnaires were distributed, 16 filled out questionnaires were collected. Out of which, one overrated response (scored top to all measure) was identified and excluded from consideration. The response has lowered the number of filled out questionnaires to 15 which gives a response rate of 83%. Majority of the respondents (n=12) are male comprising of 80% of the respondents and 20% are female (n=3). This shows that when compared to male there are low numbers of females on the studied project area, IT division; the position of one of the female respondent is a team leader and the remaining two are project managers. In addition, majority of the male respondents (n=7) fall in the age group of 31–35 years' old. Generally, 60% of the respondents are below the age of 35 which shows that the work force is composed of mainly young employees and an adequate number of experienced and senior staffs comprising of the remaining 40%, which is an advantage for the company in terms of knowledge sharing.

With regards to the educational background of the respondents, 7 respondents (46.7%) have a Bachelor's degree and 8 respondents (53.3%) have Master's degree. This shows that majority of the respondents are educated to a level of Master's degree. With regard to the respondents' educational background, it shows that respondents are literate enough in order to understand and answer the research instruments correctly. The last two part of the demographics section asked the respondents about their overall experience in the company and their project experience in order to understand the level of their experience and how that might influence their response to the questionnaire. The results showed that respondents' experience in the Airline ranges from six years to well over fifteen years. It further shows that 60% of the participants have adequate experience in projects ranging from 6 to 5 years. 4 individuals, ie, 27% of the participants have a project experience of less than five years and 2 individuals, ie, 13% of the participants have a project experience of more than 15 years. Overall, 73% of the participants have project experience more than five years.

The target sample consisted of IT and project leaders within the IT division. The individuals held roles that can be described as Higher Executive Officers, Middle Management, Front line Supervisors (Team Leaders), and Senior Officers (Project Managers/Officers), and have worked in the IT division ranging from 6 years to more than 15

years. The individuals represented in the target sample therefore have the authority, experience, and knowledge to accurately answer the research questions. The research, from participants' adequacy perspective to give relevant feedback, is therefore reliable.

Looking at the overall PMO functions maturity, the aggregate maturity score of the 27 functions is 49% putting it at an "Intermediate" level of maturity. The sophistication level of service delivery for the entire 27 PMO functions ranges from as low as 20% to a higher score of 87%. This shows that there is a room for improvement especially if the PMO works on the three functions with "Basic" maturity level and the "Intermediate" maturity level functions with a low score. The two tactical functions "implement and manage the risk database" and "Implement and manage the lessons learned database" and the operational function "Conduct project audits" has scored the lowest level of service provision sophistication score making them the three functions with "Basic" level of maturity. The operational function "Managing one or more projects or programs" has scored a higher level of maturity of 87% putting it on the "Advanced" maturity level. Tactical function "Manage Interface with Customers" has scored the second highest maturity score of 73% putting it on the "Advanced" level of maturity. The last function to achieve an "Advanced" level of maturity is the operational function "Provide information to senior management of the status of projects that are underway" with a score of 69%.

In the functional group analysis, most of the respondents scored organizational learning as having the lowest maturity level as compared to the other functional groups. Organizational learning is a group of functions comprising of the following functions: "Monitor and control the performance of the PMO", "Manage archives of project documentation", "Conduct post-project reviews", "Conduct project audits", "Implement and manage a database of lessons learned", and "Implement and manage a risk database". On the contrary Group 3 – Multi Project Management has scored the highest maturity score of 61%. This shows that the PMO manages relatively well the functions under this group, functions like, "Manage one or more departmental portfolios", "Coordinate and integrate the department's portfolio", "Allocate and share resources between departmental projects", "Identify, select and prioritize new departmental projects and programs", and "Manage one or more programs or projects".

5.3. Conclusion

The research papers main agenda was to assess the maturity level of a PMO in Ethiopian Airlines Information Technology department. Hence the purpose of the study is to find out the level of maturity of the PMO that would ultimately help the PMO to see if its functions and structural positioning are in alignment with the PMO's mission. To address the issues mentioned under the statement of the problem, this study tried to answer the research questions; What are the common functions the PMO performs? And what is the level of maturity of the PMO?

The first research question enquires regarding the functions that the PMO provides. Based on the data gathered and analyzed, it can be concluded that the PMO attempts to performs all PMO functions identified in the literature. It is also evident from the answers to the interview questions and the company documents reviewed that the PMO is expected to provide all functional approaches, i.e., strategic, tactical and operational. On top of that significant number of functions in the questionnaire were rated more than zero (if the respondent believes the function is not performed by the PMO, he/she gives a score of zero to that particular function). This can be taken as additional testimony that the PMO tries to provide all functions. The overall maturity score of the PMO is 49%. The score puts the PMO on an "Intermediate" level of maturity.

