

Role of the Project Management Office (PMO) in Enhancing Project Success Factors in Saudi Arabia: A Case Study of the Jazan Region

¹*Dr. Khaled Muhammad Ali Muhammad, ²Eng. Ibrahim Dhafer Ali Kariri, ³Eng. Ahmed Suliman Dhayhi, ⁴Eng. Saeed Ali Alkathami, ⁵Eng. Turki Abdulkhaliq Mana Alqarni, ⁶Eng. Hani Hamed Alzawawi

¹Project Management Director, Jazan Region Municipality, AD Engineering Co, KSA, Jazan

²Vice Mayor of Jazan Region, and Undersecretary of Jazan Municipality for Projects and Public Health, KSA, Jazan

³Project Management Director, Jazan Region Municipality, KSA, Jazan

⁴Senior Professional Mechanical Engineer, Ministry of Municipal and Rural Affairs and Housing, KSA, Riyadh

⁵Project Manager, Ministry of Municipal and Rural Affairs and Housing, KSA, Riyadh

⁶Project Planning manager, Ministry of Municipal and Rural Affairs and Housing, AECOM Engineering Co, KSA, Riyadh

*Corresponding Author: Dr. Khaled Muhammad Ali Muhammad (khmuhammad@momra.gov.sa)

Abstract - The crucial role of a Project Management Office (PMO) in the construction engineering field is essential for ensuring project success. This research paper examines the conceptualization of PMOs for engineering and construction enterprises, underscoring the necessity for specialized structures to oversee projects in a coordinated and centralized manner. The study explores various PMO models and functions proposed by different authors, addressing the challenge of determining specific functions for implementation in a given context. It aims to propose a set of functions for a supportive PMO in an engineering and construction company, including the development and implementation of a PM methodology, provision of tools for project management support, and enhancement of PM competencies. Furthermore, the paper discusses the different types and roles of PMOs, emphasizing their evolutionary nature and operation at multiple organizational levels based on maturity. It emphasizes the substantial impact a PMO can have on an organization and the critical need for broad support for its operations across the organization, not limited to management levels. In addition, the study offers a comprehensive guide to PMOs, defining the project management office and its various types, encompassing project, program, and portfolio management offices. It delineates the roles and responsibilities of a PMO, stressing the importance of standardizing and enforcing project management standards across an organization. Overall, the research aims to illuminate the value that PMOs bring to an organization, particularly in the context of engineering and construction enterprises, and to provide insights into the significance of a value-centric PMO, its primary roles and responsibilities, and its contribution to successful project outcomes.

Keywords: Project Management Office, Construction, Role, PMO Structure, Saudi Arabia.

I. Introduction

A Project Management Office (PMO) is a unit, entity, or division within a company that establishes and upholds project management standards. The main objective of a PMO is to realize advantages through the establishment and adherence to project management processes, policies, and approaches. PMOs oversee the preservation of documentation and metrics for project execution, ensuring that projects are completed punctually and within budget.

The PMO aims to standardize and implement efficiencies through repetition in project execution, serving as the repository of documentation, guidance, and metrics for the practice of project management and execution.

It is a centralized, enduring organizational entity tasked with managing multiple projects for an entire company or a specific department within the company. PMO functions may encompass training, project services, methodology, processes, and project management tools. Additionally, a PMO may have strategic responsibilities, such as offering support in project portfolio management.

The concept of the Project Management Office (PMO) was introduced in academic literature around the late 1990s with the aim of improving outcomes through the efficient allocation of resources and centralized supervision [1].

Recent research suggests that these organizations are becoming increasingly advanced as they extend their functions beyond basic project administration to the adoption of contemporary project management systems [2].

In addition to fundamental project administration roles, PMOs now function as a focal point for fostering innovation in projects [3], creating knowledge governance frameworks [4], overseeing strategic portfolio priorities [5], driving changes in project management [6], and benchmarking industry best practices [7].

The inherent value of PMOs in the construction sector extends beyond simply lowering project failure rates, encompassing the cultivation of a culture of ongoing improvement, integrated supervision, and centralized resource allocation [8].

In today's construction industry, there is a need to utilize more productive and efficient PMOs to deliver greater value and drive transformations in the project management landscape [6].

PMOs can support project managers by establishing the framework necessary to standardize project management practices, enabling construction project portfolio management, and identifying approaches for repeatable processes [9].

Contracting companies are increasingly embracing project management offices (PMOs) to enhance their capabilities in delegating, organizing, controlling, and monitoring projects. PMOs can fulfill a range of functions within contracting companies, with some dedicated to managing specific projects, while others support projects from initiation to completion, and provide administrative support to project managers, allowing them to focus on more critical tasks [9].

The primary objective of this article is to introduce the Project Management Office (PMO) and evaluate the implementation of various types of PMOs in the construction industry.

The intended audience for the article is those interested in understanding the role of Project Management Offices (PMOs) and the application of different types of PMOs within the construction sector. This includes professionals in the construction industry, project managers, and individuals involved in project management practices. Understanding the intended audience can help in tailoring the content to effectively address the needs and interests of these specific groups.

The PMO is influenced by the following factors:

- When multiple projects compete for limited resources (such as people, space, and infrastructure), a central organizer like a Program Management Office is essential to determine the optimal allocation of resources.

- The uncertainty stemming from both internal and external sources necessitates a flexible flow of information to enable swift and accurate communication among project participants.
- The interdependencies among projects require centralized, high-level monitoring by a Program Management Office.
- Each project having its own management and administrative processes creates challenges for an organization to assess the performance of one project against another.
- The lack of coordination among projects inevitably disrupts the day-to-day operations of the organization.

PMOs encompass a wide range of expertise and involve professionals from various disciplines such as IT, planning, finance, and risk management who collaborate to ensure that all projects align with the organization's defined outcomes. While not every organization requires a PMO, the need for a project manager is prevalent in most cases.

A project manager is accountable for the comprehensive oversight and success of an individual project from inception to completion. Their responsibilities include defining project objectives, gathering data, scheduling tasks, and managing resources, costs, and budgets. Project managers typically require strong leadership and communication skills, as they often supervise teams from diverse functional areas that must collaborate to achieve the project's objectives.

