

Role of a Project Management Office (PMO) in improving Project Success Factor in Saudi Arabia: Case Study of ZATCA

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Abstract: The demand for establishing a Project Management Office (PMO) will continue as many projects continue to delay or remain in the region of complicated and stalled projects. In Saudi Arabia, project failure is can be classified as severe pain for many businesses, even for the country's economy. There might be a shortage of research in the literature on project failure that emphasizes why projects fail or delay in Saudi organizations and the impact of implementing a PMO to manage projects. The main objectives of this empirical research in Saudi Arabia are to (i) conduct a literature review on the role of PMO and projects success criteria, (ii) identify the relationship between industrial engineering and the project management framework, (iii) critically evaluate if establishing a PMO will help achieving goals for project success. (iv) identifying when a project is successful, (v) evaluate the difference between the organizations that have established a PMO and other organizations that have not, (vi) identify the main obstacles for establishing PMOs in Saudi Arabia. A literature review on project failure and PMO establishment were performed. To prepare research questions and hypotheses, this study employed a multiphase mixed-method design with quantitative and qualitative methodologies to reach its research purposes. The data were collected through an online questionnaire for the critical incident technique study and then analyzed using thematic analysis and ANOVA using SPSS software. The main findings of the research show that most response that the project characteristics and performance within the organization, such as schedule, budget, and end-product, are essential for project success; in addition, the statistics showed the most important reasons for project failure. Furthermore, the study statistics showed that the primary motivation for starting a PMO is as follows a) Implement and follow standard practices, b) decrease the rate of and c) Assess project risks at early stages of the project lifecycle. Practitioner of project management view on PMO roles centered on the stalled project how it will develop and maintain project management standers and Provide project management consultations. Interestingly, the study also revealed that the lack of understanding of PMO value to the organization and Resistance to change are the main obstacles to establishing a PMO office. Overall, there was a statistically significant relationship between project characteristics and PMO's effectiveness according to (Obstacles of establishing PMO). There was a statistically significant relationship between project characteristics and PMO's effectiveness according to (Reasons of Projects failure).

Keywords: Project Management, Project Success Factor, ANOVA, Mixed-Method Design

I. INTRODUCTION

Most projects face challenges to succeed, and uncertainty is one of the major issues which makes it very complex to produce complete and constant requirements. The availability of literature is few on the role of PMO offices and projects success factors in Saudi Arabia, where huge budgets for high-profile various projects has been allocated by the government.

This research attempts to find the important reasons for having PMO offices in projectized organizations. Furthermore, it also studies and investigates the critical success factors (CSF) of

different types of projects and which ones are most important to be applied and implemented. In addition, it questions the definition of project success and which components that project managers in Saudi Arabia to be the most remarkable ones.

Public construction projects are among the most important tools for countries and organizations, through which strategic visions and goals are transformed from just written plans into reality. The overall all performance of projects in a country is the tools that measures and reflects the efficiency of the work of the country and its ability to accomplish its development aspirations. Because of the performance of current projects in Saudi Arabia from various sectors, projects are frequently likely to stumble, accordingly, its repeatedly has become similar to a phenomenon, so a number of seminars and conferences are generated to discuss this issue and try to come up with better solutions and recommendations to solve it. Every now and then, relevant authorities issue statements that warn about the status of government projects.

As mentioned previously that countries and big organizations are increasingly using projects or programmers as a measure and method of achieving strategic objectives. The integration between the large number of projects being undertaken and the complications of managing them has encouraged many organizations attempting to improve control, coordination and in some scenarios, rationalization of those projects, through establishing project or program management offices (PMOs) (Singh et al., 2009; Arto et al., 2011; Martins and Martins, 2012). According to Andersen et al. (2007, p. 98), a consistent theme across PMOs is to enable “*a systematic coordination and unified handling of key project-related tasks*”, in order that organizations can be more successful in the projects they undertake. Some research has shown that the number of PMO being established in organizations is growing (Hobbs and Aubry, 2007; Hobbs et al., 2008; Spelta and Albertin, 2012).

This concludes that organizations are convinced that these are productive means of addressing the challenges of the growing average and complexity of projects that they are managing (Aubry et al., 2008; Aubry and Hobbs, 2011). However, there are still some other organizations questioning the benefit of PMOs (Hoffman, 2003; Hurt and Thomas, 2009; O’Leary and Williams, 2008). Although previous study papers have specified and identified a wide range of activities undertaken by PMOs (Desouza and Evaristo, 2006; Hobbs and Aubry, 2007), they did not inspect the impact of PMO involvement in these activities that counterpoint on project success. This research will contribute to an understanding of the role and impact of PMO in projects success, by exploring the practices they contribute in and the range to which this involvement contributes towards satisfaction with those practices and overall project success. In fact, some other previous research (Stanleigh, 2006) has found that 70% of PMOs in some domains were shut down within two to three years of the establishment because they became unsuccessful to demonstrate their value, although other research highlights the persistent changes to the structure of PMO (Aubry et al., 2010a, b). An understanding of the influence of PMO participation at the practice level can help managers in identifying how they should focus the efforts of their PMO to ensure that they add value.

In fact, Saudi Arabia’s economic and social development is known that it has an important role in the region, therefore, the Zakat, Tax, and Customs Authority (ZATCA) is playing an important role to improve its performance by developing its provided services and raising the efficiency of its staff as stated in their mission statements. Indeed, ZATCA focus on supporting taxpayers to fulfill their duties in the field of zakat, tax, and customs, facilitating trading and making the Kingdom one of the global logistics centers in the region by providing them with all the required tools and resources, and increasing awareness on tax and customs compliance. Additionally, utilizing technology and takes its advantage to develop electronic services.

This implies to conclude from the above mentioned that more projects are to be established, therefore, studying the important role of a successful PMO establishment will ensure if the organization is

working on the right things by prioritizing work based on ZATCA strategy. However, expanding in this study will also give us an answer if it will enable the transparency of information including employing capacity and availability to ensure what are the right projects are implemented within budget without overburdening the organization. According to a Project Management Institute study, 70% of high-performance organizations have a PMO. This is not a coincidence that PMO is involved in solving the various pain points that may negatively affect the project performance, boost performance, and posture it to pull new business opportunities. The importance of PMOs is heightened as market conditions grow in complexity.

The scope of this research is restricted to the roles of the PMO Office and to the relationship between the role of the PMO office and project success factors in general. Likewise, this research targets the important role of PMOs in reducing project failure in Saudi organizations.

The target population of this research is the Zakat, Tax, and Customs Authority (ZATCA), Saudi Arabia who have been involved in the implementation of different projects. The sample of research divided to three groups depending on the type of research methodology as follows:

[1] Critical Incident Technique

Due to the time and cost constraints of this research, the two-sample approach is followed to conduct semi-structured interviews: (i) purposive sampling and (ii) snowball sampling. However, the researcher applied strict criteria of looking for different project managers accordingly interviews were conducted with eight project managers who worked in Saudi Arabia.

[2] The Online Survey

As mentioned previously the main limitation of this research are time and budget, therefore, an online survey method followed. Ultimately, the researcher decided to employ probability sampling represented in stratified sampling and simple random sampling techniques to gather data among ZATCA employees. However, the approach accomplished by sending a link to online questionnaires that sent to ZATCA employees by email.

[3] The Semi-Structured Interviews in ZATCA

The semi-structured interviews conducted with five experienced managers in ZATCA based on the following criteria: more than five years of experience as a manager or have been a project manager for more than three projects.

Research Objectives

This research aims to clarify the role of implementing PMO in increasing project success factors in Saudi organizations by looking at the following: i) the main benefits of establishing a PMO in an organization and comparing it to those who did not establish ones; ii) the different variables of Project manager, organization and PMO can affect the project success. Research objectives can be achieved by critically investigating the influence of PMOs on projects.

Accordingly, the framework of this study is built to explore the expected performance of a PMO in increasing project success. In particular, the researcher focused on three factors the PMOs, project managers, and project success. Moreover, the study aimed to achieve other objectives by considering the influence of education and experience of project managers on project success in organizations. It alleged that The PMO has several main functions to accomplish the project successfully.

The exploratory research aims to answer the research questions and to test the hypotheses to develop a model capable of determining how and when a project is considered successful.

The main objectives of this study are as follows:

1. To conduct a literature review on the role of PMO and projects success criteria.
2. The relationship between industrial engineering and the project management framework.
3. To critically evaluate if ZATCA initiative by hiring a consultant to stablish PMO will achieve NPMO goals and will align with government objectives.
4. To critically contribute to identifying when a project is successful.
5. To test how the independent variables of project manager, organization, and PMO can affect the project success and failure.
6. Critically evaluate the difference between the organizations that have established a PMO and other organizations that have not by testing the research hypotheses.
7. Overview the main obstacles to establishing PMOs in Saudi Arabia.

Research Questions

The research questions are divided into four groups in accordance with the type of research methodology as follows:

- 1- What are the main differences between the organizations that established a PMO and organizations that do not?
- 2- What effect do the Project manager, organization, and PMO variables have on a project outcome?
- 3- What are the main challenges of establishing a PMO in Saudi Arabia organizations?
- 4- What are the key elements of successful projects?

Research Hypothesis

According to the research model, the main research hypotheses examined using One-way ANOVA test tests to address objective number five. Moreover, based upon research model, the study aims to test the following hypotheses against a significance level of (0.05) according to table 1.

