

**The IT Project Management Office – a study
about its benefits and drawbacks on ICT
Portuguese sector**

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Dissertation presented as partial requirement for obtaining
the master's degree in Information Management

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by

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ABSTRACT

The challenges and complexity on the execution of Information technology and digital transformation projects are increasing. Siloed organizations are preventing value creation and affecting the expected performance of a project. Recently, there is a considerable interest in industry about the potential of the Project Management Office (PMO) capabilities to effectively lead organizations in digital transformation. Several benefits might arise from the introduction of a PMO, however not all organizations have yet realized the PMO structure and potential. The assessment carried out on this research evaluates the current perception of the IT PMO in ITC companies in Portugal. The analysis aims to provide a holistic understanding of perceived value, benefits, drawbacks, and improvement points inside the IT sector from experienced professionals. The survey conducted has sentences with a score rate to support a structured analysis, as a Likert. A discussion on the findings and results concludes the research along with future work suggestions.

KEY WORDS

Project Management Office, Project Management, PMO, IT PMO

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ACRONYMS AND ABBREVIATIONS

DX	Digital Transformation
IT	Information Technology
ITC	Information and Communications Technology
PM	Project managers
PMBOK	Project Management Body of Knowledge
PMI	Project Management Institute
PMO	Project Management office
PMoCE	Project Management of Center of Excellence

1. Introduction

1.1. Background

The growing interest in innovative and technological solutions may be explained by **the businesses' digital transformation (DX)** demand to keep up their competitive edge and fulfilling the customer needs. Most of these initiatives are conducted as **projects** (Keil, et al., 2000), consequently the **subject of project management** has been attracting attention especially for Information Technology (**IT projects**) regarding strategic IT investment growth (Spelta & Albertin, 2012).

The IT can perform an significant role in the context of project management as these **IT projects "must deliver success and value"**. Currently, these IT projects are present in almost every aspect of the business (Varajão, Trigo, Figueiredo,, & Barroso, 2009). The strategy and execution of these projects may be the challenges to completing and achieving digital transformation goals. In a Gartner research in April 2017 with 388 CEOs and senior business executives, 31% of the them indicated that IT-Related is one of their top five strategic business priorities for 2017/2018 investments. This takes **IT-Related changes as the number two** business priority; growth is the number one. Gartner claims that this **IT focus have never been this high** (Gartner, 2017). This research also states that, for those who are quantifying progress, the **revenue** is the top digital transformation success metric. The IDC Reveals Worldwide Digital Transformation Predictions 2017 states that, by the end of 2019, **DX investments** will reach USD 1.7 trillion worldwide, a **42% increase** from 2017 (Tomić, 2017). According to a survey from Bain & Company in November 2017 (Baculard, Colombani, Lancry, & Spaulding, 2017) **just 5%** of those companies involved in digital transformation efforts reported that they **had achieved or exceeded the expectations they had set for themselves**.

Recent studies, such as the MIT and Capgemini (Fitzgerald, 2013) study and Organizational Barriers to Digital Transformation (Gupta, 2018), report that the main **challenges to any Digital Transformation projects** are people, communication and change management, not just a technology challenge. The studies summarize that **siload organizations** prevent value creation, thus collaborating across silos is a top challenge. The misleading of change and knowledge management processes are also indicated as barriers, for e.g.: the lack of articulated and clear messages for changing, not identifying the key people and change agents, projects not aligned with the organization culture, values and beliefs, a non-

collaborative environment and not defining clear measurement systems. All these points are highlighted as **preventing completing projects and achieving digital transformation goals**.

In this scenario, the **project management** discipline is considered as a foundation to address these challenges. That is why this discipline is implicated in a wide variety of businesses, industries, public sector and studies. Projects, within programs or portfolios, are often applied as a mean of achieving an organization's strategic plan (PMI, 2004). **Project managers** (PM) are accountable for leading the execution of a project, thus performing a fundamental role to achieve the organization objectives. The PM is usually concentrated on the project assigned within the organization, thus coordinating its execution and delivery. However, the enterprise has other projects being carried out simultaneously, what constitutes the **company's portfolio to achieve the strategic objectives**. Consequently, due to economic pressure to reduce the *time to market*, organizations must tackle the complexity of managing multi-projects. A group of professionals emerged to embrace the concept of program and portfolio management driving an office to connect **strategy, methodologies and knowledge** among projects focusing on the business' goals (Aubry & Thuillier, 2007). This concept can be described by several synonyms, such as **Project Management Office (PMO)**, project office and Program Management Office (Darling & Whitty, 2016). This dissertation considers all main synonyms but focused on **PMO**.

The PMOs are entities that lead **organization's project management efforts** through monitoring and controlling project performance, implementing a standard methodology, multi-project management (portfolio and program) and supporting organizational learning (Hobbs & Aubry, An Empirically Grounded Search for a Typology of Project Management Offices, 2008). The PMO foundations have a **wide range of concepts and typologies**. **There is no single truth for the PMO definition**. As a result of a recent investigation, **António Monteiro** analyzes the typologies of PMO that are proposed by researchers, summarizing a total of **25 PMO Models** in the literature review, grouping by models that share the same concepts. The PMOs framework vary considerably from one source to another (Monteiro, 2016).

1.2. Motivation

There are many reasons that affect the expected **performance of a project** as, for example, bad decisions, lack of project management knowledge, and lack of consistency in the methods used, among others. The organizational and technological complexity, the environmental volatility, and the competitive

pressure for innovation, suggest an increasing need for **improvement in best-practice IT project management** to deliver projects **higher success**.

Recently, there is a considerable interest in industry about the **potential of the Project Management Office (PMO) capabilities** to effectively lead organizations in digital transformation (McKay, Marshall, & Grainger, 2013). While the fundamental origin of the PMO may have been engineering, recently IT projects are a very concern for the PMO (Aubry, Hobbs, & Thuillier, 2008).

Power and Dickson (Powers & Dickson, 1973) undertook a study in **14 organizations** aiming to identify factors associated with the **project success** and failure. In their research of MIS projects, objective measures were considered such as **met time, cost, user satisfaction** (meeting information needs) and the impact on computer operations. Project success and performance is supported by metrics and measures. PMO leaders require these metrics to report their organization's activities accurately.

The motivation for this research emerged from the perception that in Information and communication technology projects, PMO studies are currently **relatively under-researched**. Spelta and Albertin claim that the reason to **set up a PMO** in an organization is to reduce the number of problems in projects through the adoption of PM methodologies (Spelta & Albertin, 2012). Stanleigh (2006) found that 75% of PMOs in the information-systems and technology domain shut down within 3 years of formation.

PMOs are frequently referred to as necessary for **carrying out multi-projects** and supports successful projects (Thomas, 2009). However, other researchers state that PMOs do not appear to be that significant after all for some organizations as public authorities (Lundqvist, 2017). The motivation comes from unresolved questions, little research on the area and lack of actionable advice.

1.3. Objective

In a scenario where *"the more complex projects have become, the more the need to be flexible in project management activities"* (Conrad, 2017), PMOs need to support Project Managers through project management methodologies **to increase projects' deliveries effectiveness**. The PMO is part of a network of complex relations that links strategy, projects and structures (Aubry & Thuillier, 2007).

The research objective is focused on analyzing and studying the **IT PMO benefits and drawbacks perceived by Portuguese ITC companies**. Based on previous literature and by observing and investigating the experienced professionals' point of view, the thesis goal is to understand these professionals

experience and add information for academia and business circles to evaluate the relevance and perceived value of a PMO in IT projects.