The fundamentals of the Project Management Office (PMO) concept are not especially new. The project office associated with engineering, aerospace, and defense-type projects emerged in the 1950s as the scale and complexity of projects increased [10]. However, it was not before the 1990s that this concept truly expanded into its current forms [11].

The increasing competitiveness and global nature of markets, characterized by significant technological advancements and an uncertain economic climate, present significant challenges for organizations. Companies are compelled to not only endure but also excel in a milieu characterized by rapid and ongoing transformation. Construction projects are progressively intricate and pose significant management challenges [12].

Indeed, the construction sector is known for its substandard quality, strained relationships, limited productivity, and a resistance to embracing change [13].

Historically, construction projects have relied on inflexible and impenetrable divisions between processes and stakeholders, making effective communication, collaboration,

and the integration of Project Management practices challenging [12].

The need for a fresh approach has sparked the expansion of Project Management as a firmly established formal discipline across various industries, including construction, over the past few decades. Introducing these new processes and management methods often prompts organizations to undergo organizational restructuring of their business models to enhance performance, such as through the implementation of PM Office (PMO) structures. According to the PM Institute (PMI), a PM office (PMO) is a management structure that standardizes project-related governance processes and facilitates the sharing of resources, methodologies, tools, and techniques. The responsibilities of a PMO can vary from providing PM support functions to assuming direct management of one or more projects.

1.1 The advantages of a PMO

A PMO offers several benefits, including the establishment of standardized methods and procedures. A centralized approach to projects ensures clarity and consistent, accurate results, potentially leading to reduced project costs as the PMO is responsible for setting precise time, cost, and resource estimates. This oversight can decrease the likelihood of revisions during the project's course.

Having a PMO ensures that projects align with the organization's goals and contribute value. Additionally, the office serves as the central repository of various types of knowledge. For instance, the PMO can identify any similarities among projects and provide information and resources to different teams to facilitate completion, thus avoiding the need to reinvent the wheel.

A PMO is typically tasked with identifying and training project managers and providing professional support. This result in better-trained staff, which helps ensures project success and can contribute to employee retention.

1.2 Types of PMOs

The development of a PMO does not adhere to a standard approach; however, an effective PMO is always closely aligned with the organizational strategy of the company.

Some enterprises have a supportive or advisory PMO, which compiles and stores an organization's projects but plays more of a consultative role. This type of PMO provides advice based on knowledge gleaned from past projects. Many organizations have department-specific, regional, or divisional PMOs.

The type of PMO with the highest level of managerial control has the authority to enforce organizational standards and practices. This is sometimes referred to as a directive PMO, which acts as the central authority on projects.

The design of a PMO for maximum effectiveness depends on various organizational factors, including targeted goals, traditional strengths, and cultural imperatives.

Historically, there are three basic organizational structures for project management offices:

The project repository: This model is most common in organizations that empower distributed, business-centric project ownership or in enterprises with weak central governance. The project office serves as a source of information on project methodology and standards. Project managers continue to report to, and are funded by, their respective business units.

The project coach model: This model assumes a willingness to share some project management practices across business functions and uses the project office to coordinate communication. Best practices are documented and shared, and project performance is actively monitored. The PMO in this model is a permanent structure with staff and has some supervisory responsibility for all projects.

The enterprise project management office: This model also assumes a governance process that involves the PMO in all projects, regardless of size, enabling it to assess scope, allocate resources, and verify time, budget, risk, and impact assumptions before the project is undertaken. Funding is generally a combination of direct budgeted allocation for baseline services and a fee-for-service charge for others.

1.3 Roles of PMOs

Historically the PMO typically assumed a limited number of functions: Project definition and planning; Cost and benefit analysis; Risk management; Monitoring and control; Support in the application of project management processes and procedures; Collection and dissemination of knowledge; Provide skills in project management; Standards and processes [14].

Currently, its main concerns are centered on project support; Consulting and mentoring; Methods and standards; Software tools; Training; Management of project resources (human and material) [15].

According to some authors (10. 15-17), several responsibilities have been mentioned for PMOs: Aligning projects with organizational strategies; developing standards, processes, and methods; equipment and space in order to

optimize organizational resource usage; monitoring project measures; monitoring and controlling organizational project; managing organizational projects risks; project portfolio management; capturing and utilizing lessons learned; training and mentoring project managers.

The roles of PMOs can be segmented into three levels: strategic; tactical; and operational [10].

At an operational level, a PMO provides basic centralized support to individual projects and ensures professionalism and excellence in applying widely accepted principles and preferred project management practices to each project [18]. This may include activities such as selecting and maintaining a project management methodology, assisting teams with logistics, production of regular reporting, risk assessment, and logging activities [19].

At a tactical level, PMO services provide further added value through multi-project coordination and the management of cross-project dependencies. This may include resource integration across projects and ensuring that project management disciplines are adhered to.

Finally, the strategic PMO involves all aspects of an operational and tactical PMO. It is also equipped with the authority to prioritize projects about corporate objectives and strategies and advise senior management on the viability of project investments [10].

The role of a Project Management Office (PMO) in the context of engineering and construction businesses is crucial for ensuring the successful execution of projects. The main goal of PMO conceptualization for engineering and construction companies is to propose a set of functions for a supportive PMO. These functions include developing and implementing a PM methodology, providing a set of tools to support project management, and developing project management competences [12].

In addition, the PMO in engineering and construction businesses requires effective collaboration with stakeholders, as it can no longer operate in organizational silos. The PMO conceptualization involves tackling the knowledge gap regarding the content of PMO communications in project-based organizations. This includes conducting a critical literature review and qualitative synthesis to draw conclusions concerning the existing theoretical discussions on the topic. Different PMO typologies are suggested to perceive PMOs as an evolutionary structure, taking into account the level of integration within the organization [12].

The structure of the PMO should include individual functions such as delivery, control, and governance. Strategic

PMOs enable strategic change in organizations and play a crucial role in ensuring the success of projects. PMOs are conceptualized as models through the roles they play, considering the level of integration within the organization [20].

In summary, the PMO in engineering and construction businesses is essential for standardizing project management practices, providing support to project managers, and ensuring the successful implementation of new processes and tools. The PMO manager plays a crucial role in overseeing the project's management office and ensuring the successful execution of engineering and construction projects.