Table 1 Research Hypothesis

IDs	Hypothesis
Ha1	There is a statistically significant relationship between project characteristics and PMO's effectiveness according to (Obstacles of establishing PMO, Understanding PMO roles, Motivations for establishing a PMO, and Reasons of Projects failure).
Ha1.1	There is a statistically significant relationship between project characteristics and PMO's effectiveness according to (Obstacles of establishing PMO).
Ha1.2	There is a statistically significant relationship between project characteristics and PMO's effectiveness according to (Understanding PMO roles).
Ha1.3	There is a statistically significant relationship between project characteristics and PMO's effectiveness according to (Motivations for establishing a PMO).
Ha1.4	There is a statistically significant relationship between project characteristics and PMO's effectiveness according to (Reasons of Projects failure).
Ha2	There is a statistically significant relationship between PMO's establishment and effectiveness according to culture values (age, education, experience).

II. LITERATURE REVIEW

Following World War II, project management emerged as an organizational social practice form for the development of infrastructure and technology initiatives (Hodgson and Cicmil, 2006). It underwent a practical development stage as part of several significant initiatives, including the Manhattan project in the 1940s (Morris, 1997) and the Polaris – US Navy project in the late 1950s (Morris, 1997). During the 1960s and 1970s, there was a lot of criticism of the managerial approach in practice; as a result,

the theoretical foundations of project management began to grow, mostly in the domain of organizational management research and around ideas of project organizational structure (Packendorff, 1995). Furthermore, project management operational research evolved further in the 1980s and 1990s.

There are many different definitions for project and project management. The Project Management Institute's (PMI) definition is the most widely used, stating that projects must have a temporary nature with the goal of providing a specific product or service at the end of the project's term (PMI, 2017). According to Marnewick (2018), the project is analogous to a temporary organization that was created as part of a larger permanent organization. Kernzner (2004) defines project management as the planning, guidance, and allocation of resources available to an organization in order to achieve the specified project objectives. According to the PMI, project management entails monitoring various activities while guaranteeing the sensible application of relevant knowledge, methodologies, and techniques in order to accomplish or even exceed the project's planned objectives (PMI, 2000).

Few project managers are ever involved throughout a project's whole life cycle. Understanding of previous phases of the project or what is planned in later stages may be required information for the project manager to make key decisions. The project has four stages in its life cycle. The Conceptual Stage is the first stage. The Implementation Stage is the second stage, and the Operational Stage is the third stage, Finally the Stage of Abandonment.

To continue and study how a project could be handled, it is necessary to first to a perception of what a project is and what it is not. Projects and project management have been described as self-evident, natural, and important by scholars from both within and outside the project management discipline. This prompted others to call for a halt and ask, "What do we mean by a project?" and "What is the true definition of project management?". Accordingly, the table 2 give an overview of a number of definitions available in the literature that define and explain both project and project management.

Table 2 Definitions of Project and Project Management

Author(s)	Definition
Kerzner (1998)	"A specific objective to be completed within certain specifications, with defined start and end dates, funding limits (if applicable) and which consumes resources (i.e., money, people, equipment)." (Kerzner, 1998, p. 2).
Linehan and Kavanagh (2006)	"...an emergent outcome of disparate, ambiguous, political practices." (Linehan and Kavanagh, 2006, p. 55).
Söderlund (2013)	"A particular kind of task, a temporary endeavour, and project management is the solution to solving that task. The project could then be broken into a series of activities, work packages, subprojects, and milestones. Project management as such is very much oriented towards these activities, including conceptual design, feasibility study, detailed design, detailed planning, etc." (Söderlund, 2013, p.124).
The Association for Project Management (APM, 2016)	"A unique, transient endeavour, undertaken to achieve planned objectives, which could be defined in terms of outputs, outcomes or benefits. A project is usually deemed to be a success if it achieves the objectives according to their acceptance criteria, within an agreed timescale and budget." (APM, 2016, p. 1).
Cleland and King. (1988)	"Project management is the application of the systems approach to the management of technologically complex tasks or projects whose objectives are explicitly stated in terms of the time, cost, and performance parameters." (Cleland and King, 1988, p. 870)
Martin (1976)	"Establishing a committee is not project management. Just about everything that characterizes committees is prejudicial to good project management...A committee is oriented toward recommendations; a project is oriented to results... Appointing a project manager is not, by itself, establishing a project." (Martin, 1976, p. 6)

Project Management Office

A project office is an organizational grouping of people who have been given the authority to oversee a particular project. Controlling time, cost, and performance to comply to contractual criteria; ensuring

that all required work is documented and delivered to all relevant individuals; and ensuring that all work completed is both permitted and supported by contractual documents are among the tasks (Cleland and Kerzner, 2009). A project office is frequently used to support a single large, difficult project or a program that includes several projects.

A PMO, on the other hand, does not oversee projects directly. Instead, it's an internal consultation service aimed at providing project management help to all or many projects within a business. However, if a company has a small number of projects or other unusual circumstances, a PMO may be called upon for more rapid involvement or to lead a project.

The words PMO and PO are separated in certain literature based on the content of what they accomplish (functions and services), but they are used interchangeably in others. The work of Block and Frame, as well as others, demonstrates this interchangeability. The ability of a PMO to cope with many projects, clients, contractors, partner organizations, and other entities is the defining feature.

PMO is frequently staffed with full-time employees to provide a mix of managerial, administrative, training, consulting, and technical services to projects and the company. One of its objectives is to offer uniform methods, procedures, systems, and policy (Wells, 1999 and Bates, 1998). It serves as a focal point for PM implementation across an organization and as a supportive entity for effective PM technique utilization.

Some PMOs are organized so that the director reports to a senior level of management and is on a par with different functional managers. Other PMOs are found within divisions, as is the case with information systems and technology (Knutson, 1995).

Project management centers of excellence and centers of expertise are two terms used to describe PMOs (Ward, 2000). Others, such as a PM cost center or profit center, have more obfuscated names (Carol R., 1997). Because one sponsor is responsible for all expenditures associated with the establishment and management of the PMO, and funding for all services and products is procured through the office, it is referred to as a cost center. In other circumstances, organizations perform PMO-like duties or provide PMO-like services without establishing a formal PMO. A company's human resources department, for example, might organize PM training (deGuzman, 1999).

The size and declared management goal of a PMO influence its functions and services. According to Block and Frame (2001) recommendations the following criteria to help increase an organization's PM effectiveness in a general study of PMOs:

- i. Project support, which focuses on relieving project managers of administrative tasks such as reporting and software operations.
- ii. Professional PM expertise, such as proposal formulation and project planning, will be disseminated as needed throughout the business through consulting and mentorship.
- iii. Establishing and enforcing standards and processes to capitalize on best practices and guarantee that all members of the organization speak the same PM language.
- iv. Training to improve individual abilities and inspire PM experts to become certified.
- v. Assisting in the hiring of project managers for its projects.
- vi. Enabling virtual project offices to play a high-tech project support function.

There are two primary accounts among the negative perspectives on organizations adopting the use of PMO: 45 (1) In an era of resource scarcity, the PMO is considered as an unnecessary cost that firms cannot afford; (2) the PMO adds another layer of bureaucracy that slows down operations. Because of these viewpoints, some supporters say that, in order to ensure a seamless implementation and effective

usage of PMOs, businesses should carefully evaluate the following essential considerations before embarking on such an endeavor:

- i. The PMO's management level and whom the director reports to.
- ii. The relationship of the PMO to the project review executive committee, if one exists.
- iii. The PMO's basic responsibilities, authority, and activities.
- iv. Without additional research of these challenges, the influence of PMOs in boosting project success cannot be dismissed.

Overall, the PMO, according to the researcher, is an organizational unit responsible for coordinating, supporting, and standardizing the work of project planning, implementation, and evaluation in a way that ensures both the project's and the organization's success and achievement of objectives.

Types of PMOs

According to a survey released by the PMI in 2013, 53% of respondents answered that the categories described below perfectly or partially suited the PMO in which they operate. Because classifications are driven by the type of PMO functions and scope of integration in the organization they are more relevant to professional practices (PMI, 2013):

1. Organizational Unit PMO / Departmental PMO / Business Unit PMO:

This kind is observed in more than 50 percent of all firms with a PMO (around 54%), especially those in the IT, consultancy, or telecommunications industries. According to Giraudo and Monaldi, (2015) In an organizational department or business unit, these PMOs assist numerous projects as needed.

2. Project Support / Control Office PMOs:

Because it is linked to internal financial and administrative operations, this is a more sophisticated version of PMO in the organization. It gives full-time professionals with appropriate access to technical resources and methodological standards to provide simultaneous support to various project managers inside the business. According to Oliveira et al. (2017) this type is involved in project operations and promotes communication and collaboration. Working in a comparable PMO type was identified by 44% of PMO personnel.

3. Center of Excellence PMOs:

At the organizational level, this kind indicates a central focus of project management. It is responsible for formulating the organizational standards, methodologies, and strategies that project managers will use in their activities. The success of the implemented methods and procedures is ensured by the center's continual monitoring. Around 35% of PMO employees began their careers in a similar organization, where they provided training and advice to increase staff abilities as well as build standard procedures and operations.