This research is structured as follows: in the **first section** introduction of this study, describing the background, the research motivation and objective. The **second part** presents the literature review that analyzes other PMO studies regarding their contribution to project management performance. This section initiates presenting the PMO concept, then its historical information. Further, there are two parts to address the literature review on PMO benefits and drawbacks. The third section explains the research methodology. The study results are detailed in the **fourth section**, with the sample characterization, the script of the interview, data analysis and the study findings. Finally, the **fifth section** addresses the conclusion of the thesis with future work proposals.

The research is qualitative, by interviewing experienced professional. The study aims to describe the reality, and to interpret the perception through an open-ended interview. To provide a quantitative analysis on the interviews' responses, the questionnaire considered a rating scale for some questions.

Regarding terminology, the term PMO is used in all sections of the research, however, when specifically referring to IT area, the description specifies IT PMO.

2. Literature review

2.1. PMO concept

The project management discipline and researches characterize PMO main concepts in a **wide range of definitions**. The concept has been changing, adapting and evolving around for many years. According to Darling and Whitty (Darling & Whitty, 2016) the PMO phenomenon is a dynamic and regularly evolving feature of the project landscape, from starting out as **managing non-operational work** to also include management of human resources that are involved in the projects.

There is no single truth for the PMO definition. The definition given for PMO in PMBOK has been evolved and adapted. Analyzing the 3rd (2004), 4th (2008), and 5th edition (2013), they vary from each one.

The 3rd (PMI, 2004) and 4th editions (PMI, 2008) mentions PMO as a **centralized structure**, but the latter highlights the relevance of keeping the **business objectives consistent** and a structure dependent upon the need of the organization. However, the 5th edition (PMI, 2013) focus on a **management structure** that can perform several types of structure in organizations, each varying in the degree of control and influence delegated to the PMO entity. This edition emphasizes the functions to standardization and facilitation of sharing resources, methodologies, tools and techniques. This concept is shared by other authors, such as Desouza and Evaristo, and Dai and Wells. The former mentions that PMO is an exercise to **customize and sustain the practices**, methods, techniques, and tools in organizations (Desouza & Evaristo, 2006). And the latter, says that PMO is an organizational unit that provides project managers, project teams, and functional managers with **access to the principles**, practices, methodologies, tools, and techniques that are used for efficient and effective project management (Dai & Wells, 2004)

In the PMBOK 5th edition the PMO functions are proposed in three groups: Supportive, controlling and directives. All three editions are specific about the differences between the PM responsibilities and PMO objectives. The PM focuses on the specific project objectives (ex: scope, schedule, cost), while PMO **manages methodologies, major program changes, risks, metrics and interdependencies among projects at the enterprise level**. Moreover, all three mentions that the responsibilities of a PMO can range from providing **project management support** functions to actually being responsible for the direct management of one or more projects. Desouza and Evaristo concludes that a **knowledge-based** approach for PMO demands to centralize information.

The PMO foundations have a **wide range of concepts and typologies** with considerable variation in responsibilities undertaken, their locations and authority within the organization, hence different goals and measures of success. Hobbs and Aubry identified **27 functions of PMO** (Hobbs & Aubry, 2007). In a recent investigation, **António Monteiro** analyzes the typologies of PMO that are proposed by researchers, summarizing a total of **25 PMO Models** in the literature review, grouping by models that share the same concepts. The PMOs framework vary considerably from one source to another (Monteiro, 2016).

The **PMO functions are presented in different groups** in the literature. Hobbs, Aubry and Thuillier say that Performance, methodologies, portfolio and program, strategic and organizational are the mains functions (Aubry, Hobbs, & Thuillier, 2008). In a previous study, these authors mention also that the PMO should **no longer be considered an isolated island** within an organization, it is part of a network of complex relations that links strategy, projects and structures. (Aubry & Thuillier, 2007). Spelta and Albertin describe that PMO has several interfaces to connect to **IT management** (Spelta & Albertin, 2012)

Englund, Graham and Dinsmore define **three types of PMO**: an office to support the project or the program, and PMoCE (Project Management Center of Excellence) (Englund, Graham, & Dinsmore, 2003). Desouza and Evaristo segment the role of **PMOs into three levels**: strategic, tactical and operational (Desouza & Evaristo, 2006).

2.2. History of PMO

Whitty and Darling summarize a **timeline of PMO literature**, due to a lack of history of the PMO description in the literature and deficient documentation. The concept of the PMO has been recorded as early 1805 in Britain for running government schemes to handle delivery. In the USA, documents mention the project office can be traced to as early as 1905 for controlling costs and demonstrating transparency in government audit and accountability (Darling & Whitty, 2016).

Englund support that about the late 1980's, another group of professionals such as a small group of PMs decided to place an office to connect **strategy, methodologies and knowledge** among projects focusing on the **businesses goals**. The project office began to appear in organizations as a project management initiative in the 1990's (Englund, Graham, & Dinsmore, 2003). Whitty and Darling also claim that numerous PMO literature transformations take place in the 1980s when PMO started to be included in discussions relating to software development.

In 1996 the **1st edition of PMBOK** – A Guide to The Project Management Body of Knowledge is released. The **PMBOK** is a set of standard terminology and guidelines for project management, and it is a document resulting from work overseen by the Project Management Institute (PMI). This document is to some extent related to an earlier work that began with a white paper published in 1983 called the "Ethics, Standards, and Accreditation Committee Final Report."

In conclusion, while the **fundamentals of the PMO** can be associated with engineering, aerospace and defense-type projects by **1950's**, more recently, the exponential growth is attributed especially to **IT projects** driven by the concern of better control of risks, improve the project management and preventing project failures (Desouza & Evaristo, 2006) .

2.3. Benefits

Desouza and Evaristo state that some of the primary reasons for project failures are a result of **poor knowledge management and lack of consistency in management**, among others, causing overruns in cost and time through restarts or projects routinely abandoned before completion. Several institutions have established a PMO to ensure **successful management** as the PMOs coordinate this organizational vision among **multiple projects**, support project success, keep stakeholders informed of project progress and outcomes, and provide costs control, however the PMO implementation benefits depends on the type of PMO that would best serve organizations (Salameh, 2014).

Most of large organizations have at some stage **implemented at least one PMO** with several objectives in mind (Kutsch, Ward, Hall, & Algar, 2015). The PMI Pulse of the profession 2018 reports that organizations are empowering PMO to shift **the focal point from an administrative function to one that manages value delivery**. The PMI survey considers that **80% of the successful projects have a PMO** and 72% indicate there is high alignment of the PMO to organizational strategy (Institute, 2018).

In the literature, different authors acknowledge the PMO importance: Hurt and Thomas 2009, Aubry, Hobbs, Muller and Blomquist, 2010. The creation of a PMO in an organization is mentioned by the authors as a demand for **project execution excellence**. Spelta and Albertin states that one of the most common goals of the creation of an IT PMO is to **reduce the number of problem projects** through the adoption of project management methodologies and processes framework. As for IT organizational structure, **IT PMO** may increase **project delivery effectiveness**. Establishing a PMO is a strategy for preventing project failures caused by poor management of project management knowledge (Desouza & Evaristo, 2006).

