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Article

Exploring the Project Management Office for Hail Public Construction Projects, Saudi Arabia

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Abstract: The Saudi Vision 2030 is critical to boosting national development, notably in the construction industry. The construction industry is getting a lot of attention in a variety of ways, the most visible of which is the promotion of best practices, including project management office (PMO) applications. Hail province, like others, is experiencing project delivery issues. Thus, the purpose of this research is to explore the suitable PMO model for Hail public construction projects. A literature review included the drive factors for establishing PMO in construction firms, as well as PMO models and typologies that describe functions. Therefore, those drive factors and PMO models were subjected to a focus group to explore their suitability in the context of Hail. The research findings reveal that the Enterprise PMO is the main for Hail public construction projects, followed respectively by the Program Management Office model and the Project Management Center of Excellence (PMCOE). This method of selection a PMO model is driving construction companies and related businesses to change in order to improve the sector while also addressing construction project delivery challenges in Hail province.

Keywords: PMO models; construction; Vision 2030. Hail; Saudi Arabia

1. Introduction

The Saudi construction industry contributes significantly to the gross domestic product [1]. In addition, it is critical to the development and support of the Saudi Arabia kingdom's infrastructure and other industries, including Hail public construction projects. Hail Municipality strives to make Hail province extraordinary in terms of infrastructure, building, and services in order to guide urban development into cities and villages. It also offers services that promote dwellers' well-being [2]. The Saudi government unveiled the Saudi "Vision 2030" in 2016, which is a strategic plan that begins a new direction aimed at optimizing the economy for increased efficiency and reduced financial waste. The government confirms its commitment to realizing Vision 2030, which includes enabling economic diversification, supporting local content, and developing creative prospects for the future [3]. Furthermore, the Saudi government established (MASHROAT) in August 2015, which is the National Program to Support Project Management, Operation, and Maintenance in Public Entities [4]. Five years later, in February 2021, the Expenditure and Projects Efficiency Authority (EXPRO) was established, with the goal of transforming (MASHROAT) and the Spending Efficiency Achievement Center in to EXPRO. Thus, the goal of establishing EXPRO is to 1) achieve efficient spending in government agencies, 2) improve the quality of projects, assets, and facilities, infrastructure planning, programs, initiatives, and operational processes, and 3) monitor and control program and initiative implementation [5]. EXPRO represents the role of PMO for the entire national projects.

Project Management Office (PMO) is described by the PMI as a framework that standardizes procedures and allows for the sharing of resources, tools, methodologies, and methods in which

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PMO's tasks vary from delivering PM support services to overseeing project monitoring [6]. External environmental compel organizations to adapt innovative products and services, including application of project management practices, in order to remain competitive and suit the needs of their customers [7]. Therefore, a project management office (PMO) is an organizational structure tasked with numerous obligations linked to the centrally located and well-organized oversight of projects, involving various models and functions which span from PM support functions to directing the entire project [8]. Obtaining PMO success, on the other hand, is tough [9]. Stanleigh discovered around 75 percent of PMOs in the information-systems & tech sector shut down after three years of launching [10]. Nevertheless, Liu and Yetton investigated the influence of PMO on project performance and discovered that while PMOs had a moderate impact on the IT sector, they did not increase project performance in the construction business [11]. Literature review indicates that a very limited cover on the application of PMO in Saudi construction industry.

Hence, PMO establishment should place more emphasis on motivators (drivers) to assist decision makers in construction organizations in making better selections. Eriksson and Leiringer identified four motivators for organizations to establish PMOs [12]. Furthermore, Oliveira et al. identified seven driving factors [13], whereas Ntshwene et al. identified nine driving factors [14]. Now it is obvious that selection of PMO model is sophisticated unless drive factors are defined to guide understanding of the PMO functions.