4. Project-Specific PMO:

This category was identified by roughly 31% of PMO workers in their workplaces. It is usually in charge of supplying short-term entities with operational functions such as paperwork, training, and infrastructure in order to support a single project.

5. Corporate PMO / Enterprise PMO:

This is the most complicated type of PMO, and it is most typically used in major government-funded companies or in the energy and manufacturing industries. Their job includes keeping track of numerous initiatives to verify that they are in line with the organization's goals and plans. They also guarantee that organizational governance is followed and undertake portfolio management in order to optimize

work processes and achieve the desired results. This PMO is involved in strategic planning and execution, as well as the development of management procedures, tools, and methods to improve overall project performance.

Importance of PMOs

According to Bassi et al. (2018), the PMO is defined as a competitive strategy in which executives select and coordinate the programs and initiatives that will help them realize their goals. According to the literature, PMOs not only improve project management performance but also raise overall organizational performance. With the goal of lowering risk and remaining competitive, firm leaders are focused on project and program alignment with a long-term strategy. As a result, the PMO's role is to help organizations strengthen this link by providing people with training, mentoring, and development opportunities, facilitating knowledge management through knowledge transfer, and performing portfolio management functions to guarantee strategic alignment and realization of benefits.

Because many industries are subject to rapid change, project management strategies that allow for quick development and learning are becoming increasingly important. As a result, companies are looking for ways to reduce product time to market, which could be accomplished by putting in place a structure that supports project, program, and portfolio managers in their daily work activities, standardizing and providing technical support, and ensuring efficient project delivery.

PMO's top five responsibilities can be summarized as follows (Bassi et al., 2018):

- i. Project policies, procedures, templates, and other common documents clearinghouse and management
- ii. Identification and implementation of project management methodology, best practices, and standards • Central monitoring of all project timelines and budgets
- iii. Coordination of project interdependencies
- iv. Central office for project tool operation and management, such as enterprise-wide project management software

Even while the majority of organizations working on projects are analyzing the importance of creating this strategic entity, the number of companies with a PMO structure remains low. According to the results of literature (Barlow et al., 2017), only 65 percent of respondents had a PMO, as illustrated in the graph of responsibilities (figure 1).

According to a survey done by PMI, top management usually initiates and supports the installation of a PMO structure for 38.8% of the time as a necessity for enhancing project performance, having a formal and consistent project methodology, and generally for strategic reasons. However, the fact that 89 percent of organizations plan to start or continue investing in PMO in the next years is encouraging.

According to Taylor (2016) The major goal of putting PMOs in place is to make the most of the development and implementation of standards, rules, methodologies, and techniques. PMOs use the information, consulting, documentation and standards gained from the implementation of their repeated projects as a foundation for knowledge, consulting, documentation, and standards required for efficient project management and implementation across the enterprise.

Organizations are increasingly recognizing the value of PMO in managing their projects' work. According to a study conducted by the Standish Group in 1994, only around 16% of all completed projects worked within the money, time, and technical resources allotted to them (Crawford, 2001). The project success rate increased to 26% in a follow-up study in 1998, and part of that rise was

ascribed to the development of the PMO, which enabled greater project management and the use of standard procedures. The importance of PMOs is summarized below:

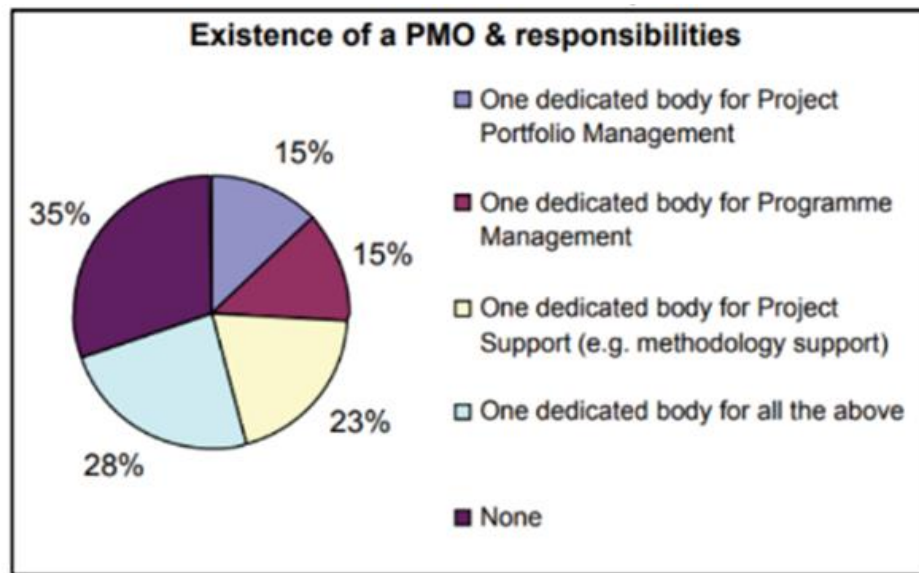


Figure 1 Existence of a PMO and responsibilities

- PMOs can now participate in strategic project management by enabling or even directing portfolio management practices, in addition to standardization and methodology development. Additional responsibilities could include overseeing and maintaining track of existing projects until they are completed, as well as communicating work progress to senior management so that they can make the best judgments about whether or not to continue or terminate specific initiatives (Taylor, 2016).
- Project management has vastly improved, resulting in additional responsibilities and burdens. Synergy has been built in a way that can provide measurable and repeatable benefit when project management duties were done loosely and separately for each project. The desire to broaden and diversify the responsibilities and functions of PMOs has been fueled by this synergy (PM Solutions, 2016).
- PMOs can assist resurrect faltering projects and ensure that they stick to their budgets and timetables while increasing cost-effectiveness and productivity (PMI, 2013).
- PMOs enable enterprises to methodically visualize, plan, implement, complete, and document all of their projects. They aid sensible resource forecasting and budgeting by providing insight into the optimum activities to invest in without squandering available funds (PM Solutions, 2016).
- PMOs provide the required infrastructure of project management tools and expertise. It serves as a clearinghouse for the exchange of best practices information and offers advice to project managers in troubled projects. PMOs can serve as a one-stop shop for all of the projects that have been completed (Rad and Levin, 2002).

Project Success Factors

The difficulties of a project are explained by Soldano and Krueger (1994). "Managing a project is like taking a long, complicated journey that requires judgments at every exit ramp and intersection," they write. The traveler has a specific location in mind, as well as a specific time frame and budget. Incorrect judgments made along the road can cause immobility or compel the passenger to backtrack,

wasting time and energy. A poor decision, such as attempting to travel on a closed road, can have disastrous implications in terms of both time and money." (p.310)

As a result, a journey's success or failure differs from one Project to the next. Project success is equally as difficult to define as failure, according to Standing et al. (2008). According to Pinto and Slevin (1988), determining how to assess project performance is challenging, and the characteristics that determine success or failure vary among researches.

Project success, according to Baccarini (1999), comprises two components: project management success and project product success. According to De Wit (1988), there is a distinction between project management success and project success. According to Avots (1969), project management is a critical component of project success. Munns and Bjeirmi (1996), on the other hand, show that there is overlap between project and project management in the following areas: period; project and project management success objectives, which are frequently entangled; and measurement ease. While project management may be capable of achieving project success, this does not always imply that it can also avoid project failure.

According to Hayfield (1979), there are two categories of project success variables: macro and micro factors (see table 3).

Table 3 Project Success Variables

Factors at the Macro level	Factors at the Micro level
1. The practical project definition 2. The methodical approach to project execution 3. Comprehension of the project environment 4. Selection of companies to carry out tasks 5. Policy formulation for the project	1. The well-organized project. 2. The selection of a core project team 3. Effective management controls 4. Effective information management systems

There are four project success factors, according to Morris and Hough (1987):

- (i) Deliverables that have been completed
- (ii) Delivered on schedule, on budget, and in accordance with technical specifications
- (iii) Profitable for contractor
- (iv) cancellation owing to a reasonable factor (in the event of a cancelled project) is lucrative for the contractor

According to a study by Accenture (2010), approximately 70% of firms that have implemented PMOs claim that project success rates have improved significantly as a result. Companies that implement project management standards, particularly a PMO with appropriate governance, are said to incur half the significant project cost overruns, delays, and cancellations as those that do not. Companies that have a project office in place, independent of the tasks and responsibilities of the PMO, have superior project performance, according to Ernst & Young. PMI-NIC found the same positive results in a research (2008) study analyzing the condition of PMO implementation in Italian businesses. According to the report, the definition of a PMO boosted project performance for 55 percent of participants while lowering business risks associated with company efforts.

Interestingly, the characteristics of Project Success Criteria because some project success criteria are "hard," i.e., objective, palpable, and measurable, they are divided into "hard" and "soft" dimensions. These are frequently linked to cost, time, and quality objectives (Archibald, 1992). Hard criteria are reasonably simple to assess and gain some level of agreement on. On the other hand, happiness, job satisfaction, improved reputation, and attention to detail are examples of "soft" success factors. This is a more subjective, nuanced, and difficult to assess component.

Every project will have a diverse set of stakeholders, each with their own subjective definition of success (Stuckenbruck, 1986; Wideman, 1998). In fact, Baker et al. (1988) propose the term "perceived project success." As a result, a project can be a success for one party while being a failure for another (de Wit, 1988). "The question of whether a project was or was not a success will depend to a great part on who is asking the question," writes Stuckenbruck (1986). Unfortunately, different stakeholders in the project may have quite diverse definitions of what defines project success.