As **the scope of the PMO function** increases in the organization the more strategic and enterprising role it takes. Some authors in the literature support that PMO **improve project success management** when ensuring continuous executive support and collaboration across the various divisions of the organization. The table below (Table 1 – PMO benefits) describes the breakdown on the main benefits:

Benefits	Author
Prevent and reduce the risk of major project failure	Englund (2003) Desouza & Evaristo (2006) Kutsch <i>et al.</i> (2015)
Guarantee that projects are aligned with the strategic objectives of the organization to projects to be consistent with the business long-term objectives	Desouza & Evaristo (2006)
Creation of processes framework to address project failure problems	Crawford (2002)
Project management improvement in business-critical projects	Bernstein (2000)
Reducing unsatisfactory results on projects	Rad (2001)
Focal point in a multi-project environment	Hobbs & Aubry (2008) Thomas (2009) Salameh (2014) Cleland & Ireland (2007)
Facilitates transfer of project management knowledge across the organization	Bernstein (2000)
Facilitates control by synergy and transferring knowledge	Pellegrinelli & Garagna (2009)
Increase the success rate in delivering to the investment business case	Pansini & Terziewa (2013)
Organizational arrangement for integration	Artto <i>et al.</i> (2011)
Make more efficient use of resources or scarce skills	Kutsch <i>et al.</i> (2015)
Proactive project risks/issues management Better evaluations in terms of time and budget Increasing of effectiveness and efficiency in project management Increasing in output quality Increased percentage of success of project activities Better coordination and control of tasks and resources Availability and circulation of information Creation of data-clearing house of information and project best-practices Implementation of project management competencies and know-how within the organization Increasing of transparency due to information sharing Increased predisposition to change and innovation; Identification of synergies between activities and projects Gaps fulfillment, especially during feasibility analysis, due to increased attention and awareness Better definition of project priority and possibility of negotiations in order to manage urgencies	Pansini & Terziewa (2013)

Table 1 - PMO benefits

In the literature, several authors argue an extensive **list of benefits** from implementing PMO in an organization. However, the same authors provide justification for **not creating a PMO**. The goals and objectives of an **IT PMO** should be defined prior to its establishment to ground its implementation (Kutsch, Ward, Hall, & Algar, 2015). One of the mentioned benefits is that the PMO make more efficient use of resources or scarce skills. The PMO to perform on increasing a **project efficiency and productivity** need to be measured by a baseline established prior to the PMO implementation. If the **IT PMO** goals are not defined and measured by a starting point used for comparisons, **IT PMO** performance and benefits will be subjected to incertitude. Kutsch *et al.* mention that many **PMOs face the lack of recognition of their contribution**. The **lack of definition and baseline** are some of the reasons to the limitations stated in the literature.

2.4. Drawbacks

The **establishment of PMOs** is associated to some overhead and considerable costs, which makes it important to **carefully** consider the consequences. Darling and Whitty (Darling & Whitty, 2016) argued that it could be doubted whether the **costs associated with implementing PMOs really would create the expected return**, even if the performance were assumed as being in compliance with “best practice” (Lundqvist, 2017).

Most PMOs mistakenly focus only on **defining methodology**, processes, and templates without first focusing on understanding the organization’s vision, strategic goals, business objectives, culture, and departmental interdependencies and relationships (Millhollan, 2009). Dai and Wells (Dai & Wells, 2004) concluded that organizations with **PMO had no better project performance** than those without. Milosevic and Patanakul (Milosevic & Patanakul, 2005) argue that there is no statistically significant correlation between the variable most directly related with the PMO and project success after studying the impact of several variables on the level of project success.

Pellegrinelli and Garagna (2009) mention that the creation of a PMO, that brings decision to a centre, will **reduces a degree of autonomy from project leaders**, as they typically value autonomy and dislike standardization. These project leaders may be protectionist and resist the discipline and interference imposed by a PMO, especially if the PMO decides upon things that it knows little about or coming up with solutions and standards that cannot be used by project managers. **The central control office may deteriorate autonomy, creativity, entrepreneurship and ownership**. Additionally, a PMO must be carefully introduced in organizational structure, since employees could misjudge its intervention, especially long-time workers (Aubry, Müller, Hobbs, & Blomquist, 2010) (Pansini & Terzieva, 2013). Member of the project might feel threatened or frustrated because of re-organizations; moreover, an increase in controlling procedures could generate stress or loss of motivation (Atkinson, Crawford, & Ward, 2006).

Another research demonstrates that **PMO does not have a direct and significant impact on project performance** (Kutsch, Ward, Hall, & Algar, 2015). The PMOs influence in projects’ performance depends on the satisfaction of project leaders as also mentioned by Pellegrinelli and Garagna (2009). Establishing a PMO should be grounded in the reality of the business and project environment and recognize that it has to adapt to changes.

The table below (Table 2 – PMO drawbacks) list drawback points stated by some authors:

Drawbacks	Author
No evidence of project performance gains	Dai & Wells (2004)
No correlation between project success variables	Milosevic & Patanakul (2005)
Focusing only in methodology without understanding organization	Millhollan (2009)
Reduces autonomy, creativity, entrepreneurship and ownership of project leaders	Pellegrinelli & Garagna (2009)
Not having a direct and significant impact on project performance.	Kutsch <i>et al.</i> (2015)
Considerable associated cost – value for money	Darling & Whitty (2016)
PMO intervention may be misjudged by long-term employees	Aubry, Hobbs & Blomquist (2010) Pansini & Terzieva (2013)
Increase in controlling procedures could generate stress or loss of motivation	Atkinson, Crawford & Ward (2006)

Table 2 - PMO drawbacks

The quest for a **lasting, efficient and valuable IT project management office** is a challenge faced by many PMO leaders. Some authors say that **lack of flexibility** reduces the adoption and lifetime of PMO (Mullaly, 2011). The lifetime of PMOs is **less than two years** (Hobbs & Aubry, 2010).

The organizations that deal with **IT Projects** need to reach a state of mature project management. Pellegrinelli and Garagna question how to manage the continuous improvement, how to keep on fostering professionalism as people leave and join the organizations.

3. Methodology

The research reported in this document considered a survey. Since the aim of this study is to provide a holistic understanding of **IT PMO benefits and drawbacks** in ITC Portuguese companies, the interviews conducted with managers and PMO professionals were performed in an environment where they could openly share their thoughts. Nevertheless, the survey is fully supported by an online form to allow qualified participants to respond the questions remotely.

To the respondents that could perform a presential interview, the conduction of the discussion was private to allow the participants to openly express their experience.

The literature review provided the foundations to formulate the questions. This supported the whole interview process more systematically. Many other researchers have used this approach and this exploratory study was conducted similarly. The directive questions aim to correlate the interviewees' professional experience with the literature findings. The survey has sentences with a score rate to support a structured analysis, as a Likert.

The **interviewees were asked** about their interpretation of the different topics regarding IT PMO using the questionnaire (4.2 Questionnaire). The tables of benefits and drawbacks that was previously identified and **mapped through the literature review** was also used for the interview process.

The data collected was both **real-time** and **retrospective**. The aim was to retrieve multiple perspectives to investigate the participant's domain knowledge about the PMO. As a conventional method of determining the importance of the services provided by a PMO, a questionnaire was sent out to the initial survey participants, and it was completed by the **4 IT and Project managers and 3 PMOs** (7 respondents in total). Given the specificity of the study due to its segment, the set of information collected from these highly **qualified professionals** has the needed quality to support the study on IT PMO benefits and drawbacks perceived by Portuguese ITC companies.

The questionnaire presented an initial interviewee's characterization. Then, the Project management and PMO profile were set to identify the company classification. The next sectors of the questionnaire present sentences related to the benefits and drawbacks identified in the literature review. The sentences are separated in the PMO performance, perceived value, alignment with the organization and future adoption intention. Each sentence was rated by the respondents' agreement (totally disagree to totally

agree) in 5 levels. The respondents of this questionnaire were both recipients and providers of the service. This enabled a detailed enquiry and analysis.

Finally, due to the limited timeframe, interviews were carried out with respondents from **three ITC private companies** that perform IT projects in Portugal in **project-based organization**. With more time available for conducting the research, the possibility for collecting and analyzing an expanded set of data would increase, providing broader, deeper and more valuable insights into the change initiatives and efforts arising due to the organization's digitalization efforts. Due to limited availability, the interview with **IT executives** was not performed. This profile of respondent would provide a broader perspective. However, due to the size and business capacity in the IT area of the respondents' companies, it is considered that it is a **representative, relevant and satisfactory group** of the IT segment to analyze the results.