In the dynamic landscape of construction engineering, the efficient execution of complex projects is paramount for success. Amidst this backdrop, the establishment of a Project Management Office (PMO) plays a pivotal role in streamlining operations, ensuring project delivery, and maximizing organizational efficiency. This article delves into the significance of PMO in construction engineering and explores how it can be effectively applied to drive project success.

1.4 PMO responsibilities

The responsibilities of a PMO typically encompass providing guidance, documentation, and metrics related to the practices governing the management and execution of projects within the organization. Additionally, a PMO may engage in project-related tasks and oversee project activities through to completion. The office may also deliver reports on project activities, issues, and requirements to executive management, serving as a strategic tool to steer implementers and decision-makers toward consistent business- or mission-focused goals and objectives.

A PMO generally grounds its project management principles, practices, and processes in an industry-standard methodology. Here are some commonly utilized project management methodologies:

Agile: The Agile method is suited for projects requiring speed, flexibility, and the continuous delivery of products to customers in short delivery cycles. Agile Project Management is an iterative approach that breaks project processes into smaller cycles called sprints or iterations.

Waterfall: The Waterfall methodology provides increased control during each phase of a project but may become inflexible if project scope changes occur.

Scrum: This term, derived from the formation of players in the game of rugby, is a component of the Agile framework.

Its deliverables are expected every 30 days. Workgroups struggling to prioritize work can enhance productivity by transitioning to Scrum.

Six Sigma: Six Sigma is a methodology used to enhance processes by eliminating what are considered defects—products or services that do not conform to their specifications.

1.5 PMO Location

The location where the PMO will be located is very important. The PMO can be established and linked at several locations within the company, supporting the functions of the organization.

- The PMO may have direct authority and serve as a functional department responsible for all projects of the organization as Figure 1 or it may not have direct authority and its function is to provide support to project managers and senior management as in Figure 2.

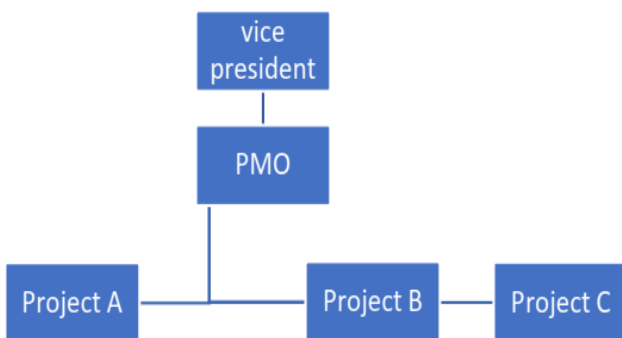


Figure 1: PMO in a Line Organization [22]

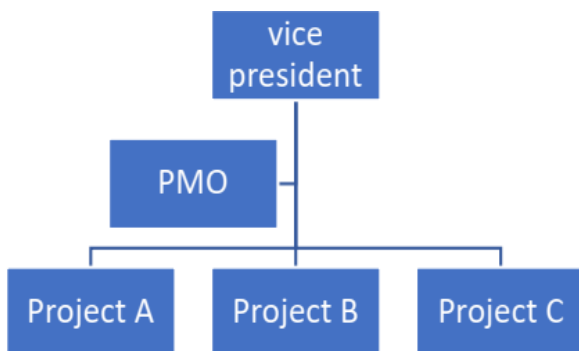


Figure 2: PMO in support Organization [22]

1.6 PMO structure

The PMO structure should fit the planned phases and modules covering the roles identified in each phase of the roadmap. Thus, the structure of the PMO must be flexible and change as the needs of the PAHW change. The PMO structure should consist of the following: [21]

- ✓ Director/Director of the Project Management Office.
- ✓ Subject matter experts.
- ✓ Project Management Office Coordinator.
- ✓ Project managers.

Factors that will impact your PMO structure include:

1. Industry: Across various industries, there are common project types that are industry-agnostic, such as business mergers or the implementation of new tools. However, the specific projects within each industry will vary. Highly regulated sectors, like Finance, typically require more PMOs and a higher level of control. Similarly, industries dealing with large and complex projects, such as Aeronautics companies, also necessitate a greater level of control. Conversely, industries with less complex projects, like manufacturing companies producing standard products, may require less control over their PMOs.
2. Organization Size: The size and scope of your organization will influence the PMO structure. Global, multi-office businesses with multiple suppliers and partners may require higher levels of control for effective communication with diverse project teams and suppliers. On the other hand, smaller businesses with a single location overseeing capable project teams within a small radius may opt for a more supportive PMO structure.
3. Existing PMO Structure and Maturity: The existing PMO structure and Project Management maturity of the organization play a crucial role in determining the PMO structure. For instance, a Strategic PMO overseeing established PMOs may adopt a supportive function, assuming the existing PMOs already have defined processes. Conversely, if a project-specific PMO is being established, a controlling or directive PMO may be necessary to ensure standardization and skill development.
4. Anticipated PMO Function: the type of PMO being established, whether it's a Strategic PMO or a Project PMO, and its fundamental purpose will guide the selection of the PMO structure.
5. Expected PMO Activities and Characteristics: PMOs typically handle activities related to strategic planning, project delivery, reporting for decision-making, and continuous improvement. The specific activities and the level of control required for each, such as data quality assurance, resource sharing, and financial oversight, will influence the characteristics prescribed for the PMO.

By considering these factors, organizations can tailor their PMO structure to effectively meet their specific needs and objectives.

The Project Management Office (PMO) can help in reducing project execution time through several key mechanisms:

1. **Standardized Processes and Best Practices:** The PMO establishes and implements best practices and maintains standards related to project management, planning, and execution. By standardizing processes, the PMO introduces economies of repetition in the execution of projects, thereby streamlining project execution [23].
2. **Guidance and Oversight:** The PMO provides direction and key metrics in the execution of projects under its governance. It offers guidance and monitors projects, programs, and portfolios, aiming to add value to stakeholders through effective project execution. Additionally, the PMO can facilitate or own the project portfolio management process, monitoring and reporting on active projects and portfolios to top-tier management, thereby fostering strategic [24].
3. **Enhanced Communication and Collaboration:** The collaborative framework fostered by the PMO enhances cross-functional teamwork, breaks down silos, and improves synergy among diverse teams. By facilitating streamlined communication and providing standardized processes, the PMO boosts productivity, minimizes project delays, and ensures efficient project execution [25].
4. **Project Portfolio Management:** Effective project portfolio management processes are essential for efficient project execution. The PMO can play a crucial role in project selection, prioritization, and initiation, as well as in stage-gate reviews and performance metrics selection and application, all of which contribute to improved project execution [26].
5. **Reduction of Project Lifecycle Times:** The PMO can take responsibility for reducing project lifecycle times by exerting influence over project execution. This can be achieved through effective project portfolio management, standardized processes, and strategic oversight, aligning project execution with corporate strategies and objectives [27].