Finally, there are three critical components to project management success: (1) meeting time, cost, and quality targets (project outputs and inputs); (2) project management process quality; and (3) satisfying project stakeholders' demands as they relate to the project management process.

Literature review on PMO importance and Project success factors

The first paper that selected were under the topic of "*The role of project management offices (PMOs) in IS project success and management satisfaction*" (Ward and Daniel, 2012). This paper were suggesting that more organizations are using project and program management offices to coordinate the activities related to information system (IS) projects, this paper aims to explore how this role relates to project success and satisfaction. Furthermore, The study aims to explain how the involvement of a prime-mover in various practices is related to overall project success and management satisfaction, and how this relationship is associated with the practices satisfaction. It also explores the extent to which the involvement of the PMO is associated with the satisfaction of the individual practice's shoulders. In summary, the finding of this paper was suggesting that the presence of a PMO does not affect the success rates of IS projects. This study debunks the assumption that the presence of a PMO makes a project more challenging. Furthermore, it is suggested that PMOs should be involved in the early stages of projects, rather than monitoring them on an ongoing basis. Eventually, like every study this research had several limitations and raises opportunities for further research. However, The study did not explore the relationship between PMO involvement and project success or management satisfaction. Instead, they sought to explain the findings through an inductive approach.

The second research paper related to our study with the following topic "Causes of delay in Saudi public construction projects" (Alsuliman, 2019). This paper strongly suggests that project delay is the most challenge to be faced when implementing construction projects. the paper illustrated the expansion in public construction projects that have been undertaken as part of the government's national development plans over the last three decades in Saudi Arabia. While one of the crucial problems concerning these projects is the repeated and lengthy delay that happened during the project lifetime. Accordingly, the author tried to examine the main causes of delays in Saudi public construction projects. interestingly, the paper concluded that the type of project delays could be classified based on the different stages of a construction project, according to the following (i) factors before the award of tenders, (ii) factors during the award of tenders, (iii) factors after the award of tenders, and (iv) general factors. Furthermore, the study specified 50 delay factors through quantitative methodology by conducting a focus group using a questionnaire that was administered and distributed to number of 211 participants from the construction industry. The following tables illustrate the top 20 delay Causes of Public Construction Projects in Saudi Arabia presented founded by the author.

However, from the previous analysis we rely that this paper focused on the external reasons rather than the internal reasons for project delays or filer. In addition, this does not minimize the value of this paper findings and results of the study instead it can increase the importance of the study, where the 20 reasons that affect the success of the project can be used by the PMO in order to be managed and monitored the project in the desired manner.

An Interesting research paper under the following topic "Implementation of Project Management Standards and Project Success: The Mediating Role of PMOs" (Pirotti et al., 2018), focus attention on

the implementation of project management practices through the project management body of knowledge (PMBOK) 10 knowledge areas, in some construction project-based organizations considering the important role of the PMOs and to the degree to which that leads to project success. The author's objectives were categorized to the following: (I) investigating the influence of project management standards on project success, and (II) examining the influence of PMO as a relationship between project management standard practices and project success in the construction project-based organizations.

Table 4 Top 20 Delay Causes of Public Construction Projects in Saudi Arabia.

No.	Factors
1	Focus on financial analysis and awarding the lowest bidder.
2	Awarding contractors projects beyond their financial and technical potential.
3	Selection of contractors who have other faltering projects.
4	Ministries are not interested in the development of the engineering sector.
5	Government entities are late in giving financial rights to contractors.
6	Weakness of the financial and technical capabilities of some contractors.
7	Government entities do not withdraw the delayed projects from the faltering contractor.
8	Weak technical analysis of the competitors.
9	Lack of interest in timetables and updating them constantly.
10	Expanding the use of subcontractors who are not qualified.
11	Poor salaries and financial incentives for engineers lead to a lack of interest in study and supervision.
12	Variations in orders occur during the project period.
13	Lack of accuracy in the studying of quantities, specifications, and drawings.
14	The weakness of coordination between service providers that related to project sites and works.
15	The weakness of experience of some engineers in studies and supervision.
16	The use of non-qualified consultant offices.
17	The weakness of training and development of engineers and engineering departments.
18	Weak efficiency and experience of the Technical Supervision Department of the government entity.
19	Weak information bases at ministries and companies on infrastructure.
20	Lack of planning by government entities.

Additionally, the author highlighted the unfolded knowledge and research gap and introduced a conceptual framework to reduce the gap by developing three hypotheses based on the study objectives, as follows.

- PMO influences Project Success through effective communication, project mission, and top management support among construction organizations.
- The implementation of PMS, PMBOK 10 knowledge areas, influences the success of projects among construction organizations.
- PMO plays as a mediator between the implementation of PMS, PMBOK 10 knowledge areas and Project Success among construction organizations.

Figure 2 shows the conceptual framework. A survey methodology was conducted in this research, targeting project managers and construction practitioners, and multivariate analysis techniques were adopted to analyze the data. Following the exploratory and confirmatory factor analyses, the SEM analysis was applied to examine the hypothesized relationships. In summary, the suggested conceptual framework was confirmed, and the analysis clarified the understanding of the current situation of project management standard practices and construction industry practitioners' awareness of the factors contributing to project success.

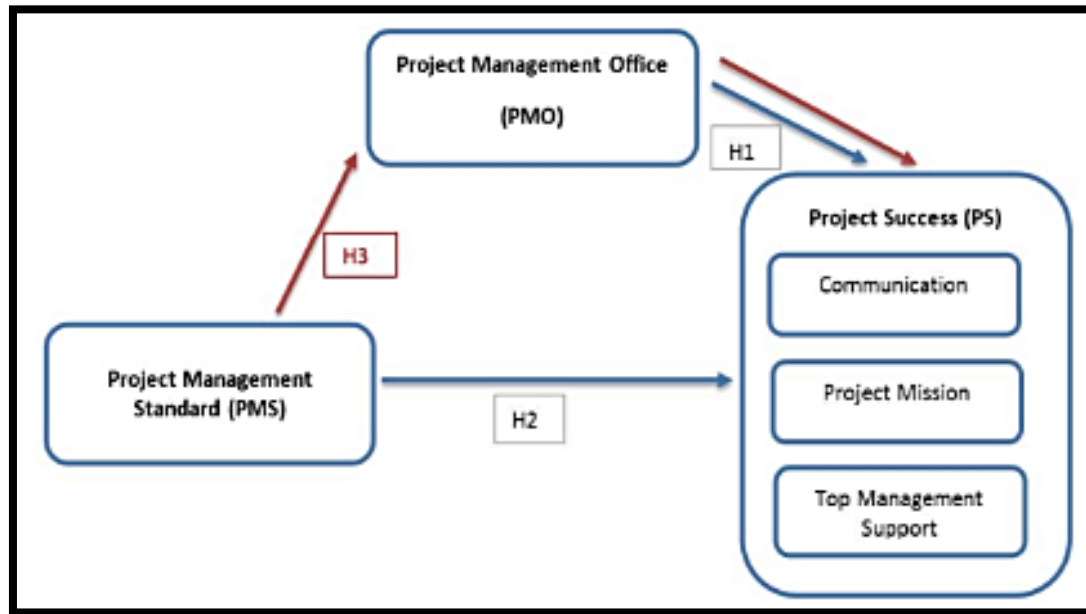


Figure 2 Conceptual framework

Another research paper with the following topic "*Project execution obstacles: a case of King Abdulaziz Airport in Saudi Arabia*" (Hudhaif, 2021). The objective of this study was to identify the causes of the various delays in airport projects in Saudi Arabia, especially the King Abdulaziz International airport (KAIA). Because it is the most strategic airport in the Kingdom of Saudi Arabia and is used by millions of pilgrims annually. In summary, the methodology of this paper used an explorative approach in synthesizing literature that explores various case studies, because the author suggests that literature review serves as a critical element to examine the most important reasons for project delays in the context of Saudi Arabia. Furthermore, the study used a quantitative methodology in which they provided both a questionnaire and interviews to collect primary data about the various methods to reduce delays and delay factors in manufacturing projects within Saudi Arabia. Interestingly, the research discussed three questions as follows: (i). What are the causes for project delays in Saudi Arabia? (ii) What are the justifications for project costs?, (iii) What are the challenges of completing projects in Saudi Arabia?. Eventually, this paper has identified a number of factors in delay in the sectors such as Meeting daily targets; Engineering; Materials; Time Management; Risk Management; External Causes; Finance; and Employment Problems. The author believes that these factors have contributed negatively to the image that Saudi Arabia has achieved in their project issues and delays that have badly cost the industry a huge amount of money in additional costs to recompense for the time and budget overruns.