Looking at the overall PMO functions maturity, the aggregate maturity score of the 27 functions is 49% putting it at an "Intermediate" level of maturity. The sophistication level of service delivery for the entire 27 PMO functions ranges from as low as 20% to a higher score of 87%. This shows that there is a room for improvement especially if the PMO works on the three functions with "Basic" maturity level and the "Intermediate" maturity level functions with a low score. The two tactical functions "implement and manage the risk database" and "Implement and manage the lessons learned database" and the operational function "Conduct project audits" has scored the lowest level of service provision sophistication score making them the three functions with "Basic" level of maturity. The operational function "Managing one or more projects or programs" has scored a higher level of maturity of 87% putting it on the "Advanced" maturity level. Tactical function "Manage Interface with Customers" has scored the second highest maturity score of 73% putting it on the "Advanced" level of maturity. The last function to achieve an "Advanced" level of maturity is the operational function "Provide information to senior management of the status of projects that are underway" with a score of 69%.

The overall maturity is the result of the aggregate score of the strategic functions which scored 51%; the tactical functions which scored 47%; and the operational function with a score of 51%. Hence that maturity level of the PMO both at strategic, tactical and operational level is "Intermediate" and this implies that the PMO's overall maturity is also "Intermediate".

5.4. Recommendation

Based on the data analyzed the PMO is expected to deliver all departmental functions. But its structural position is situated as front-line supervisor under one of the IT division's department. This structural position does not provide the PMO with the necessary authority to monitor all projects, within IT division, that are conducted out of the PMO office. So it is the recommendation of this paper to restructure the PMO to a higher level in order to enable it to have the necessary authority to monitor all projects within IT division. Or the PMO has to adjust its mission and limit its functions to areas where it can manage with its current authority level.

The PMO must immediately start work to improve the maturity levels starting from the functions which scored very low depending on its mission.

There is a significant gap the way the PMO perceives its maturity and the way the executives, the other team leaders and the project managers perceive the PMO's maturity. This shows that the PMO has no idea that it is out of touch with the very people it is supposed to assist. Hence it is the recommendation of this paper for the PMO to also assess the perception of its clients in order to gauge if it is meeting their expectation.

In the functional group analysis, most of the respondents scored organizational learning as having the lowest maturity level as compared to the other functional groups. Hobbs and Aubry (2007) describe this group of functions as comprising of the following functions: "Monitor and control the performance of the PMO", "Manage archives of project documentation", "Conduct post-project reviews", "Conduct project audits", "Implement and manage a database of lessons learned", and "Implement and manage a risk database" (Hobbs & Aubry, 2007, p. 83).

Desouza and Evaristo (2006) suggest that one of the roles that drive significant organizational value is when the PMO acts as a knowledge-manager. This means, ensuring past learning is captured, stored, and communicated to prevent project related issues from re-occurring, or improve efficiencies through applying positive learning. Hence this paper recommends the PMO to work on the organizational learning functions to enhance the maturity level of this important group of functions.

From the result of the interview, the PMO have adopted the PRINCE2 project management methodology to be used on all IT projects. However, the average score of the functional group "Group 2 - Development of PM Competencies and Methodologies" scored the lowest next to Organizational learning. This shows that there is a gap from the PMO side to ensure the adoption of the methodologies that it has rolled out by all projects. This problem could be related to the lack of head counts in the PMO on a staff capacity to assist and train project managers within the PMO in particular and in IT in general. Hence it is the recommendation of this paper for the PMO to have project management experts on a staff capacity in order to consult, assist and train Project Managers.

5.5. Research Limitation and Areas of Further Research

5.5.1. Limitation of the study

The research focused on only one PMO of the organization, hence the result might not represent the overall maturity of the other PMOs in the company or the overall maturity of the organizational PMO. Assessment of

PMO maturity is a new endeavor for the case studied and it has taken the researcher's time and effort to be on the same page with participants of the research.

5.5.2. Suggestion for future research

Since the idea of project management office maturity is relatively new and not practiced in Ethiopia, it would be valuable to conduct further research in the topic. Since this research is based on one case, further study can be conducted on other PMOs in Ethiopian Airlines in particular and in other organizations and sectors in general. This will allow to provide important statistical generalizations regarding PMO maturity in broader scope. A continuous study on the same case will also be beneficial to assess the progress made in terms of maturity after the necessary improvement initiatives are put in place.