In summary, the PMO's involvement in standardizing processes, providing guidance and oversight, enhancing communication and collaboration, and focusing on project portfolio management can significantly contribute to reducing project execution time.

1.7 Latest Trends in Project Management Offices

The field of project management is constantly evolving, and staying abreast of the latest trends is crucial for organizations to adapt and thrive. Here are some of the latest

trends in Project Management Offices (PMOs) based on the most recent information available:

1. **Artificial Intelligence in Project Management:** The use of artificial intelligence (AI) in project management is on the rise. Organizations are increasingly leveraging AI for resource planning, collaboration, and the adoption of suitable cloud-based tools [28].
2. **Embracing New Technologies and Management Paradigms:** The project management landscape has seen significant evolution, with organizations transitioning from traditional methods to enterprise SaaS solutions. The advent of newer technologies and management paradigms continues to shape new project management trends [29].
3. **Focus on Remote and Virtual Teams:** The COVID-19 pandemic has solidified the trend of virtual and remote teams in project management. Project managers are now tasked with managing a wider scope of virtual staff and teams, emphasizing the need for enhanced security measures and redundancy for critical files [30].
4. **Constantly Changing Digital Tools & Technology:** The rapid evolution of digital tools and technology is a key trend in project management. Project managers are at the forefront of driving digital transformation within their organizations, necessitating a focus on staying updated with the latest tools and technologies [31].
5. **Expansion of Artificial Intelligence (AI) and Automation:** The expansion of AI and automation is a significant trend in project management. This trend emphasizes the need for project managers to adapt to the inclusion of AI and automation in project management processes [32].
6. **More Jobs for Project Managers:** The demand for project managers is expected to grow significantly, with the project management labor force predicted to grow by 33 percent in over 11 countries by 2027. This growth will lead to a wide range of job opportunities for project managers across various industries [33].
7. **Emphasis on Emotional Intelligence (EQ):** There is an increasing focus on the impact of emotional intelligence in project management. This trend highlights the importance of emotional intelligence in leadership and team management within project environments [32].

In conclusion, the latest trends in Project Management Offices reflect a shift towards embracing new technologies, adapting to remote work environments, and leveraging AI and automation to enhance project management processes. Staying informed about these trends is essential for project managers and organizations to remain competitive and successful in the evolving landscape of project management.

1.8 Adapting Project Management Offices to Remote Work

Adapting Project Management Offices (PMOs) to remote work requires a strategic approach and the implementation of best practices. Here are some key strategies based on the latest insights:

1. Utilize Collaboration Tools:
 - PMOs should ensure that the project team has access to the right collaboration tools to work together effectively, regardless of their physical locations [34].
 - Implementing management tools such as timesheets can help keep the team accountable for the time spent on tasks [34].
2. Manage Different Types of Remote Teams: Understand and manage various types of remote teams, including fully remote, hybrid, and flexible teams, based on the company culture and employees' needs [34].
3. Emphasize Effective Communication: Successful remote project management heavily relies on effective communication. Utilize digital tools and platforms to facilitate seamless communication and collaboration among remote team members.
4. Invest in Remote Project Management Tools: PMOs should identify and invest in remote project management tools that are suitable for their team's specific needs and requirements [35].
5. Prioritize Team Cohesion and Collaboration: Encourage more frequent team meetings to strengthen team cohesion and collaboration, which can help eliminate frustrations that may arise due to the lack of close physical proximity.
6. Address Distractions and Productivity Challenges: Acknowledge and address the challenges of working from home, including interruptions and inadequate remote work equipment. Implement strategies to maintain focus and productivity in a remote work environment [36].
7. Support and Guide Remote Team Members: It's crucial for managers to guide and support remote team members, providing the necessary resources and assistance to ensure their success in a remote work setting [35].

In conclusion, adapting PMOs to remote work involves leveraging collaboration tools, effective communication, and the implementation of remote project management best practices. By embracing these strategies, PMOs can effectively manage remote project teams and ensure the successful execution of projects in a distributed work environment.

1.9 PMO in the Middel East

Between 2000 and 2005, PMOs were exclusively found in large companies in the Middle East. Subsequently, from 2005, the presence of PMOs began to extend to local organizations, albeit predominantly within the construction, IT, or telecommunications sectors. In recent years, the Middle East has recognized the significance of PMOs across all sectors, including private, public, government, and non-profit organizations. Nevertheless, disparities persist in the comprehension of the PMO concept, its capabilities, the requisite contributions to large-scale organizations, and the progression of its maturity levels within these organizations.

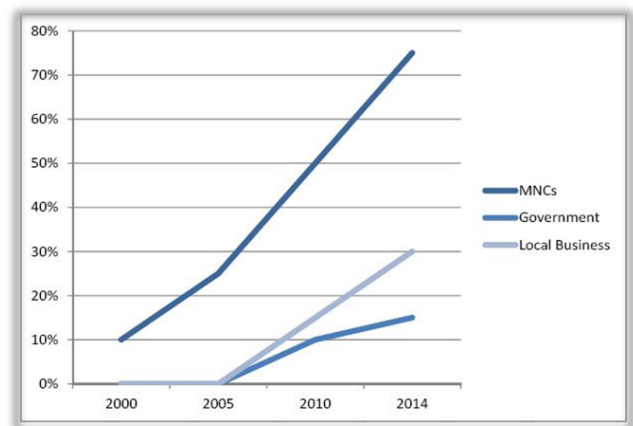


Figure 3: Noted growth in awareness of the significance in the Middle east, Source: Aziz [20]