Another research paper with the following topic "*The importance of PMO Practices in Strategic Initiative Implementation: An Empirical Study of Indonesian Banks*" (Ichsan and Hamsal, 2019). This paper was suggesting that Business companies are required to establish strategy and apply it in the form of strategic initiatives in project management in order to be competitive in the market. Furthermore, this study explored the critical significance of PMO practices in the implementation of strategic initiatives, as evaluated by bank performance from 2014 to 2016. The contribution of PMO methods in managing strategic initiatives in Indonesian banks was assessed empirically through a survey employing questionnaires. Data was gathered from 74 top executives representing 115 banks. Project portfolio management capabilities, PMOs practices, and bank performance as measured by return on assets (ROA) were analyzed and compared using the Partial Least Square Structural Equation Model method with Smart PLS 3.0 software as variables for strategic initiative implementation. This paper proves that the presence of a formal PMO contributes not only to better management of multiple

strategic initiatives in the form of projects, but also to aligning them with strategic objectives by selecting appropriate projects, prioritizing them, balancing the capabilities in implementing them, and configuring them based on the needs of the organization, according to this study.

III. RESEARCH METHODOLOGY

The main purpose of this mixed method study was clarifying the role of implementing PMO in increasing project success factors in Saudi organizations. In this study, categories of PMO implementation challenges (Project characteristics and performance, reasons of Projects failure, reasons for establishing a PMO, roles of PMO, and obstacles of establishing PMO) were the dependent variables, and the independent variables within this study were nationality, age group, level of education, English fluency, original field of study, and years of experience in Project Management. Information on dependent and independent variables were collected by using a questionnaire.

Research Approaches and Data Collection Method

Creswell et al. (2003) define the mixed method as one that "involves the collection or analysis of both quantitative and/or qualitative data in a single study in which the data are collected concurrently or sequentially, are given a priority and involve the integration of the data at one or more stages in the process of research."

It's a relatively new study strategy that's only been around for a few decades. It is a new research method that has been developed in recent decades. According to Gelo et al. (2008), the mixed method is defined as "a research approach that combines and integrates quantitative and qualitative research approaches" (p.278). Mixed method techniques aim to maximize the benefits while minimizing the drawbacks of one of the two approaches in a specific application (Gelo et al., 2008).

The study will adopt a survey methodology and use an online questionnaire for data collection to assess and understand the research topic and problem. Accordingly, this analysis will depend on two primary sources of data:

First is the primary data: which will be collected by designing an online questionnaire with closed questions to help measure the study's variables. According to Sekaran (2003), when having a will structured questions, questionnaires are an efficient method to collect data that helps researchers get accurate and relevant results. Moreover, the popularity of using the internet is continuously increasing, and more people are using the internet for information and communication (Nie et al., 2002). Thus, we will access unique and large populations and save both money (Couper, 2000 and Llieva et al., 2002). And time (Llieva, Baron, & Healey, 2002).

Second is the secondary data: this will be achieved by reviewing relevant books, previous studies and publications, and available scientific databases discussing smartphone users' security awareness.

Literature Eligibility Criteria

The study employed the following six criteria to choose papers related to the study topic. The first criteria are papers published in the English language, mainly between 2000 to 2022 (LEC1). The second criteria focused on articles that discuss the role of a PMO in improving Project Success (LEC2). PMO office existence and its importance in projectized organization (LEC3) were The Third criteria for selecting articles. The fourth criteria are articles that discuss Project Management within a specified context (LEC4). The fifth selection criteria focused on papers that examined the implantation of the PMO office within the context of Saudi Arabia (LEC5). Finally, the sixth criteria are papers that discuss various types of PMO offices (LEC6). The fowling diagram illustrate the literature eligibility selection criteria. Figure 3 shows the literature eligibility criteria.

LEC1	•Papers that only written in English language (C1) were included because English is the lingua franca for Project Management
LEC2	•Role of a Project Management Office (PMO) in improving Project Success
LEC3	•PMO office existence and its importance in projectized organization
LEC4	•Project Management within a specified context
LEC5	•the implantation of the PMO office within the context of Saudi Arabia.
LEC6	•various types of PMO offices

Figure 3 Literature Eligibility Criteria

Research Sample

The scope of research, population, and sample size that the study of the population will involve mainly those who responded to the online questionnaire. The research sample followed was the simple random sampling is The Simple Random Sampling method is considered one of the best probability sampling approaches for saving time and resources. It is a trustworthy method of gathering data in which every member of a population is chosen at random and solely by chance. Each person has the same chance of being selected to participate in a sample. An invitation was sent to several departments at ZATCA-EPMO through official email, those employees were asked to voluntarily participate to an online questionnaire that was published on the Internet for a period of 16 days. Accordingly, the timeline to receive responses from participants was from 1/11/2021 to 17/11/2021. However, the total number of received responses was 74 responses but the valid responses, which included in the study, were 74 responses in total as participants.

Statistical Data Analysis Technique

For three reasons, statistical data analysis is an essential aspect of this research study: For three reasons, statistical data analysis is a crucial aspect of this study project: (1) to provide an answer to research questions. (2) to examine research hypotheses; (3) to assist in developing the vital role of the PMO office.

In fact, genuine data from the Saudi Arabian significant sector ZAKAT was analyzed using the Statistical Package for Social Science software system (SPSS). One of the most popular software programs is SPSS, which has the advantage of having a window user interface that makes it simple to use.

There are two types of statistical data analysis methods: descriptive statistics and inferential statistics. Inferential statistics are used to show the relationships between variables (Sekaran, 2003), while descriptive statistics are used to "describe, summarize, or explain a given collection of data" (Singh, 2007). The following subsections describe the statistical data analysis approaches employed in this study.

a) Descriptive Statistics

Tables, graphs, and measurements are typically employed in the first stage of statistical analysis to present descriptive statistics (Bryman and Cramer, 1996). They are utilized to acquire a better grasp of the data collected for the study endeavor. Using descriptive statistics, raw valid data from samples must be turned to information.

According to McHugh (2003), the choice of a descriptive statistic is based on two criteria: I, the variable's measurement level must correspond to the measurement criteria demanded by the specific statistic the researcher must use; and (ii) the statistic must present the information the researcher seeks.

The most straightforward strategy for summarizing data is cross-tabulation, which may find any relationship between two variables (Singh, 2007). Evaluate the role of a PMO in improving Project Success Factor in Saudi Arabia: Case Study of ZATCA is investigated using descriptive statistical measures such as frequency, percentage, and means, as well as cross-tabulation.

b) ANOVA test

The goal of ANOVA is to see if there is a difference between two or more groups' means (Singh, 2007). By describing the effect of the relationship, it deals with an independent variable and a dependent variable. As a result, the ANOVA technique can aid researchers in determining the statistical significance of relationships between variables.

The selection of ANOVA statistics is based on three criteria, according to Siegel and Castellan (1988): I data must be a random sample from the entire target population; (ii) the expected number in each group should not be too small; and (iii) the rule of thumb is that at least five counts should be expected in each group. ANOVA is being utilized in this study to look at IT manager and organizational variables that may influence the result of an IT project.

Issues of Trustworthiness

A two-sectioned survey was sent to collect the data needed to test the predetermined hypotheses. Part I inquired about background and demographics and included questions that identified nationality, age group, level of education, English fluency, original field of study, and years of experience in Project Management. Questions 1 through 6 were dedicated to this purpose; in addition, they were used to determine which group each participant belonged to for each of the null hypotheses. Part II included questions of the project characteristics and performance. Questions 7 through 11 were dedicated to this purpose. Questions 12 through 16 were about reasons of projects failure, Questions 17 through 22 were about reasons for establishing a PMO, Questions 23 through 26 were about PMO roles and responsibilities, and Questions 27 through 30 were about obstacles of establishing PMO. Respondents were asked to rate the role of implementing PMO to increasing project success factors in ZAKAT on a five-point Likert-type scale that ranged from 1 to 5 (strongly agree = 5, agree = 4, undecided = 3, disagree = 2, and strongly disagree = 1). According to Ary et al. (2010), "The various agree-disagree responses are assigned a numeric value, and the total scale score is found by summing the numeric responses given to each item. The survey was in both languages English and Arabic. The survey was posted electronically and was available to the participants on Google Docs site

Research Model

A conceptual model is defined as "words and/or pictures that are meant to assist learners in creating mental representations of the system being studied" by Mayer (1989). It is meant to serve as a guide for gathering and analyzing data. Furthermore, a research framework is critical for reaching the research purpose by determining a conceptual framework.

PMO implementation is recognized to be influenced by elements such as project manager qualities, organizational features and context, project characteristics, and PMO characteristics. Few studies have found variables influencing PMO implementation (Dai, 2001; Stewart, 2010; Hobbs and Aubrey, 2010). This study will demonstrate how to use some of the variables identified in the previous investigations. The research model for this study is shown in figure 4.

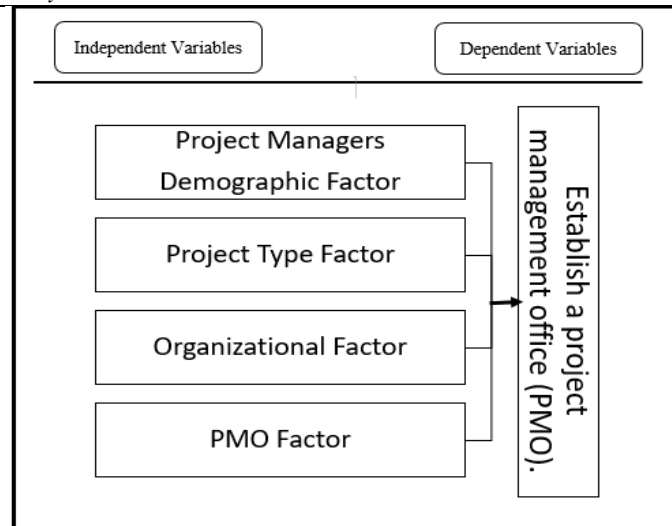


Figure 4 Research Model

IV. DATA ANALYSIS AND HYPOTHESES TESTING

Descriptive analysis of Respondents’ Background

Overall, the responders represented the target demographic with a wide range of experienced engineers in project management. Table 5 summarizes the complete demographic information that indicates the respondents' backgrounds. The total number of received responses for the study was 74 responses.