4. The Study – focus on Portuguese ITC sector

The literature review highlighted the complex and nature of PMO role. This section presents the data collection for the empirical analysis of this research. The goal of this empirical study is to answer the research questions through exploratory, interpretative and structured approach.

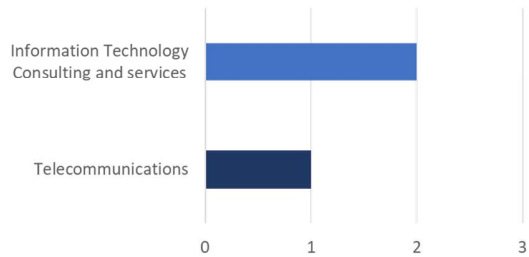
4.1. Sample characterization and profile

Participant identification

The study collected empirical data **from seven qualified and experienced professionals in three companies**. Because the purpose of the research is to provide a specific comprehension on the **PMO benefits and drawback in a particular area**, the study is not focused on obtaining a broad concept or reaching a general conclusion, but to emphasize insights in a **determined segment** and propose ideas for further research. These professionals have a qualified experience in the **IT area**, and their companies operate in the sector of Information technology and telecommunication consulting and services in Portugal, also abroad, for more than 20 years with a significant and large volume of business in the area. Therefore, the data collected provides the **appropriate concentration** and capture a straight perception. Additionally, the research is centered only in professionals with management background and companies that conduct their business in project form and have organizational structure to sustain a PMO.

Three companies are represented in this survey, 2 are from Information Technology Consulting and services, while only one from Telecommunication. Regarding the respondent's current professional position, **four are IT or Project Managers** and **three are Project Office professional or director**. The IT managers and Project managers are identified together as both have the role to coordinate projects and deliveries deadlines, although in different governance levels. All the participants reported direct interactions with the PMO role or working as one. The chart below (chart 1) shows that answers.

The sector of the organization



Role of the participants

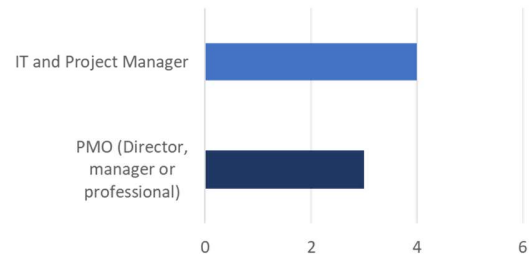


Chart 1 - Characterization - The organization's sector and the role of the participants

Project management profile

In the characterization of the **project management profile**, the participants indicated that the **waterfall and agile methodologies** are the predominant process in the companies to conduct projects, as no other methodology was mentioned (multiple answers). Towards **Portfolio Management**, most of the respondents reported that this organizational process is **not adopted**. The two professionals that mentioned the portfolio management adoption, pointed that the responsible for this process is the **Executive management**. In this case, one of the respondents (that is a PMO director) specified that the scope and steering of the Portfolio may be conducted in an organic method to reach projects alignment:

*Not all projects are analyzed, but a short-list is selected as necessary, by a set of criteria: by the **client's** visibility and impact in the market, by its **risk** level if in a critical point, by its **geographic** zone if there is any particular characteristic, by the **volume** of projects in progress versus the organization's capacity. These projects, while bids, are evaluated by the executive and account manager. They group the head of the business units to negotiate the strategy and the organizational feasibility. It is not effectively a portfolio management framework, but an organic process.*

Project management Office profile

Survey participants were asked a series of questions related to **Project Management Office** profile. Most of the respondents reported that, in their current company, the organizational length of time using PMO is **five or more year**. One respondent informed that this time was between **2 to 4 years**, and one respondent was not aware of this information as illustrated I the chart below (Chart 2).

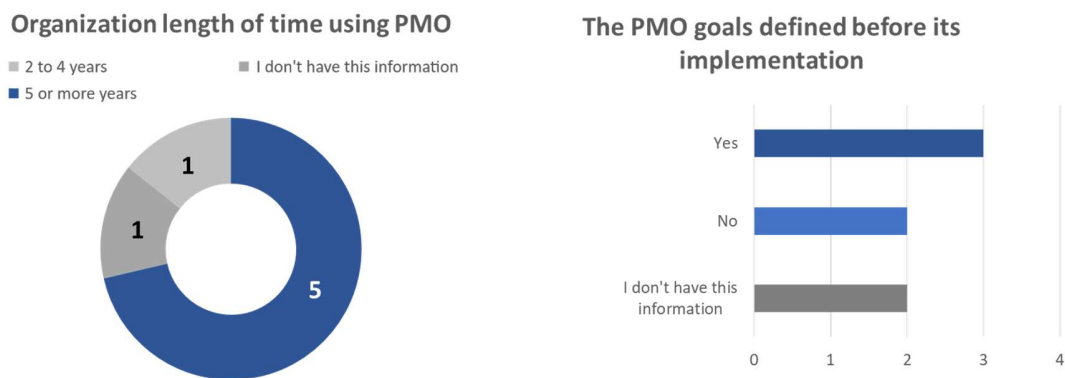


Chart 2 - Characterization - Org. period using PMO and the PMO goals defined before its implementation

Regarding the type of **PMO structure** implemented (multiples answers), most of the participants pointed the **PMO per project** as the most frequent topology in their companies. Despite of two participants that mentioned the **Enterprise PMO**, they informed that the PMO is more often involved directly to one project than managing interdependencies in a centralized structure. The criteria to select a PMO to a project is usually the visibility and size of the project. One of the respondents (PMO director) mentioned that occasionally, a project has a PMO allocated when the Project Manager values and understand the role, not by a business or management criteria. This participant also complaint that, this is one of the reasons why there is a **lack of guidance** and structure to conduct the role of the PMO in the selected project.

Despite of this reported deficiency on PMO role direction, most of the participants claimed that the purpose and **goals of the PMO are defined** before their implementation, as the detailed breakdown in the chart above (Chart 2). Moreover, the survey asked which **tools** are used by the PMO to perform their activities (multiple answers). Microsoft Project, Jira and Confluence were mentioned as the predominant tools. Slack and Smartsheet were both indicated by one respondent. It was reported a specific challenge on the tool's topic, as **to guarantee standard** and information security, the tools must be authorized by the corporation. However, one respondent mentioned that some project leaders and PMOs tend to use tools and software that are not alignment with the organization.

4.2. Questionnaire

The questionnaire for the interview is organized in sectors to bring structure to the analysis. The survey's script has an initial part to **characterize the respondent** with directive options and an additional option for other possible answers. Due to the main objective of the research to identify the interviewee perception on the PMO, if the respondent answers the question *Does your organization use PMO* with a negative option, the questionnaire ends. The **second part** has 5 sessions with a total of 28 sentences in scale rate (likert). The sessions are divided into: The PMO impact on performance, the PMO impact on project management, the PMO perceived value, and the Project Management Office alignment within your organization and alignment with the organization. Finally, the **last session** asks about the future adoption. All the questions are mandatory to the respondent. The given list of questions used are listed below.