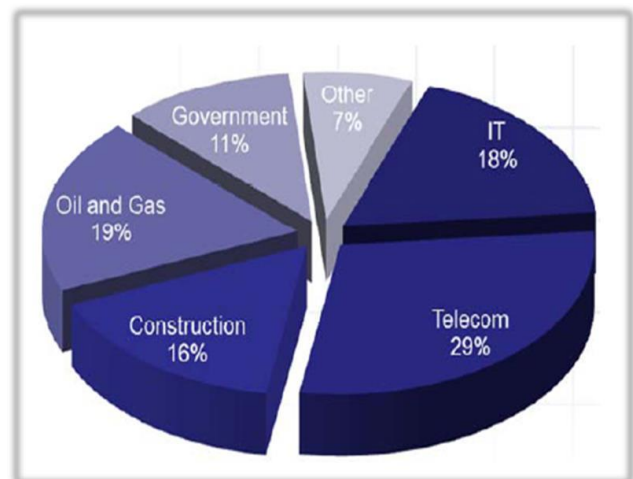


Figure 4: adopters of PMO by sector in of the PMO in the Source: Aziz [20]

Qatar has effectively executed significant projects under the guidance of the Project Management Office (PMO), driven by the extensive construction endeavors leading up to the 2022 FIFA World Cup and aligned with the country's National Vision 2030.

Similarly, Saudi Arabia, with its substantial business landscape, acknowledges the pivotal role that the Program Management Office (PMO) and PMO (Program Management Office) will play in its endeavor to foster a culture of overseeing large-scale programs.

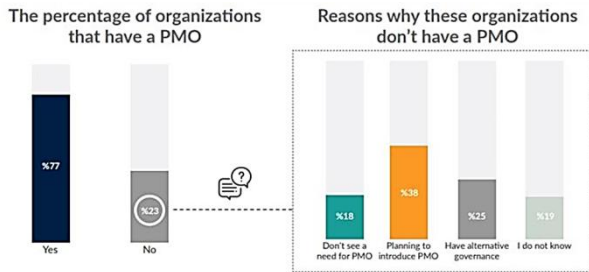


Figure 5: State of PMO in Saudi Arabia 2021, Source [37]

PMO types that organizations have

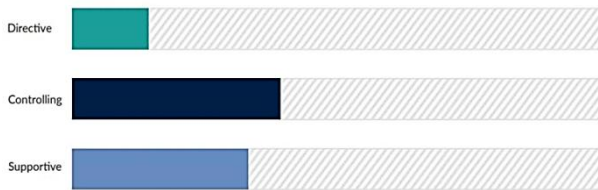


Figure 6: State of PMO in Saudi Arabia 2021, Source [37]

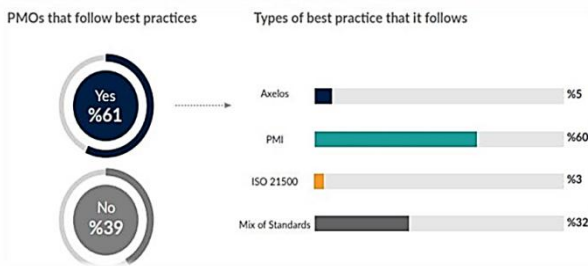


Figure 7: State of PMO in Saudi Arabia 2021, Source [37]

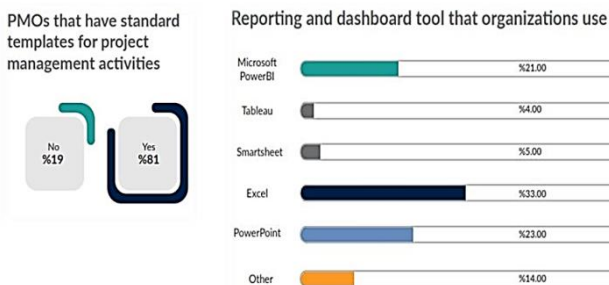


Figure 8: State of PMO in Saudi Arabia 2021, Source [37]

In the most recent global survey conducted by Price Waterhouse Coopers (PWC) and the Project Management Institute (PMI) in 2021, aimed at identifying actions that can propel project managers and leaders in the Middle East toward

organizational success, 534 respondents from the Middle East, including 209 C-Suite level executives, were involved.

The findings of the survey led to the following recommendations:

- ✓ It is essential for Middle East organizations to enhance C-Suite support for the PMO, transitioning it from leading project execution to steering corporate strategy.
- ✓ Customizing PMO processes and methodologies to align with the diverse needs of the organization and stakeholders is crucial to maximize their value.
- ✓ Given the current talent shortage, organizations need to cultivate robust project management capabilities to mitigate the risk of project failure or consider outsourcing project management.
- ✓ PMOs should adopt results-based, engagement measurements across the organization to establish KPIs that empower them to become "strategic project influencers" and catalysts for change.
- ✓ The PMO must swiftly implement digital skills enhancement, accompanied by a cultural shift towards a digital mindset within the PMO and C-Suite.
- ✓ As hybrid work models persist, project managers will require additional support and training in managing remote teams.

Egypt continues to lag behind in the utilization of modern project management methods, emphasizing the need to contemplate the implementation of project management systems to meet the qualitative and quantitative requirements of its projects, particularly in the reconstruction phase. The multitude of projects and their intersecting processes and objectives underscore the necessity for planning tools and quantitative performance monitoring to address the complex landscape [38]. Notably, the implementation of project management offices in Egypt remains limited to a few private sector entities, such as Egyptian Telecom, which operates a technical PMO office [39].

The development of public projects poses significant challenges that demand administrative capacity, extensive time, and the refinement of planning, procurement, monitoring, and control methods. While public project development remains a formidable undertaking, its efficacy is more pronounced in projects initiated by private endeavors [40-41].

The implementation of a PMO in the construction sector represents a project in itself, involving significant efforts in initiation, planning, implementation, monitoring, and control processes. This endeavor necessitates a restructuring of the organization and the establishment of a clear purpose, stakeholder goals and objectives, requirements, scope, budget,

resources, and schedule. Early alliances and the formulation of a PMO charter and communication plan are [41].

In the context of the public sector, the establishment of PMOs necessitates the following, as articulated by [42,43]:

- ✓ Clearly defined goals.
- ✓ Operating independently from the IT office.
- ✓ Endorsement by management.
- ✓ Postponement of enterprise project management software deployment until the organization has developed some project management maturity.
- ✓ Staffing with proven experts familiar with the agency's business functions.
- ✓ Early demonstration of capabilities through swift victories and notable successes.