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Appendices

Questionnaire

ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE OFFICE OF GRADUATE STUDIES
MA IN PROJECT MANAGEMENT
SURVEY QUESTIONNAIRE

Dear Respondent,

You are kindly requested to participate on a research study for partial fulfillment of master's degree in Project Management. The study aims to assess Project Management Office's (PMO) Maturity: in The Case of Ethiopian Airlines Group's Information Technology PMO. This questionnaire is prepared to gather information on the degree of sophistication of the PMO's functions/services provision in order to measure the maturity level of the PMO. Your genuine response is invaluable for the success of the research.

Therefore, I kindly urge you to respond to all the below listed questions, presented in two parts, after close reading of the instructions provided. Please keep in mind that all your answers are going to be used only for this study purpose and will be kept strictly confidential.

Please don't write your name or any personal identifier on the questionnaire.

For any clarification needed please contact me on: +251-911-624004 Or +251-115-178793
Thank you in advance, for your time.

Abrham Kidane

Part I: Respondent's demographic data

Instruction: Please put a tick mark (X) in the check box corresponding to the choice that most represents you.

1. Gender: **Male** ☐
Female ☐
2. Age group: **18-25** ☐
26-30 ☐
31-35 ☐
36-40 ☐
Above 40 ☐

3. Education Level: **Diploma** ☐
Bachelor Degree ☐
Master's Degree ☐
Other: Please specify____ ☐

4. Position: **IT Head & Above** ☐
Team Leader PMO ☐
Team Leader Non-PMO ☐
Project Mgr/Officer ☐

5. Experience in Ethiopian Airlines:

≤ 5 Years ☐
6-10 years ☐
11–15 years ☐
>15 years ☐

6. Overall experience in project:

≤ 5 Years ☐
6-10 years ☐
11–15 years ☐
>15 years ☐

Part II Functional Questionnaire

Place an "X" in the area that most applies.

ID	Scope	Approach	Service	Score
B.1.1)	Departmental	Strategic	How does the PMO provide advice to the department senior management?	
	Departmental	Strategic	The PMO does not perform this function.	
	Departmental	Strategic	The PMO is asked by top management to give its position on issues relating to making strategic decision **once in a while**.	
	Departmental	Strategic	The PMO is **frequently asked** by top management to give its position on issues relating to making strategic decision, however, its involvement **is not formally established**.	
	Departmental	Strategic	The PMO is **frequently asked** by top management to give its position on issues relating to making strategic decision and **its involvement is formally established**.	
B.1 .2)	Departmental	Strategic	How does the PMO coordinate and integrate the department's portfolio?	
	Departmental	Strategic	The PMO does not perform this function.	
	Departmental	Strategic	The PMO identifies interdependencies between the projects and programs of the department, but **it does not keep track of the changes in interdependencies**.	
	Departmental	Strategic	The PMO **identifies and tracks interdependencies** between the projects and programs of the department, **informing and triggering** the managers of projects/programs and stakeholders in case of need, rebalancing, and other changes.	

	Departmental	Strategic	The PMO identifies and tracks interdependencies between the projects and programs of the department, **acting proactively** to ensure the realization of the portfolio and **providing preventive and corrective actions as required**.	
B.1.3)	Departmental	Strategic	How does the PMO develop and maintain a strategic framework of departmental projects and programs (scoreboard)?	
	Departmental	Strategic	The PMO does not perform this function.	
	Departmental	Strategic	The PMO provides information on projects and programs of the department, but these are limited to a view on each individual project, **with no analysis of the results** expected of business and dependencies between projects and programs, risk, and deadlines of the portfolio.	
	Departmental	Strategic	The PMO provides information on projects and programs of the department (**with analysis of the results** expected of business and dependencies between projects and programs, risk and maturity of the portfolio) in a scoreboard, **but this is not often used** by senior management to support decision making.	
	Departmental	Strategic	The PMO provides information on projects and programs of the department (with analysis of the results expected of business and dependencies between projects and programs, risk and maturity of the portfolio) in a scoreboard, but this is **regularly used** by senior management to support decision making.	
B.1.4)	Departmental	Strategic	How does the PMO promote project management awareness in the department?	
	Departmental	Strategic	The PMO does not perform this function.	
	Departmental	Strategic	The PMO raises awareness of project management to the **intermediate level** of the department including mid-level managers.	
	Departmental	Strategic	The PMO takes actions to raise awareness of project management **at all levels of the department**, including senior management. The PMO develops and publishes policies and guidelines for the management of projects in the department.	
	Departmental	Strategic	The PMO establishes and **implements a structured plan** to promote project management at all levels of the department. The PMO **reviews and improves** policies and guidelines for project management in the department.	
B.1.5)	Departmental	Strategic	How does the PMO monitor and control its own performance?	
	Departmental	Strategic	The PMO does not perform this function.	
	Departmental	Strategic	The PMO **informally** asks its customers to feedback on its performance.	
	Departmental	Strategic	The PMO **formally** ask its customers for feedback on its performance.	
	Departmental	Strategic	The PMO formally asks its customers to gain feedback on its performance and to **obtain performance indicators for the processes** under its responsibility, continually demonstrating its performance to its customers.	