As shown in table 5 and graph summary figure 5, 63.5% of the participants were non-Saudis in the count of 47 participants; in contrast, 36.5% of the participants were Saudis in the count of 27 participants. This result is interesting for further investigation, which might lead to significant finding results. However, this concern is not in the scope of this study and could be investigated more in other related studies.

Table 5. Frequency and percentage by gender

Nationality	Frequency	Percent
Saudi	27	36.5
Non-Saudi	47	63.5
<i>Total: →</i>	74	100.0

As illustrated in Table 6 and figure 5, the age range of participants varied significantly. With the majority of (33.8%) reporting to be Above 45 years old, (31.1%) for the second age group being between 36 – 45 years old, (18.9%) being between 30 – 35 years old, and (16.2%) under 30 years.

Table 6. Frequency and percentage by age

Age	Frequency	Percent
Under 30 years	12	16.2
From 30 to 35 years	14	18.9
From 36 to 45 years	23	31.1
Above 45	25	33.8
<i>Total: →</i>	74	100.0

Nevertheless, the research uses three factors to weigh the credibility of the participants’ responses: their educational level, English professional level, educational background, and years of experience in project management. Interestingly, most of the participants in this study were university degree holders, as (74.3%) of them were holders of a bachelor’s degree and (24.3%) were holders of a master’s degree. Only one participant with a percentage of (1.4%) held an associate degree. Please see table 7 below and figure 5 for further illustration.

Table 7. Frequency and percentage by education level

Education	Frequency	Percent
High school or below	0	00.0
Associate Degree	1	1.4
Bachelor's degree	55	74.3
Master's degree	18	24.3
PhD	0	0.00
<i>Total: →</i>	<i>74</i>	<i>100.0</i>

Another exciting factor is that most of the participants in this study are with a high English level, as (79.7%) of them reported that their English is excellent and (12.2%) said that their English is good. The rest (8.1%) of them were native English language speakers. Please see table 8 below and figure 5 for further illustration.

Table 8. Frequency and percentage by English level

English Level	Frequency	Percent
Not Very Good	0	00.0
Good	9	12.2
Excellent	59	79.7
Native	6	8.1
<i>Total: →</i>	<i>74</i>	<i>100.0</i>

Significantly, all participants of this research were from the Engineering field, as (83.8%) of them were from the Engineering field and the rest (6.2%) were from other areas of studies as follows (Business, architecture, IT/Computing, and accounting).

Finally, the years of experience in Project Management were distributed according to the following. In the first place, most participants have had long years of experience, as (41.9%) have had more than 14 years of experience in project management. Then (25.7%) have had less than three years of experience. The fourth group with a (14.9%) have had between 3 to 7 years of experience in Project management. Penultimate, the fifth group with a total percentage of (10.8%) had between 7 to 10 years of experience. Finally, a rate of (6.8%) with 11 to 14 years of experience in Project management. See table 9 for more illustration, also figure 5 present the distribution of years of experience in Project management.

Table 9. Frequency and percentage by Project management experience

Experience in Project Management	Frequency	Percent
Less than 3 years	19	25.7
3 to 6 years	11	14.9
7 to 10 years	8	10.8
11 to 14 years	5	6.8
More than 14 years	31	41.9
<i>Total: →</i>	<i>74</i>	<i>100.0</i>

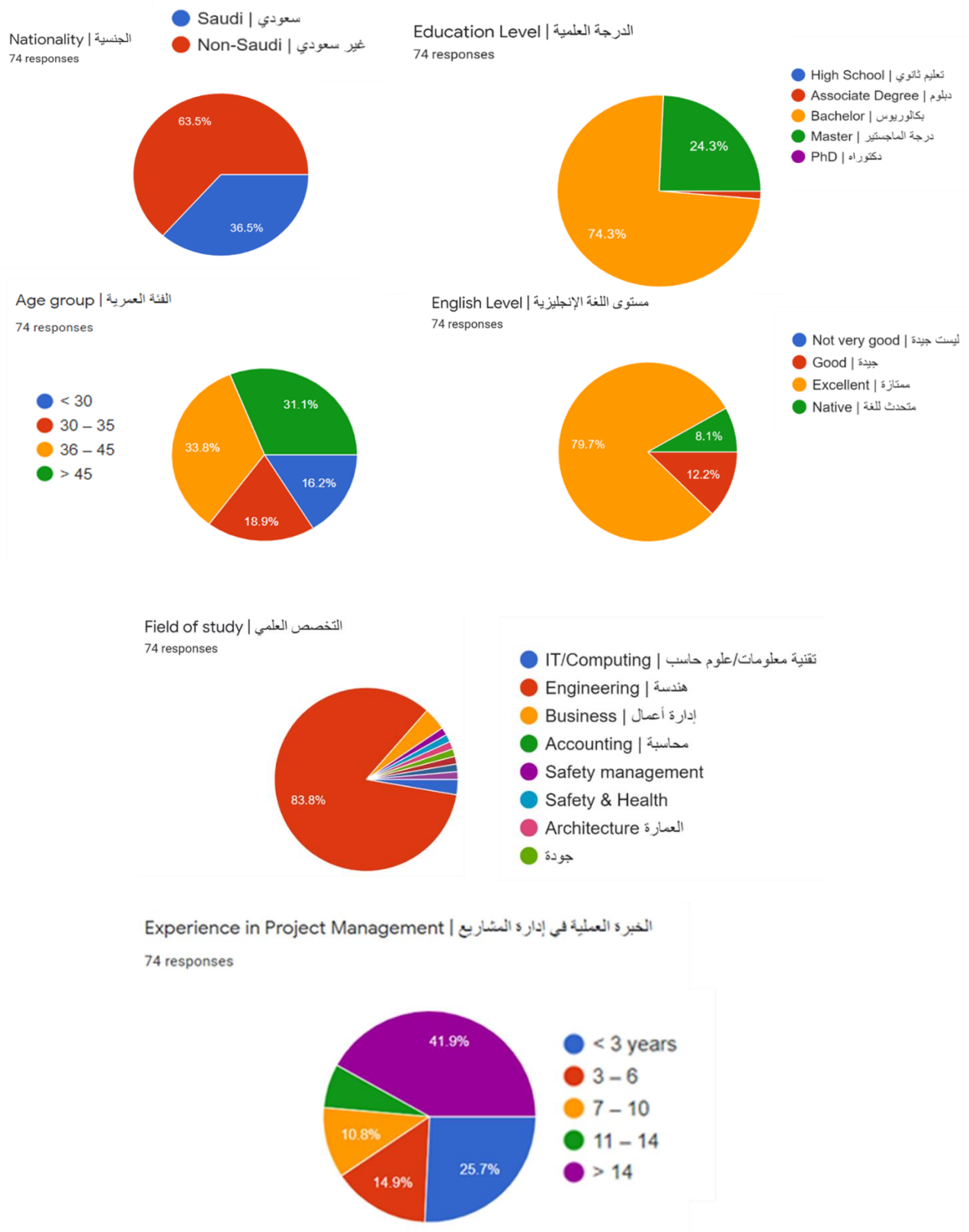


Figure 5. Summary of Demographics Respondents.

It's worth noting that some researchers have looked at project managers' competencies as essential determinants in project success. Project managers' abilities, management styles, and emotional

intelligence skills have all been investigated to demonstrate the link between project success and emotional intelligence. Overall, an organization with capable project managers equipped with the essential skills, resources, and positions can unquestionably secure project success.

Most the organization's project managers are prepared with the technical competencies required to manage projects, according to the participants' education, experiences, and position in the organization. Using PMO competency described in section two, these qualities position this organization at good stage of the PMO maturity level, indicating an advanced PMO that uses an integrated and comprehensive project management capability to meet the intended goals and objectives. Furthermore, project managers at the organization under investigation are assigned to different levels and have varying tasks based on their position in the organization and experience, as evidenced by their education field background.

Means and standard deviations

This section includes frequencies and percentages for responses of Project characteristics and performance, Reasons for Projects failure, Motivations for Establishing a PMO, Understanding PMO roles, and Obstacles of establishing PMO. Each table of previously mentioned factors includes a calculation of means and standard deviation for each question with total statistics for dimension. A Likert scale of 5 points is used to measure responses with an interval of 4 ranges to interpret the mean scores for results. Answers were coded as follows: (Strongly Disagree) was coded as 1, (Disagree) was coded as 2, (Neutral) was coded as 3, (Agree) was coded as 4, and (Strongly Agree) was coded as 5.