I. Interviewee characterization

- A. Select the sector of your company
 - 1. Information Technology Consulting and services
 - 2. Information Technology Management Consulting
 - 3. Telecommunications
 - 4. Other

B. Select your current position in the organization

1. Executive Management
2. Project Manager
3. IT Manager
4. PMO Director
5. PMO professional
6. Academic Expert

C. Indicate your current relationship with PMOs

1. I currently work as PMO
2. I work in projects that interact with PMOs
3. I don't have direct interaction with PMOs
4. Other

II. The Project Management Profile

A. Select the 2 main Project Management methodologies used in your company

1. Waterfall - Ex: PMI's PMBOK concepts
2. Agile - Ex: SCRUM, Lean
3. Other methodologies
4. None
5. Other

B. Does your organization adopt Portfolio Management?

1. No
2. Yes
3. Other

C. If yes, indicate the responsible for Portfolio Management

1. Executive Management
2. Specialized department (not PMO)
3. PMO
4. Not applicable
5. Other

D. Does your organization use PMO?

1. Yes
2. No

III. The Project Management Office Profile

A. What is the organizational length of time using PMO?

1. 5 or more years
2. 2 to 4 years
3. Less than 2 years
4. I don't have this information

B. Which type of PMO structure is implemented? (Multiples answers)

1. Enterprise PMO - centralized structure that manages interdependencies among projects at the enterprise level. It is guided by full executive support.,
2. Business unit PMO - provide support on multiple projects within a business unit
3. PMO per project - involved directly to one project accordingly with the project criteria
4. I don't have this information
5. Other

C. Before implementing the PMO, were their purpose and goals defined?

1. I don't have this information
2. Yes
3. No

D. Which tools does the PMO use for its activities? (Multiple choice)

1. Microsoft Project
2. Jira
3. Confluence
4. Trello
5. Slack
6. Asana
7. Smartsheet
8. Monday
9. I don't have this information
10. None
11. Other

IV. The PMO impact on performance - rated in 5 levels by totally disagree (1) to totally agree (5)

- A. The use of PMO increases the success rate in delivering to the investment business case
- B. The use of PMO reduces the risk of major project failure and unsatisfactory results
- C. The use of PMO allows the creation of processes framework to address project failure problems
- D. Established PMOs results in projects with higher quality and business benefits
- E. Using a PMO contributes to improving project performance
- F. The use of PMO has evidence of project performance gains
- G. Using PMO allows the company to accomplish project goals faster
- H. The projects with PMO have the productivity increased

V. **The PMO impact on project management** - rated in 5 levels by totally disagree (1) to totally agree (5)

- A. The use of PMO provides Project management improvement in business-critical projects
- B. The use of PMO enables a focal point in a multi-project environment
- C. The use of PMO facilitates the transfer of project management knowledge across the organization
- D. The use of PMO makes more efficient use of resources or scarce skills
- E. The PMO enables an effective communication across the project internal and external stakeholders
- F. The PMO supports the budget alignment throughout the project execution
- G. The PMO enables tracking project deviations to avoid impact on the overall delivery

VI. **The PMO perceived value** - rated in 5 levels by totally disagree (1) to totally agree (5)

- A. The use of PMO is delivering value for investment
- B. The organization consistently evaluate the PMO results
- C. The PMO structure understands the organization values
- D. The use of PMO increases the reaching of important goals
- E. The use of PMO has been achieved satisfactory results to the organization

VII. **The Project Management Office alignment within your organization** - rated in 5 levels by totally disagree (1) to totally agree (5)

- A. The PMO professional has a large number and variety of activities
- B. The company interaction and purpose with PMOs are clear and coherent
- C. The PMO objectives have high alignment to organizational strategy
- D. The PMO function is aligned with long-term organizational objectives
- E. The PMO function has close integration between projects

VIII. **Future adoption intention** -- rated in 5 levels by totally disagree (1) to totally agree (5)

- A. The company intends to continue using PMO
- B. The company always try to use PMO in every project
- C. The company plans to empower PMO to a strategic level

4.3. Data analysis

In order to bring an organized division to the analysis, the empirical data collected in the second part of the questionnaire aims to build an **appropriate understanding of the perception** on the PMO performance from the professionals that have a broad background on the project management area in the IT segment. The purpose of these questions is to capture the current and previous experience of the participants jointly with their current company's structure. The analysis is not focused in a case study. In this part, all the sentences were ranked by the respondents' agreement in 5 levels, from totally disagree to totally agree.

The PMO impact on performance

The initial analysis on the PMO performance is associated to the PMO impact or influence on the business, management and operational achievement rates. Most of the respondents reported agreement that the use of **PMO increases the success rate** in delivering to the investment business case. Only one participant mentioned a neutral opinion.

The results on the use of PMO to **reduce the risk** of major project failure and unsatisfactory results shows that most of the interviewed professionals **agree** on this effect, however one of the participants reported **totally disagreement**. He claimed that the project failure reduction during its execution is composed by various factors, so it is difficult to prove that the risk was mitigated using a PMO. However, this is not reflected on the perceived result of using an **established PMOs** to get higher quality in the projects and business benefits, likewise in the creation of **processes framework** to address project failure problems. In these two concerns, none of the participants indicted disagreement. Most of them agree on this statement.

Regarding the survey responses on the correlation of using a PMO to **improve project performance** and having **evidence** of this project performance gains arouse attention. They manifested a high level of agreement on the PMO **contribution on project performance improvement, as all of them ranked as slightly or totally agree**. However, the existence of evidences on this PMO performance gains were ranked lower, presenting a lack of common sense in this topic. Thus, they all acknowledged the PMO contributions on enhancing the project performance, despite of recognizing a deficiency on the evidences. Some of the participants detailed their perceptions to provide a closer understanding on this topic. One of the respondents that has a broad background on the IT management role mentioned:

It would be good to have the evidences, but it is not quantitative. The PMO job is considered as a background activity throughout the projects. At the end, there is not a deliverable to be quantified.

Another participant expressed that the PMO bring more structure, but the performance gains are not simple to measure. This professional suggests that:

If the organization consistently implements PMOs in the projects, it is possible to observe the global results and analyses the achievement prior to PMO implementation. Analyzing between project would not be effective. That is why the direct relation between performance gains and the existence of a PMO is so difficult.

The respondents indicated a positive correlation between the projects with **PMO and the productivity increase**. Most of the then pointed toward agreement. Only one participant mentioned a slightly disagreement. However, when asked about the use of **PMO as a path to accomplish project goals faster**, the respondents decrease their endorsement, as most of them ranked as neutral or toward disagreement.

The breakdown on **the PMO impact on the performance** is illustrated in the chart below (Chart 3). This is a diverging stacked bar chart that shows the count of respondents. The ones who agree with the statements are shown to the right of the zero line. The ones that disagree are shown to the left. And the ones with a neutral opinion are split down the middle. This chart is primarily interested in the total count to the right or left of the zero line, so the comparisons have a common baseline of zero. The statements are ranked by the highest score to the lowest score.

Regarding the survey on the PMO impact on the performance, the highest-rated statement was that using a PMO contributes to improving project performance while the use of a PMO to allow the company to accomplish project goals faster was the lowest scored.