	Departmental	Strategic	The PMO formally ask its customers to gain feedback on its performance and to obtain performance indicators for the processes under its responsibility, continually demonstrating its performance to its customers. In addition, the **PMO shares goals with its customers** and structures itself to **promote continuous improvement and increases in its maturity**, assessing the need for removal, maintenance, or creation of new services.	
B.1.6)	Departmental	Strategic	How does PMO participate in the department strategic planning process?	
	Departmental	Strategic	The PMO does not perform this function.	
	Departmental	Strategic	The PMO **informally and occasionally** participates in the strategic planning process of the department.	
	Departmental	Strategic	The PMO **informally and regularly** participates in the strategic planning process of the department.	
	Departmental	Strategic	The PMO **formally and regularly** participates in the strategic planning process of the department.	
B.1.7)	Departmental	Strategic	How does the PMO manage one or more departmental portfolios?	
	Departmental	Strategic	The PMO does not perform this function.	
	Departmental	Strategic	The PMO maintains a list of **active projects** throughout the department.	
	Departmental	Strategic	The PMO maintains a list of **active projects and programs** throughout the department and **establishes their prioritization but does not follow a structured portfolio management process.**	
	Departmental	Strategic	The PMO maintains a list of **active projects and portfolios, prioritizes them** throughout the department and **establishes formal processes**, acting as facilitator in the definition (identification,categorization, evaluation, selection), development (prioritize, balance, and commitment) and implementation (monitoring, review, and change management) of the portfolio.	
	Departmental	Strategic	The PMO maintains a list of active projects and portfolios, prioritizes them throughout the department, and establishes formal processes, acting as facilitator in the definition (identification, categorization, evaluation, selection), development (prioritize, balance and commitment) and implementation (monitoring, review and change management) of the portfolio. The PMO **uses an integrated system to automate the department's portfolio management process**.	
B.1.8)	Departmental	Strategic	How does the PMO identify, select and prioritize new departmental projects and programs?	
	Departmental	Strategic	The PMO does not perform this function.	
	Departmental	Strategic	The PMO identifies, selects, and prioritizes new projects and programs throughout the department **without defined criteria and without a relationship between strategic department goals and the existing portfolio.**	

	Departmental	Strategic	The PMO identifies, selects and prioritizes new projects and programs throughout the department **based on criteria, but without a clear and precise relationship between the strategic department goals and the existing portfolio.**	
	Departmental	Strategic	The PMO provides the department with a formal process of identification, selection and prioritization of new departmental projects and programs **based on categories and pre-established criteria.**	
B.1.9)	Departmental	Strategic	How does the PMO manage the benefits of the departmental projects and programs?	
	Departmental	Strategic	The PMO does not perform this function.	
	Departmental	Strategic	The PMO monitors the achievement of expected benefits for each project/program of the department **only during its execution,** evaluating the results comparing them with the original strategic goals of the project/program.	
	Departmental	Strategic	The PMO monitors the achievement of expected benefits for each project/program of the department **during its execution and after closure** evaluating the results and comparing them with the original strategic goals of the project/program.	
B.I.I0)	Departmental	Strategic	How does the PMO map the relationships and the environment of projects and programs in and out of the department?	
	Departmental	Strategic	The PMO does not perform this function.	
	Departmental	Strategic	The PMO identifies the stakeholders of the department's portfolio and takes actions to develop a strategy for stakeholder management.	
	Departmental	Strategic	The PMO identifies the stakeholders of the department's portfolio, **analyzes their expectations, establishes a strategy to manage relationships and proactively works to implement it**. Besides, the PMO looks for benchmarking in project management with other organizations.	
B.2.1)	Departmental	Tactical	How does the PMO develop and implement the departments project management methodology?	
	Departmental	Tactical	The PMO does not perform this function.	
	Departmental	Tactical	The PMO has developed a **basic methodology** for the department, **but it is not used consistently on all projects**.	
	Departmental	Tactical	The PMO has developed a **standard methodology** for the department, **aligning possible existing methodologies** in different areas, and the **methodology used in most projects in the department.**	
	Departmental	Tactical	The PMO has developed a standard methodology for the department, and **it is used by all projects as it is mandatory** unless a specific waiver is requested and approved.	
	Departmental	Tactical	The PMO has developed and **improved** the standard methodology for the department **focusing on best practices and continuous improvement**.	
B.2.2)	Departmental	Tactical	How does the PMO develop skills in project management?	