To determine the project characteristics and performance within the organization, five questions are asked to indicate the direction of responses. The first three questions were scalable, as shown in Table 10. The first question in Part tow asked the participant if Projects are completed on Schedule, although the majority with (36.5%) selected (Agree) but according to Mean calculation the overall tendency of responses was leaning toward (Agree/Disagree). The next question asked if projects are completed within the budget, the majority with (43.2%) selected (Agree), and the overall tendency of responses was leaning toward (Agree). The third question in this section asked if the end Service/Product of completed projects is being used by its intended client or end-users, the majority with (52.7.2%) selected (Agree) and the overall tendency of responses was leaning toward (Agree). According to Mean calculation, the overall direction of responses towards clear project characteristics and performance aspects was leaning toward (Agree).

Table 10. Frequency, Percentage, Means and Standard deviation for Clear Project characteristics and performance dimension

Questions	Measure	Strongly Disagree	Disagree	Agree\ Disagree	Agree	Strongly Agree	Mean	Standard Deviation	Result
		1	2	3	4	5			
P2-1) EPMO Projects are completed on Schedule	Frequency	3	13	26	27	5	3.24	0.962	Agree
	Percent	4.1	17.6	35.1	36.5	6.8			
P2-1) EPMO projects are completed within the budget	Frequency	1	14	19	32	8	3.43	0.966	Agree
	Percent	1.4	18.9	25.7	43.2	10.8			
P2-1) The end Service/Product of completed projects being used by its intended client or end users	Frequency	2	0	10	39	23	4.09	0.830	Agree
	Percent	2.7	0	13.5	52.7	31.1			
Clear Project characteristics and performance	Frequency	6	27	55	98	36	3.86	1.217	Agree
	Percent	3	12	25	44	16			

To determine the reasons for projects failure, five questions are asked to indicate the direction of responses, as illustrated in table 11 The first question in this section asked the participant if lack of top management commitment to project is the reason for project failure, interestingly, the majority with (32.4%) selected (Agree/Disagree) and according to Mean calculation, the overall tendency of responses was leaning toward (Agree/Disagree). The second question of this part asked if the unclear

project objectives were another reason for the project failure. Answers were almost close to each other, and the overall tendency of responses was leaning toward (Agree/Disagree). The third question asked if the project management methodology could fail the project. The percentage was close to each other, and the overall tendency of responses was leaning toward (Agree/Disagree). The fourth question in this section asked if Misunderstanding for user needs and requirements could fail the project, the overall tendency of responses was leaning toward (Agree/Disagree). The final question asked if bureaucracy and routine could fail a project, and many answers selected (Strongly Agree) with a percentage of (31.1), the overall tendency of responses was leaning toward (Agree). According to the Mean calculation, the overall tendency of responses towards Causes of project failure was leaning toward (Agree/Disagree).

Table 11. Frequency, Percentage, Means and Standard deviation for Reasons of Projects failure

Questions	Measure	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Standard Deviation	Result
		1	2	3	4	5			
P3-1) Lack of top management commitment to project	Frequency	15	14	24	8	13	2.86	1.35	Disagree
	Percent	20.3	18.9	32.4	10.8	17.6			
P3-2) Unclear project objectives	Frequency	12	17	16	17	12	3	1.33	Agree
	Percent	16.2	23	21.6	23	16.2			
P3-3) Lack of project management methodology	Frequency	8	20	14	14	18	3.19	1.36	Disagree
	Percent	10.8	27	18.9	18.9	24.3			
P3-4) Misunderstanding for user needs and requirements	Frequency	9	19	12	17	17	3.19	1.37	Disagree
	Percent	12.2	25.7	16.2	23	23			
P3-5) Bureaucracy and routine	Frequency	3	15	18	15	23	3.54	1.24	Agree
	Percent	4.1	20.3	24.3	20.3	31.1			
Reasons of Projects failure	Frequency	47	85	84	71	83	3.16	1.16	Agree
	Percent	12.7	23	22.7	19.2	22.4			

Six questions expressed motivations for establishing a PMO office within the organization. The overall tendency of response toward this section varied between strongly agree and agree. Respondents were found appreciating the existence of the PMO office within the organization. They strongly agreed that it would help implement training needs for project managers and their teams, and it will also apply to follow standards and practices within the organization. Furthermore, they strongly agreed that the PMO office would assess project risks at the early stages of the project life cycle and decrease the rate of project delays. The participants also agreed that the top management supports the establishment of a PMO office, which will overcome the lack of resources and experience in project management. A further illustration is presented in table 12.

Four questions examined the understanding of PMO office roles. The overall tendency of response toward this section varied between strongly agree and agree. Most respondents agreed that the PMO office would deliver successful projects within budget, time, and quality. Furthermore, most responded (agreed and strongly agreed) that the PMO office would help develop and maintain project management standers and provide project management consultations. Finally, they also agreed that the PMO office would Provide project administrative support. A further illustration is presented in table 13.

Measuring obstacles and challenges of establishing a PMO office were presented in four questions to the participant. The overall tendency of response toward this section varied between (agree\disagree) and agree. Most respondents agreed that the organization's lack of understanding of PMO value would become an obstacle to establishing a PMO office. The tendency toward extra and unnecessary overhead and expensive responses is a barrier to starting a PMO office within the organization. The

majority of responses (29.7%) agreed that the lack of understanding of the role of PMOs within the organization is another reason not to start a PMO office. However, the Mean calculation was leaning toward (agree\disagree). Interestingly, (35.1%) and (32.4) agreed and strongly agreed that resistance to change could be a reason for not starting a PMO office within the organization. A further illustration is presented in table 14.

Table 12. Frequency, Percentage, Means and Standard deviation for Motivations for Establishing a PMO

Questions	Measurement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	n	Mean	Standard Deviation	Result
		1	2	3	4	5				
P4-1) Implement training needs for project managers and their teams	Frequency	1	3	16	28	26	4.01	0.93	Agree	
	Percent	1.4	4.1	21.6	37.8	35.1				
P4-2) Implement and follow standard practices	Frequency	1	2	13	22	36	4.22	0.93	Strongly Agree	
	Percent	1.4	2.7	17.6	29.7	48.6				
P4-3) Assess project risks at early stages of project lifecycle	Frequency	1	1	11	26	35	4.26	0.86	Strongly Agree	
	Percent	1.4	1.4	14.9	35.1	47.3				
P4-4) Decrease the rate of stalled project	Frequency	0	1	12	31	30	4.22	0.90	Strongly Agree	
	Percent	0	1.4	16.2	41.9	40.5				
P4-5) The top management support establishing PMO	Frequency	1	3	10	31	29	4.14	0.91	Agree	
	Percent	1.4	4.1	13.5	41.9	39.2				
P4_6) Overcome lack of resources and experience in Project Management	Frequency	1	2	14	27	30	4.12	0.91	Agree	
	Percent	1.4	2.7	18.9	36.5	40.5				
Motivations for Establishing a PMO	Frequency	5	12	76	165	186	4.16	0.68	Agree	
	Percent	1.1	2.7	17.1	37.2	41.9				

Table 13. Frequency, Percentage, Means and Standard deviation for Understanding PMO roles

Questions	Measurement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	n	Mean	Standard Deviation	Result
		1	2	3	4	5				
P4-1) Deliver successful projects: budget, time, quality	Frequency	0	3	8	36	27	4.18	0.78	Agree	
	Percent	0	4.1	10.8	48.6	36.5				
P4-2) Develop and maintain project management standers	Frequency	0	4	9	28	33	4.22	0.86	Strongly Agree	
	Percent	0	5.4	12.2	37.8	44.6				
P4-3) Provide project management consultations	Frequency	1	1	8	29	35	4.30	0.82	Strongly Agree	
	Percent	1.4	1.4	10.8	39.2	47.3				
P4-4) Provide project administrative support	Frequency	1	1	13	22	37	4.26	0.89	Agree	
	Percent	1.4	1.4	17.6	29.7	50				
Understanding PMO roles	Frequency	2	9	38	115	132	4.24	0.79	Agree	
	Percent	0.7	3	12.8	38.9	44.6				

Correlation Analysis

The study used bivariate association through the Pearson Correlation method. According to (Cohen, 1988), the strength of the relation between two variables can be interpreted as illustrated in table 15.

The Analysis of the correlation test in table 16 reveals a significant relationship between Project characteristics and performance and the reasons for projects failure with (0.972) as the value is between (0.50 and 1). Also, there is a strong relation between Project characteristics and performance and obstacles to establishing PMO with a value of (0.536). The correlation between Project characteristics and performance and Motivations for establishing a PMO and Understanding PMO roles is small as the values are between (0.10 and 0.29). Interestingly, there is a significant correlation between Reasons

of Projects failure and Obstacles of establishing PMO as the correlation value is (0.617). Furthermore, there is a significant correlation with a discount (0.613) between Motivations for establishing a PMO and Understanding PMO roles.