THE PMO IMPACT ON PERFORMANCE

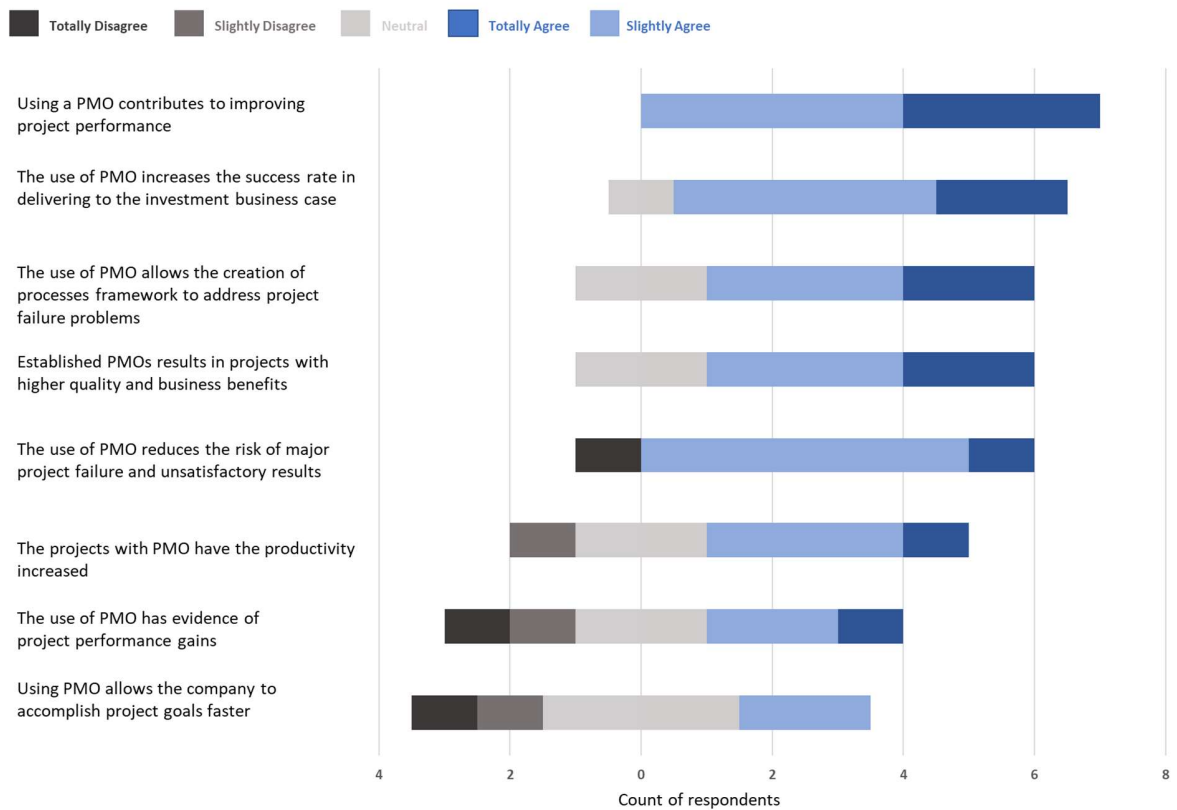


Chart 3 - The PMO impact on performance

The PMO impact on project management

The purpose of this analysis is to identify the participants' perception on the contribution of PMO on the project management competencies. The first statement mentions the **use of PMO to provide Project management improvement** in business-critical projects. The participants indicated a high level of agreement in this point, only one respondent mentioned a neutral opinion. Likewise, they agreed on the use of PMO to enable a **focal point in a multi-project** environment, however with a more neutral point of view.

In terms of the **PMO impact on facilitating the transfer of project management knowledge** across the organization, 29% of the participants mentioned a slight disagreement and another 29% a neutral opinion, while 42% moderately agree. Thus, the knowledge transfer is not directly perceived as a clear benefit on the PMO activities. However, participants valued the PMO as a path to manage resources and

scarce skills more efficiently as almost 60% indicated agreement. In this concern, only one respondent mentioned slight disagreement. One of the participants explained the interpretation on this topic:

The PMO impact on the management of resource and scarce skill depend on the scale. In large scales, such as in a scenario with five thousand people, it is not possible to have an efficient management through the PMO. It is a role of the executives and head of business units. I believe PMO can cause impact in smaller companies where it will be easier to manage the resources.

Regarding the impact on enabling an **effective communication** across the project internal and external stakeholders, and supporting the **budget alignment** throughout the project execution, most of the participants agreed on these statements. Furthermore, the respondents indicated a high score in the PMO as enabler for tracking project deviation to avoid impact on the overall delivery. In conclusion, the survey participants perceived the PMO as a promoter of a **valuable communication, budget guidance** and mainly as a significant **deviation administrator**.

THE PMO IMPACT ON PROJECT MANAGEMENT

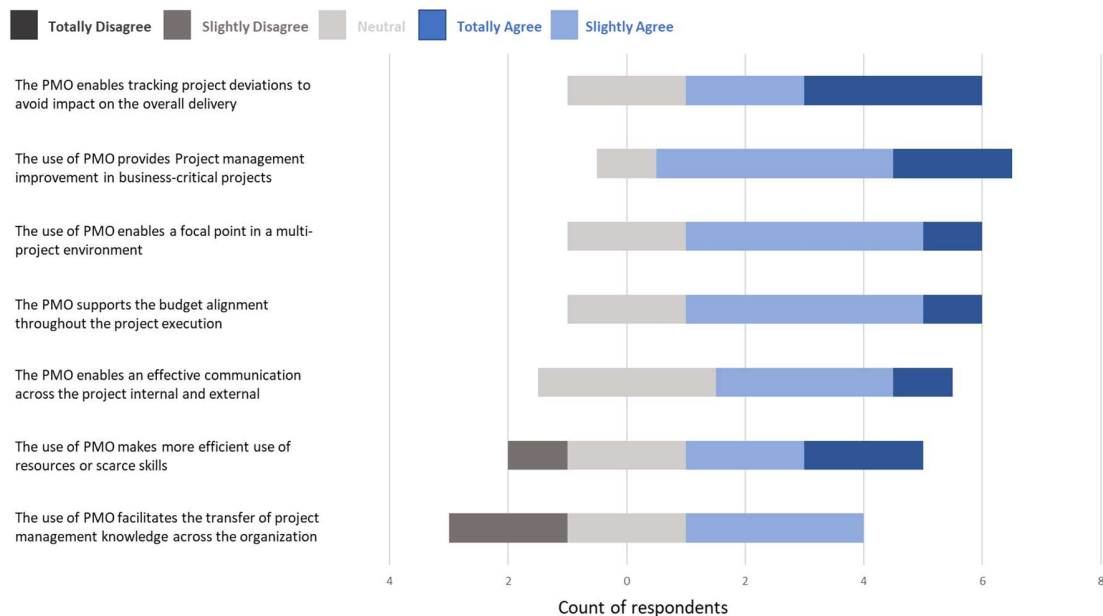


Chart 4 - The PMO impact on the project management

The overall breakdown on the PMO contribution on project management is illustrated in the chart 4. In this context, the highest-rated statement was the use of PMO to provide **project management improvement** and **track of deviations**, while the use of a PMO to facilitate the knowledge transfer was the lowest scored.

The PMO perceived value

According to the participants context, this session of the questionnaire aims to collect their perception on the PMO conditions and value. The first sentence asks about the scale of agreement on the relation between the use of PMO and the **delivery of the value for investment**. The point of view from 70% of the participants indicated agreement. Two respondents mentioned a neutral opinion. One of the participants that agreed, related this delivery with other factors:

In my experience, delivering the value for investment depends on the professional capacity and skill of the PMO. Also, it should not be limited to administrative work. On the other hand, the PMO should be aware of the bureaucracy level implemented without delivering value.

Additionally, the use of PMO to **increase the reaching of important goals** had the highest rate of agreement in this session, as only one participant mentioned as neutral.

Regarding both questions that if the **PMO structure understands the organization values**, and if the use of PMO has been achieved **satisfactory results** to the organization had the same level of agreement, where most of the respondents mentioned agreement and one mentioned a neutral view. However, one participant indicated slight disagreement.

In terms of the **organization to consistently evaluate the PMO results**, a surprising 57% of the respondents were in discordance. The other part slightly agrees. Thus, this topic did not reach a consensus from the survey participant but highlighted that the PMO evaluation needs attention.

The chart below details the overall breakdown (chart 5), where the highest-rated statement was the use of PMO to **increase the reaching of important goals**, while the organization consistently evaluate the PMO results was the lowest scored.