	Departmental	Tactical	The PMO does not perform this function.	
	Departmental	Tactical	The PMO **responds reactively** to the department's project management training needs.	
	Departmental	Tactical	The PMO **proposes** project management training for the department.	
	Departmental	Tactical	The PMO **establishes a plan for developing skills** in project management throughout the department, including training, certification and graduate courses.	
	Departmental	Tactical	The PMO **establishes a specific career path** in project management for the department,**supported by a plan for corporate developmen**t of project management knowledge, skills, and competencies, which includes training, certification and graduate courses.	
B.2.3)	Departmental	Tactical	How does the PMO implement and manage project information systems?	
	Departmental	Tactical	The PMO does not perform this function.	
	Departmental	Tactical	The PMO provides a project management information system for use throughout the department, focusing on monitoring and control, which is used by managers of projects/programs and stakeholders **in most** projects/programs of the department, but this **system does not use an integrated database**.	
	Departmental	Tactical	The PMO provides a project management information system for use throughout the department, focusing on monitoring and control, which is used by managers of projects/programs and stakeholders **in most** projects/programs of the department **with an integrated database.**	
	Departmental	Tactical	The PMO provides a project management information system for use throughout the department, focusing on monitoring and control, which is effectively used by managers of projects/programs and stakeholders **in all projects/programs** of the department **with an integrated database**.	
B.2.4)	Departmental	Tactical	How does the PMO manage interfaces with customers?	
	Departmental	Tactical	The PMO does not perform this function.	
	Departmental	Tactical	The PMO monitors the progress of projects and programs of the department but **is not involved with customer relationship management.**	
	Departmental	Tactical	The PMO **evaluates customer satisfaction, but does not directly interface with the customers** of the department's projects and programs.	
	Departmental	Tactical	The PMO **is responsible for customer relationship management of all the department's projects and programs.**	
B.2.5)	Departmental	Tactical	How does the PMO provide a set of tools for project management?	
	Departmental	Tactical	The PMO does not perform this function.	
	Departmental	Tactical	The PMO provides tools for use in the department **but they are not standardized and integrated.**	
	Departmental	Tactical	The PMO provides tools, available for department, that **are standardized and integrated** to existing processes and methodologies, but **the tools are not used in most cases** to their fullest extent.	

	Departmental	Tactical	The PMO provides tools, available for department, that are standardized and integrated to existing processes and methodologies, and **the tools are fully used on most projects and programs.**	
B.2.6)	Departmental	Tactical	How does the PMO allocate and share resources between departmental projects?	
	Departmental	Tactical	The PMO does not perform this function.	
	Departmental	Tactical	PMO **operates in a reactive form** in allocating and sharing resources between projects throughout the department.	
	Departmental	Tactical	The PMO **recognizes the importance** of a resource pool, but **lacks authority to allocate or share resources** between projects in the department.	
	Departmental	Tactical	The PMO has **established a resource pool** and **has the authority to allocate and share resources** between projects in the department.	
B.2.7)	Departmental	Tactical	How does the PMO implement and manage the lessons learned database?	
	Departmental	Tactical	The PMO does not perform this function.	
	Departmental	Tactical	The PMO stores the lessons learned from projects but does so **in an unstructured way.**	
	Departmental	Tactical	The PMO **consolidates the lessons learned** from projects of the department and **has set up a database for them**.	
	Departmental	Tactical	In addition, the PMO **implements and disseminates a system with a single point of entry to retrieve lessons learned** from projects throughout the department.	
B.2.8)	Departmental	Tactical	How does the PMO implement and manage the risk database?	
	Departmental	Tactical	The PMO does not perform this function.	
	Departmental	Tactical	The PMO has set up a risk database.	
	Departmental	Tactical	The PMO **uses a risk breakdown structure and consolidates the risks managed** in each project in the department using a risk database.	
	Departmental	Tactical	In addition, the PMO **is able to use the lessons learned database to access risks from other projects** in the department.	
B.2.9)	Departmental	Tactical	How does the PMO select, manage, and evaluate project managers?	
	Departmental	Tactical	The PMO does not perform this function.	
	Departmental	Tactical	The PMO recruits, selects, evaluates, and determines salaries of project managers **as requested.**	
	Departmental	Tactical	The PMO **establishes criteria for use in the entire organization** for recruiting, selecting, and evaluating Project Managers.	
	Departmental	Tactical	In addition, the PMO **establishes a career path for project managers** and **determines the salary structure at each level**.	
B.3.1)	Departmental	Operational	How does the PMO provide specialized services for the project manager?	
	Departmental	Operational	The PMO does not perform this function.	
	Departmental	Operational	The PMO provides the project managers with **basic project management support** such as: preparing documentation, preparing of schedules, and facilitating meetings.	