1.10 PMO between failure and success

The mere establishment of a project management office does not guarantee organizational success or access to its associated benefits.

- The implementation of a PMO often experiences a relatively high rate of failure, as organizations struggle to demonstrate its value in terms of cost reduction or increased project success [44-46].
- PMO failures are frequently attributed to exceeding the necessary time, financial resources, or not realizing the anticipated benefits in a timely manner. The average lifespan of a PMO is approximately two years, as they are frequently disbanded or restructured soon after their establishment. Another contributing factor is the adoption of a pre-existing PMO model that may not align with the organization's nature and requirements. There is a broad array of PMO types, and stakeholders often delegate PMO responsibilities without providing clear directives, hindering effective implementation [45, 47-48]. Many organizations implement existing PMO archetypes without a comprehensive understanding of the role they intend the PMO to fulfill [49]. Additionally, the pursuit of immediately establishing a highly mature PMO and imposing organizational adaptation is identified as a path to failure [20].
- A survey by CIO Magazine and the Project Management Institute (PMI®) revealed that 76% of CEOs who established a PMO within the preceding three years reported higher success rates in achieving project goals with longer-standing PMOs. The leadership and substantive expertise of the organization's PMO team play a pivotal role in swiftly realizing the benefits of a PMO.
- Conversely, the most critical factors contributing to successful PMOs, as ranked by [46] as cited by [50],

include the support of senior management and stakeholders, clarity of vision, mission, roadmap, standard processes, roles and responsibilities of the PMO, as well as clarity of the organizational structure, and effective leadership within the organization housing the PMO. Furthermore, the PMO team must possess the experience, skills, and capability to deliver added value to the organization.

1.11 PMO challenges

The implementation of a project management office (PMO) is inherently fraught with numerous challenges, primarily stemming from the need for change and the introduction of new protocols. Resistance to departing from established work habits and adhering to existing organizational policies presents significant hurdles that must be acknowledged and addressed to minimize their impact throughout the implementation process.

Value Demonstration and Overcoming Criticisms: Naturally, a PMO may encounter difficulties in proving its value and addressing concerns about increased administrative burden. Initial organizational resistance to change is commonplace, as it is a typical challenge faced by innovators seeking to enact transformative changes.

Independence and Centralization: The establishment of a PMO necessitates a degree of independence from project managers and sponsors. It also requires responsiveness and understanding from management. Given the centralized decision-making process, project managers typically value their autonomy and may resist standardization of methods and interference with their work. Consequently, mutiny and discipline issues may arise during PMO implementation.

Financial Feasibility and Cultural Impact: The benefits and cost savings introduced by a PMO may not always be financially viable. The potential loss of autonomy and creativity, as well as the perceived imposition on the autonomy and unity of project managers, can lead to resistance and conflict [51].

Identified Challenges: Singh et al. [52] utilized the Delphi method to identify 13 key challenges, including rigid corporate culture, lack of experienced project managers and PMO leadership, inadequate change management strategy, and challenges in defining the scope and size of PMO implementation.

Tailoring to Organizational Needs: Giraudo & Monaldi [53] emphasize that there is no one-size-fits-all approach to PMO implementation. They assert that the PMO must be

tailored to the internal needs of the organization and the dynamics of its surrounding environment.

PM Solutions [54] conducted an investigation into the challenges encountered during PMO implementation and subsequent development. The findings are depicted in Figure 9, showcasing the top PMO challenges.

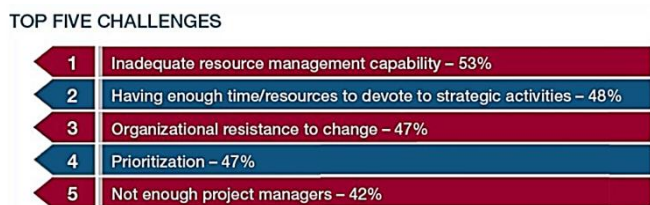


Figure 9: Five Top PMO Challenges, Source [54]

1.12 Project management office implementation

As the concept of Project Management Offices (PMOs) gained recognition, organizations have shown increasing interest in implementing them. The incorporation of sound project management practices within the PMO can lead to more efficient project execution, lower overall costs, and higher quality outcomes. However, it's important to note that while good project management skills are beneficial, they are not a cure-all. It is crucial to execute them effectively in order to ensure that the long-term benefits outweigh the efforts required to manage change.

Risks and Challenges: Despite the potential advantages, there are still inherent risks and unexpected challenges that can arise. With many projects experiencing issues such as time and cost overruns, the focus shifts from whether to implement a PMO to how to implement it in a sustainable, cost-effective manner, achieve rapid benefits, and emphasize continuous improvement.

PMO Implementation Life Cycle: The PMO implementation life cycle comprises five key stages, as outlined by [41]:

- Initiation: Involves the selection of the team, defining physical location, roles, mission, vision, strategy, objectives, and measures.
- Planning: Encompasses the selection of methods, standards, processes, tools, risk assessment, and budgeting.
- Execution: Marks the operational phase, involving project management using previously developed tools, staff recruitment, role definition, and governance plan creation.

- Control and Monitoring: Includes marketing, communications, measurement, and encouraging involvement.
- Maintenance and Transition: Focuses on reviewing and improving the methods used, measuring project adherence to time and budget expectations, implementing new services, and upgrading the PMO to elevate project management maturity levels.

Establishing a PMO: Establishing a Project Management Office necessitates a shift in the organization's structure. Defining the purpose, goals, objectives, stakeholders, requirements, scope, budget, resources, and schedule is essential. Early alliances, a PMO charter, communication plan, and a transition and implementation plan are equally crucial.

Pre-Implementation Analysis: Before implementing a PMO, it is vital to analyze the current project management landscape. Dostal [50] suggests several questions to guide this process, such as determining the PMO's capabilities, level of authority, operational scope, desired maturity level, organizational functions to be achieved, stakeholder attitudes, and the presence of a change management plan.

Cultural Impact and Change Management: Introducing a new PMO structure often necessitates a cultural shift within the organization. This may include standardizing files and reports, implementing new estimating practices, and adapting to new project management technologies. Achieving widespread acceptance of these changes requires significant effort and time.