Table 14. Frequency, Percentage, Means and Standard deviation for Obstacles of establishing PMO

Questions	Meas ure	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	n	Mea n	Stan dard Dev.	Resu lt
		1	2	3	4	5				
P5-1) lack of understanding of PMO value to the organization	Frequency	5	10	11	26	22	3.68	1.23	Agree	
	Percent	6.8	13.5	14.9	35.1	29.7				
P5-2) Extra and unnecessary overhead and expensive	Frequency	8	17	15	18	16	3.23	1.32	Neutral	
	Percent	10.8	23	20.3	24.3	21.6				
P5-3) Lack of understanding of the role of the PMO within the organization	Frequency	4	12	19	22	17	3.23	1.17	Neutral	
	Percent	5.4	16.2	25.7	29.7	23				
P5-4) Resistance to change	Frequency	3	6	15	24	26	3.86	1.11	Agree	
	Percent	4.1	8.1	20.3	32.4	35.1				
Obstacles of establishing PMO	Frequency	20	45	60	90	81	3.56	1.00	Agree	
	Percent	6.8	15.2	20.3	30.4	27.4				

Table 15. Strength of relationship between variables

Pearson Correlation Range	Relationship Strength
0.10 to 0.29	Small
0.30 to 0.49	Moderate
0.50 to 1.00	Large

Table 16. Strength of relationship between variables

		Project characteristics and performance	Reasons of Projects failure	Motivations for establishing a PMO	Understanding PMO roles	Obstacles of establishing PMO
Project characteristics and performance	Pearson Correlation	1	.972**	.070	.225	.536**
	Sig. (2-tailed)		.000	.554	.054	.000
	N	74	74	74	74	74
Reasons of Projects failure	Pearson Correlation	.972**	1	.058	.179	.617**
	Sig. (2-tailed)	.000		.625	.127	.000
	N	74	74	74	74	74
Motivations for establishing a PMO	Pearson Correlation	.070	.058	1	.613**	.163
	Sig. (2-tailed)	.554	.625		.000	.166
	N	74	74	74	74	74
Understanding PMO roles	Pearson Correlation	.225	.179	.613**	1	.155
	Sig. (2-tailed)	.054	.127	.000		.188
	N	74	74	74	74	74
Obstacles of establishing PMO	Pearson Correlation	.536**	.617**	.163	.155	1
	Sig. (2-tailed)	.000	.000	.166	.188	
	N	74	74	74	74	74

** Correlation is significant at the 0.01 level (2-tailed).

Hypothesis test result

Multiple regression is used to test the first hypotheses of study that revealed that R-Square of model in table 17 is (.954) which means the model explains 95.4% of the variance in the dependent variable. According to ANOVA test in table (20) the model statistically significant as sig is .000.

To test the first hypothesis of this study we have entered the fowling variables (PMO establishment Obstacles, Roles of PMO, Motivations for establishing a PMO and PMO, Reasons of Projects failure). Dependent variable is project characteristics. see table 17-20 for further illustration.

Table 17. Variables Entered of Dependent Variable: Project characteristics and performance

Variables Entered/Removed ^a			
Model	Variables Entered	Variables Removed	Method
1	Obstacles of establishing PMO, Understanding PMO roles, Motivations for establishing a PMO, Reasons of Projects failure ^b	.	Enter
a. Dependent Variable: Project characteristics and performance			
b. All requested variables entered.			

Table 18. Model Summary of Obstacles of establishing PMO, Understanding PMO roles, Motivations for establishing a PMO, Reasons of Projects failure

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.977 ^a	.954	.952	.26807
a. Predictors: (Constant), Obstacles of establishing PMO, Understanding PMO roles, Motivations for establishing a PMO, Reasons of Projects failure				

Table 19. ANOVA Test

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	103.240	4	25.810	359.165	.000 ^b
	Residual	4.958	69	.072		
	Total	108.198	73			
a. Dependent Variable: Project characteristics and performance						
b. Predictors: (Constant), Obstacles of establishing PMO, Understanding PMO roles, Motivations for establishing a PMO, Reasons of Projects failure						

The main hypothesis of the study was as follows, Ha1: There is a statistically significant relationship between project characteristics and PMO ‘s effectiveness according to (Obstacles of establishing PMO, Understanding PMO roles, Motivations for establishing a PMO, and Reasons of Projects failure). To test the four sub-hypotheses, the study uses One way ANOVA (refer table 20-21).

Table 20. Hypothesis of the study Ha1

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.293-	.222		-1.319-	.192
	Reasons of Projects failure	1.080	.035	1.025	30.783	.000
	Motivations for establishing a PMO	-.022-	.059	-.012-	-.366-	.715
	Understanding PMO roles	.105	.053	.065	1.964	.054
	Obstacles of establishing PMO	-.127-	.040	-.105-	-3.154-	.002
a. Dependent Variable: Project characteristics and performance						

Table 21. Hypothesis Summary Results

ID	Hypothesis	Result
Ha1.1	There is a statistically significant relationship between project characteristics and PMO ‘s effectiveness according to (Obstacles of establishing PMO)	Value of T is (30.783) at a significant level of (.000) below (0.05). Therefore Ha1.1 is accepted.
Ha1.2	There is a statistically significant relationship between project characteristics and PMO ‘s effectiveness according to (Understanding PMO roles).	Value of T is negative (-.366) at a significant level of (.715) above (0.05). Therefore, Ha1.2 is rejected.
Ha1.3	There is a statistically significant relationship between project characteristics and PMO ‘s effectiveness according to (Motivations for establishing a PMO).	Value of T is (1.964) at a significant level of (.054) Above (0.05). Therefore Ha1.3 is rejected.
Ha1.4	There is a statistically significant relationship between project characteristics and PMO ‘s effectiveness according to (Reasons of Projects failure).	Value of T is negative (-3.154) at a significant level of (.002) below (0.05). Therefore Ha1.3 is accepted.

V. RESULTS, RECOMMENDATIONS AND FUTURE STUDIES

According to the literature, most projects are suffering from failing because they are over budget or over time due to weak project management implementation techniques. Examples and causes of project failure have been presented in previous studies. The primary goal of this study was to determine the role of a PMO in reducing project failure in Saudi Arabian businesses. The exploratory outcomes generated from the empirical analysis address the research questions and test the hypotheses to meet the study's ambitions.

The findings of the study suggest that there is a link between the development of a PMO and increased project success, assuming that the PMO and its associated governance mechanisms are firmly established inside the organization. However, because there is no certain correlation between the PMO's functions and project success, the author advises assessing success at different levels of the organization depending on the PMO's role/level in it, to better understand and capture the relationship.

This research adds to our understanding of how PMOs are established in Saudi businesses. The outcomes of this study have helped to expand our knowledge of the role of PMOs. Because little previous research on the influence of PMOs on projects in Saudi Arabia has been conducted to the researcher's knowledge, this empirical research identifies the role of PMOs in reducing project delay and failure. This study's contribution is based on two perspectives: theoretical contribution and practical contribution

Even though there are various discussions about a PMO in the literature, this study is an initial step toward investigating the role of PMOs in Saudi Arabia's organizations. One theoretical contribution of this research is to extend the PMO literature by offering a comprehensive understanding of PMOs from the standpoint of project management practitioners.

The researcher's study is based on exploratory and descriptive research styles employing quantitative and qualitative data to answer the research questions and assess the hypotheses. In mixed-methods research, the pragmatic paradigm enables it to provide a unique methodological contribution. First, the researcher uses the Critical Incident Technique (CIT) study to conduct semi-structured interviews with IT managers in Saudi Arabia to learn more about the nature of project risk factors or explore the available previous studies that answer the topic. The researcher then creates a questionnaire for individuals working on projectized organizations based on a thorough analysis of the literature and the findings of the CIT study. Later, the CIT might assist in the creation of a questionnaire survey.

Although this study accomplished its goal by answering the primary research questions and testing the research hypotheses, it does have significant limitations that limit its generalizability. These constraints may open new research avenues in the future. However, various constraints were realized as follows:

- Although the sample sizes are appropriate (74 in the questionnaire survey), more comprehensive samples may provide more confidence in the outcomes. However, this would have taken up more time and cost, both of which were not accessible for this specific study.
- Due to time and budget constraints, including the difficulty of having participants complete two sets of questionnaires, the test-retest reliability approach has not been used in this study despite the fact of adding more value to questionnaires results.
- Due to time and budget constraints, it was challenging to evaluate the current established PMO office in detail.
- It was challenging to include all the findings from this study's varied research methodologies. As a result, the researcher focuses on the most critical and relevant facts that can help answer the research questions and appropriately test the study hypotheses.

Based on research findings and results, several studies can be carried out in future, they are as follows:

- Select a Saudi organization and critically evaluate its already established PMOs.
- The sample for this study was limited to Saudi Arabian organizations. As a result, future research might include organizations from other first-world countries, such as the United States and the United Kingdom.
- Furthermore, future studies might consider using other methodologies to enable in-depth investigation of the trends revealed.

VI. CONCLUSION

This study aimed to determine the impact of PMOs in reducing project failure in Saudi Arabia. This research contributes to a deeper understanding of the PMOs that have been formed in Saudi businesses and how they affect project performance. As a result of this knowledge, project managers will be more aware of the importance of PMOs in reducing the likelihood of project failure.

However, the assessment of the literature also reveals that there is still a lot of work to be done on this subject in general. Rather than project management in general, much of the existing material is focused on information technology initiatives. There is no universal consensus on the PMO's success rate. According to several studies, PMO has been over-promoted as a panacea. They wonder whether the initial and recurring costs are justified by the benefits delivered by the PMO and suggest that adoption may be premature until more study is undertaken. The issue of whether a PMO can guarantee project success in all instances may not be the proper one to ask. It's probably all about determining the intended outcome, determining the overall strategic goals, and evaluating them against the perceived costs and benefits of implementing a PMO. This study's novelty makes it a valuable contribution to the body of project management research. Its implications are critical for academic scholars and practitioners who want to have a good influence on projects.

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Ethical statement: The authors declare that they have followed ethical responsibilities.

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