	Departmental	Operational	The PMO provides project managers advanced services and support such as: risk analysis, development and management of contracts, and project recovery.	
B.3.2)	Departmental	Operational	How does the PMO provide information to senior management of the status of projects that are under way?	
	Departmental	Operational	The PMO does not perform this function.	
	Departmental	Operational	The PMO collects status information, prepares reports and **distributes** them to senior management/sponsors but **is not responsible for analysis nor does it take corrective action** based on data in the reports.	
	Departmental	Operational	The PMO receives status information, **analyzes it and provides reports** to senior management / sponsors and **informs them if there are specific problems in which their assistance is needed.**	
	Departmental	Operational	The PMO receives status information, analyzes it, and provides reports to senior management/sponsors of the organization, **informs them if there are problems and assists them in resolving problems** as requested.	
B.3.3)	Departmental	Operational	How does the PMO monitor and control project/program performance?	
	Departmental	Operational	The PMO does not perform this function.	
	Departmental	Operational	The PMO monitors and controls the project/program performance considering time, cost, quality and customer satisfaction, and **provides follow-up reports without analysis upon request.**	
	Departmental	Operational	The PMO monitors and controls the performance of projects/programs considering time, cost, quality and customer satisfaction and **analyzes the available data.**	
	Departmental	Operational	The PMO monitors and controls the performance of projects / programs considering time, cost, quality and customer satisfaction, analyzes data, and **takes preventive and corrective actions working proactively** with project/program managers and senior management.	
B.3.4)	Departmental	Operational	How does the PMO provide mentoring for project managers?	
	Departmental	Operational	The PMO does not perform this function.	
	Departmental	Operational	The PMO provides mentoring throughout the department **when requested.** The mentoring involves supporting project planning and control and transferring technical knowledge to the project manager or to his or her team.	
	Departmental	Operational	The PMO **identifies needs and proactively provides mentoring** throughout the department. The mentoring involves supporting project planning and control, to transfer technical knowledge to the project manager or to his or her team.	

	Departmental	Operational	The PMO identifies needs and proactively provides mentoring throughout the department. The mentoring involves supporting project planning and control, transferring technical knowledge to the project manager or his or her team, and **assisting them with the development or enhancement of interpersonal skills.**	
B.3.5)	Departmental	Operational	How does the PMO manage and collect project files and documentation?	
	Departmental	Operational	The PMO does not perform this function.	
	Departmental	Operational	The PMO captures and stores documents for projects across the department, **without specific analysis and information retrieval; few people use available data.**	
	Departmental	Operational	The PMO captures and stores documents for projects across the department, without specific analysis and information retrieval **but provides guidance to individuals who wish to use these documents.**	
	Departmental	Operational	The PMO **has a structured process with the goal of capturing and storing documents for projects** across the department, **analyzing the quality of documentation and providing mechanisms for users to locate needed information.**	
B.3.6)	Departmental	Operational	How does the PMO manage one or more programs or projects?	
	Departmental	Operational	The PMO does not perform this function.	
	Departmental	Operational	The PMO assists managers **on occasion** but **does not have a methodology in place or tools to use.**	
	Departmental	Operational	The PMO provides assistance to project/program managers **whenever requested** but **does not have a methodology in place or tools to use**.	
	Departmental	Operational	The PMO **provides assistance** to project/program managers **with a standard methodology and tools for their use.**	
B.3.7)	Departmental	Operational	How does the PMO conduct project audits?	
	Departmental	Operational	The PMO does not perform this function.	
	Departmental	Operational	The PMO **performs audits upon request or if there is a major problem identified by senior managers who requests feedback.**	
	Departmental	Operational	The PMO **acts proactively throughout the department, following established audit procedures for projects**. In addition, the audit results are used to provide feedback. The PMO realizes there is **significant resistance** from project managers when an audit is under way.	
	Departmental	Operational	The PMO acts proactively throughout the department, following established audit procedures for projects. In addition, the audit results are used to provide feedback. The PMO realizes that there is **some resistance, but most people recognize the value of the audit work.**	
B.3.8)	Departmental	Operational	How does the PMO conduct post-reviews of project management (lessons learned)?	
	Departmental	Operational	The PMO does not perform this function.	