THE PMO PERCEIVED VALUE

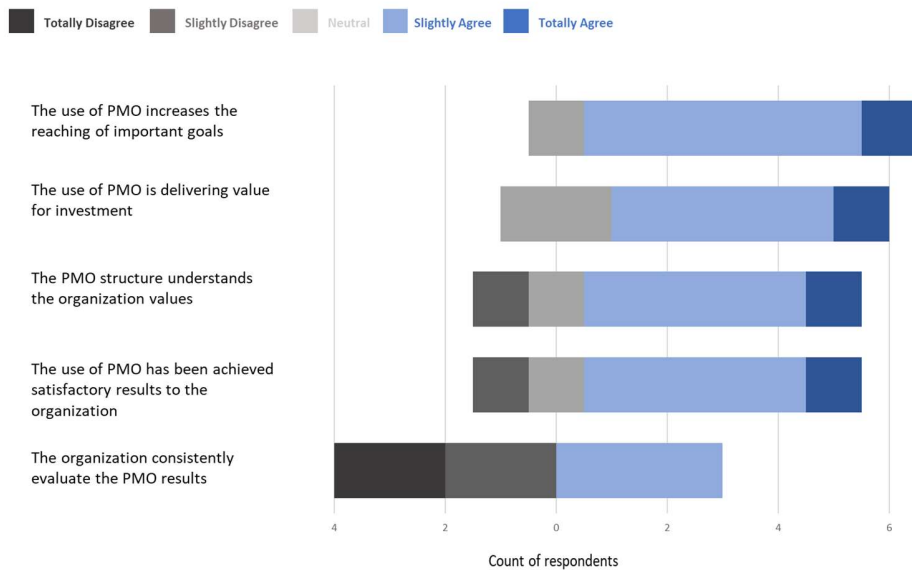


Chart 5 - The PMO perceived value

The Project Management Office alignment within your organization

In the literature, several authors relate the efficiency of PMO and their alignment with the strategic and operational direction of the organization. The objective of this session is to measure the respondent's perception on this topic by asking about the PMO activities, purpose definition and conjunction with the organization. According to the interviewees, most of them agree that the **PMO professional has a large number and variety of activities**, nevertheless 3 respondents were neutral. In terms of the PMO functions **being aligned with long-term organizational objectives**, the participants presented a lack of general agreement, however 3 respondents agreed on the sentence.

The previous question was focused on the long-term alignment. This other sentence focus on how close to the organization strategy are the PMO objectives. The results suggest a firm indifferent view from the participant, as 57% were neutral. However, 28% agreed at some level. In the next questions, participants started to reduce their level of agreement. When asked if the PMO function has close integration between projects, 57% indicated disagreement, in similar fashion, if the company interaction and purpose with PMOs are clear and coherent, only 28% agreed.

The divergent chart below illustrates the questions of the session (Chart 6). The highest-rated statement was the PMO professional has a **large number and variety of activities**, while the sentence asking if the company interaction and purpose with PMOs are clear and coherent was the lowest scored.

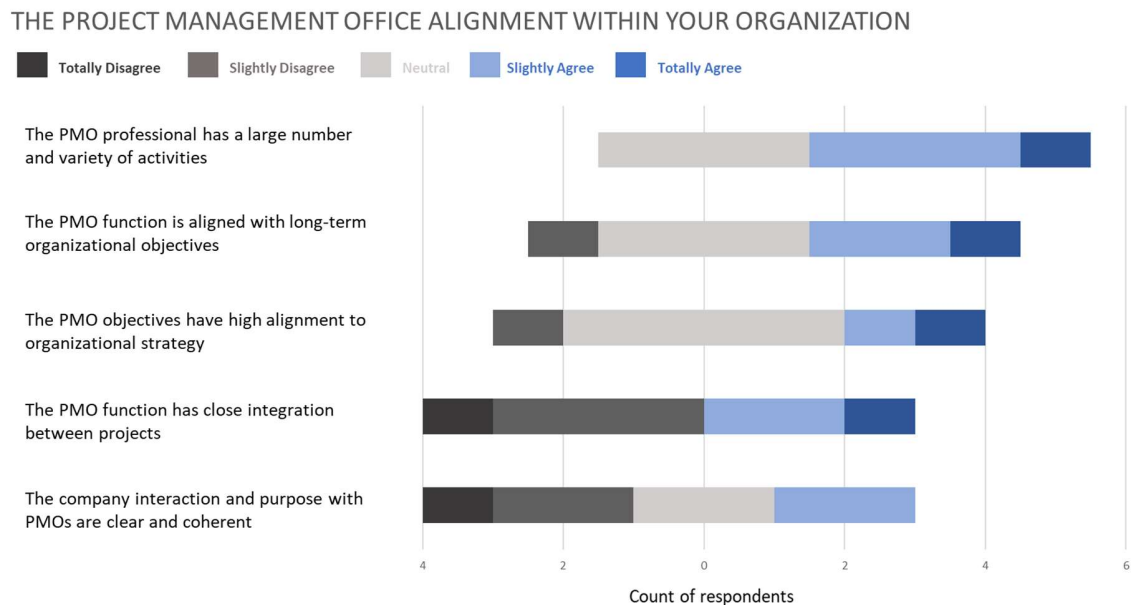


Chart 6 - The PMO alignment within your organization

Future adoption intention

The final part of the analysis asks about the intention to maintain or improve the PMO adoption. In this regard, 6 respondents agreed that their company intends to continue using PMO, and only one respondent was neutral. By contrast, the answers were divided when asked if the company plans to empower PMO to a strategic level, as 3 respondents disagree and other 3 agreed, only one was neutral. One of the professionals that agreed on this sentence mentioned that in the current company the PMO role reach to the Program level, but the executives assume the decision and control of the portfolio level. Thus, despite of the agreement, the strategic level will be limited to a hierarchy.

The results in terms of the company to always **try to use PMO in every project** showed a strong neutral level, as 4 respondents were indifferent to the topic, while 2 respondents agreed, and one totally disagreed. One of the respondents claimed that using PMO in every project is not justified, despite of this professional agreement on the topic. This IT Manager mentioned that the client usually does not consider the PMO cost or position in the contract. Thus, the PMO cost is usually attached to a significant project size. This professional added an important conclusion regarding the contribution PMO and its relation to the client's contract:

The client's decision is usually price-driven, often choosing the cheapest. The customer only starts considering other factors, such as the role of a PMO, when there is a relation of loyalty between the vendor and the client. That is, in initial contracts, once a good job is done, then it is possible to develop new businesses with the capacity to PMO participation.

The chart below illustrates the session's breakdown (Chart 7). The highest-rated statement was the company intends to continue using PMO, while the sentence asking if the company always try to use PMO in every project was the lowest scored.

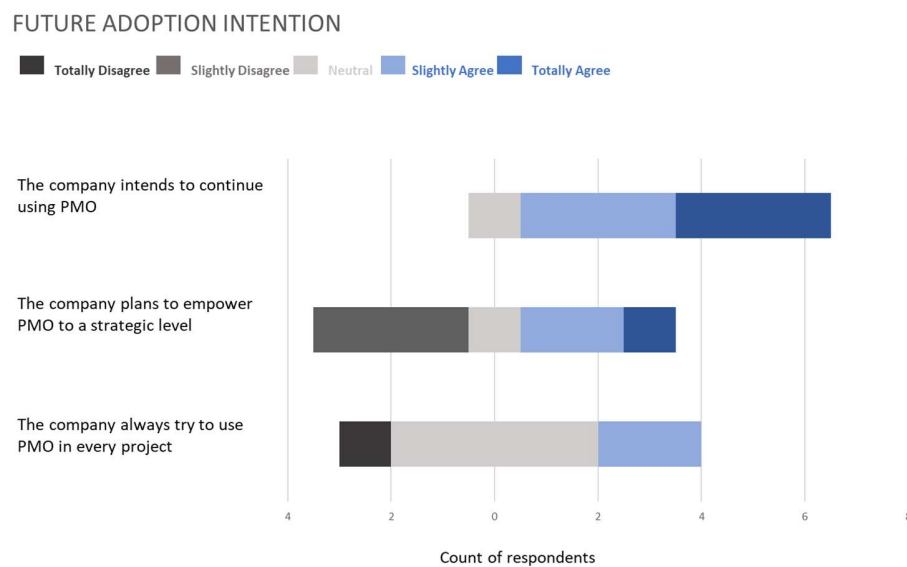


Chart 7 - Future adoption intention

4.4. Findings

Survey ranking – benefits and drawbacks

As a synthesis from the empirical analysis, the participants recognized that PMO is a role that directly contributes to **project management excellence**, as the top ranked survey's session is on the project management impact. As the achievement of **business objectives** depends on the ability to successfully execute and implement projects, the employment of an **effective Project Management practices** increases the organizations rate of projects successfully executed. The second top ranked survey's session is the analysis on the PMO impact on the **project performance**. By contrast, the lowest rated session was the PMO alignment within organization as shown on table 3 (count average of total points by level of agreement).