Key Implementation Tips: Crawford [55] emphasizes the importance of keeping stakeholders informed and engaged, delivering value and quick wins before demanding change, and avoiding the urge to implement all changes simultaneously.

Defining PMO Roles: According to Aziz [20], creating a successful PMO begins with understanding and defining its roles within the organization. Different types of PMOs exist, and the most suitable structure and functions depend on meeting the organization's needs and stakeholder expectations.

PMO implementation approach

According to Souza and Evaristo [10], there are two methods for implementing PMO.

- ✓ The initial method involves a "top-down approach."
- ✓ The alternative method is the "bottom-up approach", which depends on the organizational structure.

In a 'centralized' organization, the top-down approach is deemed more suitable and simpler to implement. Conversely,

in a 'decentralized' organization, a bottom-up approach would be more fitting, as the PMO emerges from collaboration among the organization's project managers.

II. Understanding the PMO in Construction Engineering

The PMO acts as the nerve center for project management activities within construction engineering firms. It serves as a central hub for standardizing project management methodologies, providing crucial tools to support project management, and developing competencies in project management. By establishing and maintaining project management standards, the PMO ensures that projects are executed with optimal efficiency and in alignment with organizational objectives [56].

Key Functions of a PMO in Construction Engineering

1. **Standardizing Project Management Practices:** The PMO is responsible for defining and maintaining project management standards, processes, and best practices within the organization. This function ensures consistency and uniformity in project execution, leading to improved project outcomes.
2. **Resource Allocation and Optimization:** Effective resource management is critical in construction projects. The PMO facilitates resource allocation, ensuring that the right resources are deployed to the right projects at the right time, thus maximizing resource utilization.
3. **Risk Management and Governance:** The PMO oversees risk management activities, ensuring that potential risks are identified, assessed, and mitigated effectively. Additionally, it plays a crucial role in governance, providing oversight and ensuring projects adhere to regulatory and compliance requirements [57].
4. **Strategic Project Management:** Beyond operational support, the PMO is instrumental in strategic project management. By aligning projects with the organization's strategic objectives, the PMO enables informed decision-making and ensures that projects contribute to the long-term success of the firm.

2.1 Application of PMO in Construction Engineering

Implementing a PMO in construction engineering involves several key steps:

1. **Assessment of Organizational Needs:** Understand the specific project management challenges and requirements within the construction engineering firm. Identify the areas where a PMO can add the most value.
2. **Customization of PMO Functions:** Tailor the functions of the PMO to suit the unique needs of construction engineering projects. This may involve emphasizing risk

management, resource optimization, and project governance.

3. **Stakeholder Engagement:** Garner support from key stakeholders within the organization. Clear communication regarding the benefits of a PMO and its impact on project success is crucial for buy-in and successful implementation.
4. **Establishment of Standardized Processes:** Develop and implement standardized project management processes, methodologies, and tools. This ensures consistency and efficiency across all construction engineering projects.
5. **Continuous Improvement:** The PMO should be adaptive and open to continuous improvement. Regular evaluation of its effectiveness and the incorporation of feedback is essential for refining its role and maximizing its impact.

III. A Proposal PMO for Jazan Municipality

In recent years, Jazan has witnessed significant changes across its social, economic, and political landscapes. While the projects sector has seen rapid growth, inadequate project management has resulted in delays, budget overruns, and unsatisfactory outcomes.

This article recommends the establishment of a Project Management Office (PMO) within Jazan municipality to address these issues. The PMO aims to improve performance, maturity, and tackle challenges. However, it is vital to carefully consider potential drawbacks and determine the most suitable type of PMO.

To achieve this goal, the study will evaluate the current state of the organization, identify issues within Jazan municipality, examine project management processes, and propose adjustments to management practices. The study will encompass academic research and interviews with staff members.

Multiple visits to Jazan municipality were conducted, and interviews were held with numerous executive administrators and engineers responsible for project supervision and implementation. Qualitative research methods were employed to gather data and gain insights into the PMO and its benefits. The data collection approach included face-to-face interviews with employees at different levels, observations from repeated visits and daily interactions, as well as the researcher's prior experience in public sector engineering work.

Interviews

There are five primary research methods for research strategies: case studies, field experiments, surveys, archival methods, and historical analysis. In the present research context, the PMO does not require the collection of laboratory

or documented data. The most appropriate strategies for this scenario are case studies and surveys. However, the survey strategy is not particularly beneficial at this stage for several reasons, given the focus on the case study of Jazan municipality:

- Potential for inaccurate responses from individuals lacking real facts and experience.
- Some questions necessitate detailed answers from individuals who are challenging to include in the survey.
- Some individuals may not be familiar with the concept of PMO, leading to potential inaccuracies in their responses.

The sample was selected from various levels within the technical department of Jazan municipality to encompass diverse perspectives and experiences, focusing on individuals knowledgeable about project management. This selection aimed to contribute to the attainment of the research objectives and the definition of the functions and roles of the Project Management Office (PMO).

Ten employees in Jazan municipality (refer to Table 1) were personally interviewed to facilitate in-depth discussions, drawing on their expertise and experience. This approach aimed to identify areas of weakness in task accomplishment, gain insight into essential technical and critical processes, and identify processes that could benefit from PMO support to aid in task completion and support project initiatives.

To achieve the research objective, a variety of interview techniques will be employed. The researcher developed a set of questions to guide the structure and progression of the interviews, as well as to grasp the significance of various PMO concepts. Prior to commencing the interviews, an introduction was provided to explain the purpose and aims of the research.

The inquiries pertained to the Establishment as a whole, encompassing projects and its operational and managerial mechanisms, including scheduling, project requests, quality, budgeting, training, and challenges. These questions can be categorized into two main areas:

1. The first area includes general questions about the interviewee's gender, age, experience, and educational background, as well as their certifications and training in project management.
2. The second area encompasses questions aimed at evaluating the organization's current status to gather insights into the significance and level of project management within the organization, as well as the principles and procedures of project management being implemented.

The responses provided insights into the challenges encountered by Jazan municipality. The key insights from the significant interviews are presented in Table 1.

During these informal conversations, I gained insights into the organization's present condition, their perspectives on the challenges they encounter, and the changes they believe are essential and advantageous.