Departmental	Operational	The PMO **facilitates the process of capturing lessons learned**, as it is directly involved in project meetings and events.	
Departmental	Operational	The PMO **facilitates the process, analyzes, consolidates and submits proposals for continuous improvement** on projects.	
Departmental	Operational	In addition, the PMO **provides a process to reuse the lessons learned in future projects across the department.**	

Interview Questions

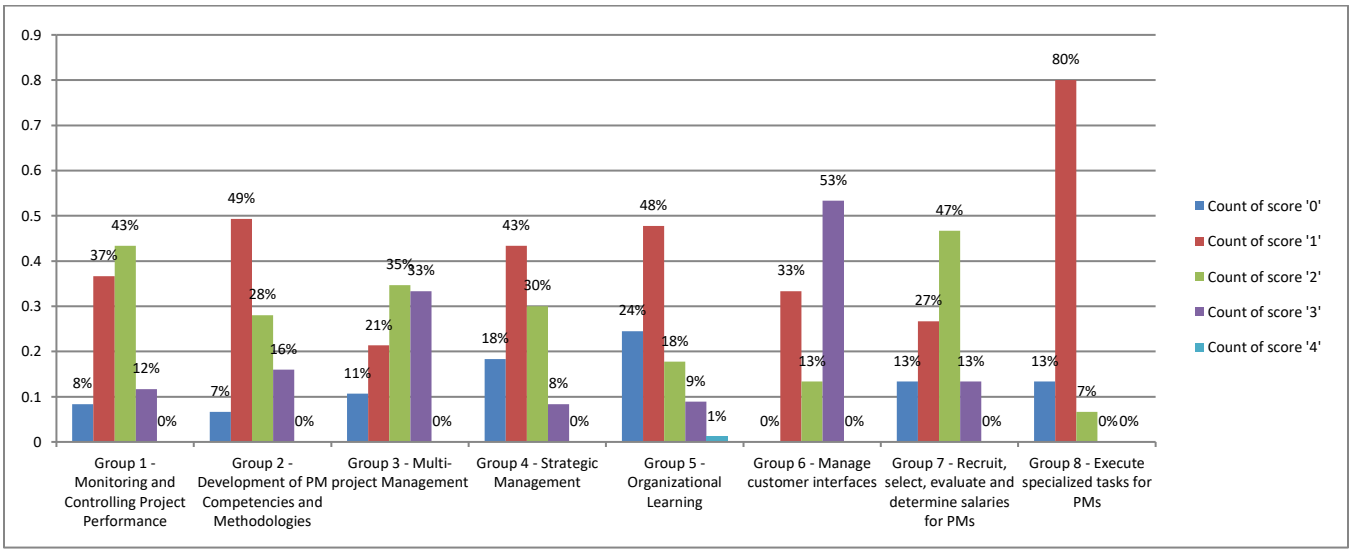
1. What is the mission of IT PMO? (in terms of strategic, tactical and operational roles it plays)
2. What are the functions/services the PMO provides?
3. Which customers/clients perceived to get support from the PMO? OR (Which customers does the PMO support?) OR who are the PMO's customers?
4. Does it provide all the functions that its clients need?
5. Where is IT PMO structurally located in the business unit/organization? in terms of scope level; (Enterprise/Corporate level, Departmental level and program-project level)
6. Dose the PMO have a staff positions other than the project managers?
7. Does it provide support to all projects in the business unit or only to projects assigned to it?
8. How many projects are currently undertaken in the PMO? You can provide an estimated figure.
9. How many projects are currently undertaken outside of the PMO within IT? You can provide an estimated figure.
10. What do you think is its short comings and the possible remedial actions for its short comings?