Session with the highest level of perceived value	Session with lowest level of perceived value
Project management	Project Management Office alignment within organization
Project performance	

Table 3 – Survey Session's rank

The sum-up of these sessions shows that the IT PMO value is perceived in a positive way, as a benefit or a gain, on the Project management area and in the project performance area. On the other hand, the IT PMO value is perceived in a negative way, as an obstacle or drawback, by the low level of agreement on the PMO alignment within the organization.

Statements ranking

Benefits

The main and highest-rated benefit perceived by the participants was the **PMO contribution to increase project performance**. The top ranked contributions of the PMO were (count of points by level of agreement):

1. Using a PMO contributes to improving **project performance**
2. The use of PMO increases the **success rate** in delivering to the investment business case
3. The use of PMO provides **Project management improvement** in business-critical projects
4. The PMO enables tracking **project deviations** to avoid impact on the overall delivery

Drawbacks

In comparison, the main IT PMO obstacle perceived by the respondents was the **lack of evaluation** on PMO results. The lowest rated sentences were:

1. The organization consistently **evaluate the PMO** results
2. The company interaction and purpose with PMOs are **clear and coherent**
3. The PMO function has **close integration** between projects
4. Using PMO allows the company to **accomplish project goals faster**

Project management, performance and perceived value

In the project management scenario, the survey captured that the PMO has significant contribution, however with some point to improve. The PMO is mentioned by several authors as a management solution to tackle project with increasing complexity (Aubry & Thuillier, 2007) (Santos & Varajão, 2015). The survey results support this statement as the PMO role was directly correlated to **tracking deviations**, improving **project management** in business-critical projects and supporting budget alignment. However, the information technology and Information System Projects, such as ERP implementation, have a **percentage of complexity** associated to multi-stakeholder, representatives from various business units, internal IT professionals and external vendors that must work hand-in-hand (Chua, Lim, Soh, & Sia, June 2012). In this scenario, the survey captured that the **PMO does not directly benefit** the effective communication, more efficient use of scarce resources and knowledge transfer.

These challenges pose opportunities for **PMO leaders**. Establishing a process-driven project using a software for controlling and delivering a project is not the final answer for a project success. The IT PMO should engage the focus on the **resource capacity and knowledge transfer**. The dependencies should be considered as part of the constraints, troubled projects require immediate attention. Poor communication comes from the lack of understanding and speaking the language of the business. The ambiguity of PMOs with regards to organizational structures and managerial practices embedded in the firm's organization is also a challenge (Artto, Kulvik, Poskela, & Turkulainen, 2011).

Regarding the performance and perceived value, the goals and objectives of an IT PMO should be defined prior to its establishment to ground its implementation (Kutsch, Ward, Hall, & Algar, 2015), however the survey noted that the organizations do not consistently evaluate the PMO results and its purpose are not clear and coherent. Therefore, this lack of references and baseline, impacts the PMO performance, implementation, and the **recognition of their contribution**. The definition of key performance indicators aligned with companies' strategy can support a baseline to perceive the PMO benefits and effectiveness, nevertheless, these KPIs and metrics should also be coherent with the PMO typology and autonomy in the company. For instance, the PMO can be measured by the number of projects kicked-off without purchase order if the accountability of this decision is directly associated to the PMO.

Another finding is that in the IT scenario, the pre-sales and proposal phases are as fundamental as the delivery and execution phases. The definitions on the contract affect directly the delivery quality and success. Thus, the IT PMO engagement in the beginning of the projects reduces this impact.

PMO profile, alignment with organization and future adoption

This research's main objective was to identify **PMO scenario in IT companies in Portugal**. The entrepreneurial landscape of the IT Portuguese organizations in this survey presents a multinational characteristic having **PMO for more than 5 years**. In this multicultural project environment, the PMO is recognized as role to tackle a **multi-project** scenario as mentioned by (Hobbs & Aubry, An Empirically Grounded Search for a Typology of Project Management Offices, 2008) (Thomas, 2009) (Salameh, 2014) and Cleland and Ireland 2007 .

Alternatively, one of the key findings is that for future adoption the **organizations' plan to empower PMO is not clear**. This result suggests that, despite of having PMO for 5 or more year, recognizing its relevance on multi-project scenario, and mostly implementing the PMO per project typology, the companies are not planning to engage the **PMO to a strategic level**. Additionally, a significant highlight was that, despite of the organizations' **Portfolio** often contains an **important volume of significant projects**, the strategic management of these projects is led by the executives without an appropriate method or process-driven, thus, apparently inserting some level of **political and influence factor in the decisions**.

Another finding is about the IT consultancy companies challenge on allocating **PMO to projects**. Firstly, the IT clients does not easily **value a project management role** as a project resource from start. In practice, the Portuguese IT companies frequently value the management position by the technical savvy instead of the management skills. Secondly the **IT upper managers** frequently do not realize what a PMO really does, because they usually do not communicate with them and does not get evidences of PMO achievement and final return. Despite of this lack of comprehension, many of the IT managers described the PMO functions based on support to project managers, eventually as a stand in of the project manager, focused on control and audit.

In conclusion, these **lowest ranked sentences** indicate that some of the questions raised by authors in the literature, as Linde (Linde, 2016) , should be considered to determine the value of PMO. Thus, it is important to understand what the purpose of the PMO in the organization and their function is.

5. Conclusion

5.1. Conclusion

Examining all the information emerged from the survey, this research achieved the initial purpose to provide a directive analysis on the IT PMO benefits, drawbacks and perceived contribution in the Portuguese zone, despite of some limitations. Many of the studies and articles described that there is no blueprint for the PMO role, each PMO has its own characteristics, as mentioned by Antônio Monteiro that found 47 of PMO typology in 2016. This research pursued findings driven by sector and zones as several studies found in the literature, for example: Lundqvist 2017, Pansini and Terzieva 2013, and Santos and Varajão in 2015.

The lack of PMO study in the area of Information and system technology, especially in Portugal, brings value to this investigation. The survey was focused on understanding the perceived contribution and impact of IT PMO on the performance, project management and their alignment with the organizational strategy. The Portuguese context of this study must also be considered in assessing the generalizability of findings.

5.2. Future work

The analysis of PMO efficiency needs an **end-to-end study**. The assessment carried out on these surveys evaluates the current perception of ITC companies in Portugal. A study associated with businesses cases in each company is recommended to identify whether the PMO's objectives have been defined, whether they are in accordance with the established organizational structure and the empowerment given to it, whether there is end-to-end participation as in pre-sales and delivery. Additionally, an interview with **IT executives** should be carried out to contribute on a complete perspective.

Another suggested approach for future work is to build a **framework based on project levels of complexity**, such as business and stakeholders' factors, to identify in which cases the PMO is needed, and the adequate typology. Additionally, a **KPI table crossing the IT PMO typologies** would also enrich the practice.

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