Table 1: List of face-to-face interviews

Interview	Job	Profession
1	A supervising engineer	Civil engineer
2	Project manager	Civil engineer
3	Director of Technical Affairs	Architect
4	Group director	Civil engineer
5	Project manager	Architect
6	A supervision engineer	Architect
7	A supervision engineer	Civil engineering
8	Technical observer	Technical Institute

The information gathered from the literature and interviews was collected, analyzed, and categorized into groups for the purpose of comparison with the theoretical framework.

IV. Discussion and Interviews Analysis

Following the analysis of the interviews, it was revealed that the Public Corporation for Jazan municipality is confronted with significant challenges. It was observed that there is no standardized approach to project management, and a majority of the Corporation's projects are currently behind schedule and exceeding their estimated costs. There is a need to enhance the effectiveness of the project implementation process, allocate skill resources more effectively, and provide training. In recent years Jazan municipality has implemented partial changes that have reinforced specific areas. As a result, Jazan municipality is obligated to make adjustments and modifications in its operations, with the necessary changes being identified through interviews and telephone conversations with its staff.

It became evident from the interviews that the primary issue was the impact of the state's economic situation on the operations of the Corporation, manifested through price disparities, scarcity of raw materials and equipment, and insufficient funding for the Corporation's projects. However, the absence of comprehensive planning exacerbated these challenges. The key problems related to the Corporation's projects are as follows:

1. Insufficient project study preparation conditions and criteria, leading to a disconnect between the planning

V. Conclusion

In the realm of construction engineering, the establishment of a robust PMO is a strategic imperative. By standardizing project management practices, optimizing resource allocation, and facilitating strategic project management, the PMO becomes a catalyst for project success. Through a tailored and well-executed application of PMO functions, construction engineering firms can enhance project delivery, improve operational efficiency, and ultimately achieve long-term success in an increasingly competitive industry.

The application of a Project Management Office (PMO) in construction engineering is multifaceted and crucial for ensuring the successful execution of projects. Here are some key aspects of how PMO can be applied in the context of construction engineering:

Standardizing Project Management Practices

The PMO plays a pivotal role in standardizing project management practices within construction engineering firms. By defining and maintaining project management standards, processes, and best practices, the PMO ensures consistency and uniformity in project execution, leading to improved project outcomes.

Resource Allocation and Optimization: Effective resource management is critical in construction projects. The PMO facilitates resource allocation, ensuring that the right resources are deployed to the right projects at the right time, thus maximizing resource utilization.

Risk Management and Governance

The PMO oversees risk management activities, ensuring that potential risks are identified, assessed, and mitigated effectively. Additionally, it plays a crucial role in governance, providing oversight and ensuring projects adhere to regulatory and compliance requirements [58].

Strategic Project Management: Beyond operational support, the PMO is instrumental in strategic project management. By aligning projects with the organization's strategic objectives, the PMO enables informed decision-making and ensures that projects contribute to the long-term success of the firm.

In summary, the application of PMO in construction engineering involves standardizing project management practices, optimizing resource allocation, and facilitating strategic project management. By tailoring and effectively applying PMO functions, construction engineering firms can

body and the executing and supervising bodies, potentially resulting in misunderstandings and implementation errors.

2. Inadequate and inaccurate conditions and criteria for selecting the executing agency, whether public or private.
3. Subpar communications management within the organization, including inadequate coordination between supervisory authorities and institution directors, routine report movement causing decision delays, and financial losses due to price disparities, time delays, and technical setbacks.
4. Evidenced low levels of planning, monitoring, and oversight from the interviews.
5. Weak coordination among different project stakeholders.
6. Lack of an adequate risk management system, potentially leading to unforeseen problems during project implementation.
7. Shortage of specialized experts, engineers, and technicians in project management, resulting in high employee turnover.
8. Absence of a quality management system within the Public Corporation for Housing.
9. Insufficient specialized training courses and necessary communication equipment, particularly in the organization's branches.
10. Reliance on simplistic software such as Excel and Word, with most transactions and approved charts still being paper-based.
11. Inadequate recognition and appreciation of individual initiatives, potentially leading to demotivation among employees, lack of innovation, and minimal and uninspiring rewards and incentives.
12. Failure to record lessons learned for future reference.

As Jazan municipality undertakes an increasing number of projects across all governorates, effectively managing them has become challenging. This is where the Project Management Office (PMO) comes into play. Based on the review of literature, interview data, and the challenges encountered by Jazan municipality, the project management office is the optimal approach that will not only oversee and execute projects, but also assist the organization in addressing many of the aforementioned issues, particularly in terms of streamlining reporting processes, reducing project execution time, cutting costs, and most importantly, monitoring the entire organization, its progress, and performance. It is crucial to consider the type of PMO and the level of authority vested in it.

enhance project delivery, improve operational efficiency, and achieve long-term success in a competitive industry.

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AUTHORS BIOGRAPHY



Eng. Ibrahim Dhafer Ali Kariri

Vice Mayor of Jazan Region, and Undersecretary of Jazan Municipality for Projects and Public Health, KSA, Jazan.

ID (KSA) No. 1050443587

E-Mail: ikriri@momrah.gov.sa



Eng. Ahmed Suliman Dhayhi

Project Management Director, Jazan Region Municipality, KSA, Jazan.

ID (KSA) No. 1055662124

E-Mail: athayhi@momrah.gov.sa



Dr. Khaled Muhammad Ali Muhammad

Project Management Director, Jazan Region Municipality, AD Engineering Co, KSA, Jazan.

ID (KSA) No. 2459928947

ID (EGY) No. 28610010129531

E-Mail: khmuhammad@momra.gov.sa,

enr.dr.5.m.3@gmail.com



Eng. Saeed Ali Alkhatami

Senior Professional Mechanical Engineer, Ministry of Municipal and Rural Affairs and Housing, KSA, Riyadh.

E-Mail: Salkhatami@momrah.gov.sa



Eng. Turki Abdulkhaliq Mana Alqarni

Project Manager, Ministry of Municipal and Rural Affairs and Housing, KSA, Riyadh.

ID (KSA) No. 1085496931

E-Mail: talqarni@momrah.gov.sa



Eng. Hani Hamed Alzawawi

Project Planning manager, Ministry of Municipal and Rural Affairs and Housing, AECOM Engineering Co, KSA, Riyadh.

E-Mail: Hani.Alzawawi@aecom.com

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