Respondents Answer and Analysis Table

	Functional Questions																										Demographic Questions					
	Strategic Functions										Tactical Functions									Operational Functions											
High Score for functional Quest	3	3	3	3	4	3	4	3	2	2	4	4	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3						
Respondents/Questions	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	Gender	Age	Education Level	Position	Exp.ET	Exp.Pjct.
R 1	2	2	1	1	2	0	2	0	1	2	1	2	1	1	2	3	1	0	2	1	2	2	1	1	3	1	1	Male	31-35	Master's Degree	Project Mgr/Officer	6-10 years	< 5 Years
R 2	1	2	2	3	3	3	3	2	2	2	2	3	2	3	3	2	1	1	2	2	2	2	2	2	3	2	2	Female	36-40	Master's Degree	Team Leader Non-PMO	>15 years	>15 years
R 3	3	2	1	1	3	1	2	1	1	1	1	0	1	3	2	2	1	0	1	1	2	2	0	1	3	0	0	Female	Above 40	Master's Degree	Project Mgr/Officer	>15 years	11–15 years
R 4	1	2	2	2	3	1	2	3	2	1	3	1	2	3	2	2	1	2	2	1	2	3	1	3	3	0	2	Male	31-35	Bachelor Degree	Team Leader PMO	6-10 years	6-10 years
R 5	1	3	3	1	3	2	3	1	2	2	3	3	1	3	2	1	1	0	2	1	2	2	2	2	3	0	2	Male	31-35	Master's Degree	Project Mgr/Officer	11–15 years	6-10 years
R 6	2	1	3	1	1	2	1	2	1	1	1	2	1	2	2	1	1	0	1	1	3	2	1	2	3	1	1	Male	26-30	Bachelor Degree	Team Leader Non-PMO	6-10 years	6-10 years
R 7	1	2	0	1	4	2	1	2	1	2	1	3	1	3	3	2	0	0	2	1	1	2	2	1	3	2	2	Male	31-35	Bachelor Degree	Team Leader Non-PMO	6-10 years	6-10 years
R 8	1	2	0	1	1	0	1	3	1	1	3	2	1	3	3	3	1	2	2	1	3	1	1	3	3	1	1	Male	Above 40	Bachelor Degree	IT Head & Above	>15 years	6-10 years
R 9	2	3	1	1	3	1	2	3	1	2	2	1	1	1	1	3	1	0	0	1	2	2	1	0	3	1	1	Male	31-35	Master's Degree	IT Head & Above	11–15 years	< 5 Years
R 10	3	3	2	1	0	3	1	2	1	1	2	3	2	1	2	2	1	1	1	1	2	2	1	1	3	0	1	Male	Above 40	Master's Degree	IT Head & Above	>15 years	>15 years
R 11	3	0	0	1	1	1	1	2	1	0	1	2	1	3	1	1	1	1	1	1	2	1	2	1	1	1	1	Male	31-35	Master's Degree	Team Leader Non-PMO	6-10 years	6-10 years
R 12	0	0	0	0	2	0	0	0	0	0	1	1	0	1	1	1	1	1	3	0	1	1	0	0	2	1	0	Male	36-40	Master's Degree	Project Mgr/Officer	6-10 years	6-10 years
R 13	2	1	1	1	2	2	3	3	1	2	1	1	1	3	1	0	1	1	3	0	3	3	1	0	3	0	1	Female	31-35	Bachelor Degree	Project Mgr/Officer	11–15 years	< 5 Years
R 14	0	0	1	2	3	0	2	1	0	0	1	1	1	1	1	2	1	0	2	1	2	1	1	1	0	0	0	Male	31-35	Bachelor Degree	IT Head & Above	11–15 years	11–15 years
R 15	2	2	2	2	2	1	2	2	1	1	2	1	1	2	3	1	1	0	0	1	2	2	0	2	3	1	1	Male	Above 40	Bachelor Degree	Project Mgr/Officer	>15 years	< 5 Years
Count of score '0'	2	3	4	1	1	4	1	2	2	3	0	1	1	0	0	1	1	8	2	2	0	0	3	3	1	6	3	0					
Count of score '1'	5	2	5	10	3	5	5	3	10	6	8	6	11	5	5	5	14	5	4	12	2	4	8	6	1	7	8	1					
Count of score '2'	5	7	4	3	4	4	6	6	3	6	4	4	3	2	6	6	0	2	7	1	10	9	4	4	1	2	4	2					
Count of score '3'	3	3	2	1	6	2	3	4	0	0	3	4	0	8	4	3	0	0	2	0	3	2	0	2	12	0	0	3					
Count of score '4'	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4					
	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15						
Avg Score	1.60	1.67	1.27	1.27	2.20	1.27	1.73	1.80	1.07	1.20	1.67	1.73	1.13	2.20	1.93	1.73	0.93	0.60	1.60	0.93	2.07	1.87	1.07	1.33	2.60	0.73	1.07	Male	18-25	Bachelor Degree	IT Head & Above	≤ 5 Years	≤ 5 Years
Degree of Soph.%	53%	56%	42%	42%	55%	42%	43%	60%	53%	60%	42%	43%	38%	73%	64%	58%	31%	20%	53%	47%	69%	62%	36%	44%	87%	24%	36%	Female	26-30	Postgraduate dipl	Team Leader PMO	6-10 years	6-10 years
Approach Avg %	51%							47%											51%										31-35	Master's Degree	Team Leader Non-PMO	11–15 years	11–15 years
PMO approach Maturity Level	Intermediate							Intermediate											Intermediate										36-40	Other: Please spec	Project Mgr/Officer	>15 years	>15 years
PMO Maturity%	49%																												Above 40				
PMO Maturity Level	Intermediate																																

Appendix 1 Respondents answer and analysis table

Group Score of the Eight Functional Groups



Appendix 1 Group Score of the Eight Functional Groups