Several researchers covered the models, typologies, and functions of PMO [8,15–20], Monteiro et al. reviewed and summarized that into twenty-five models addressed in the literature [7], only seven models are applied in this research due to the identification of drive factors to found PMO in Saudi construction industry. Thus, these PMO models are the Enterprise PMO, Program Management Office, the Project Management Center of Excellence PMOCoE, Project Office, Business Unit PMO, Controller, and Project Support Office. Thus, the Enterprise PMO is primarily responsible for project business management through division unit PMO oversight, as well as reporting and oversight of important organization projects [15]. A Program Management Office is a control center, which aims entire power for hiring and training project managers, strategy alignment, and project selection [16]. The Project Management Center of Excellence (PMOCoE) is a methodical approach that seeks to standardize processes while also improving best practices and building team's skills and knowledge [17]. The function of a Project Office is to manage data for a single or several projects by keeping records of the project, monitoring advancement, and developing project operations and modifications [18]. Business Unit PMO enables business management throughout the administration of portfolios and programs, including project prioritization and controlling resources among projects [8]. The Project Control drives big and sophisticated single projects, thereby it providing several schedules incorporated into the whole program schedule and providing data for signifying corrective actions [19]. The Project Support Office is an administrative support model that provides project controls, planning and scheduling, document management, and PM tools [20].

An argument by Crawford stated that the application of a PMO model should concentrate on activities [8]. An enormous diversity of PMO functions and models appeared in the researches, and then Oliveira et al. concluded that the paramount of applying PMO is to define the functions in order to understand permitting operations. Thus, it is vital to adjust functions of a PMO model to the strategic and organizational context in order to improve project outcomes and fulfill requirements [13]. However, this study aims to explore the applicable PMO model for Hail public construction projects.

2. Methods

Qualitative methods were employed throughout this research using three phases including prime and subordinate data gathering including literature search and focus group phases as shown in Figure 1. Although, there has been little study conducted with focus group [21], thus this study uses a focus group. The focus group method is an efficient way to collect valuable data on susceptible participants' feelings, beliefs, and behaviors [22]. Practitioners for the focus group were selected from Hail Municipality involved in construction as well as to several private construction companies and

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consultants in Hail province, KSA. Altogether, practitioners held project management roles and had more than 10 years of experiences in construction. Thus, a focus group was organized in November 2022. Focus groups usually includes 5 to 12 individuals [23], thereby there were 14 participants in the focus group; all were at managerial level in either governmental or private construction consultancy companies. This research applies the level of assurance in regular focus group method as well as applies the significant outlines for focus group developed by Dodds and Hess which are recruitment and data collection considerations [21]. All practitioners were given a 20-min presentation covering the driving factors for using PMO in organizations in addition a 20-min presentation regarding to the models and Typologies of PMO that meet needs of organizations. Efficiently, practitioners were then clustered into three groups with an organizer for each group. Therefore, all practitioners were given 30-min to discuss and respond to the questions regarding the driving factors for using the PMO in organizations, also they were given 30-min to discuss and respond to the questions regarding the PMO models in accordance with construction firms. However, the three phases are explained next.

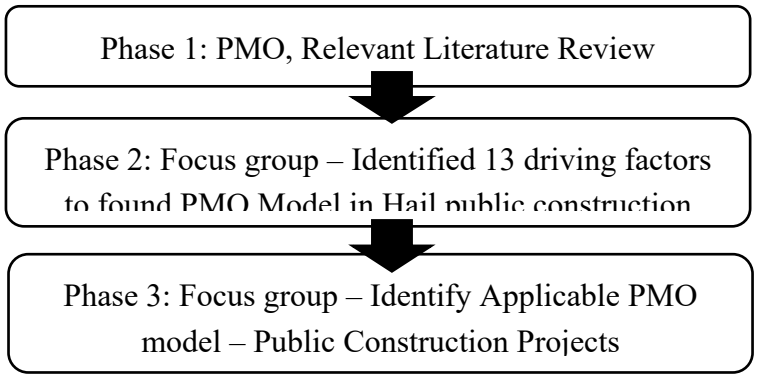

Figure 1. Research Design.

First phase, a subordinate data gathering were covered through a literature review regarding the purpose of using PMO and the models and typologies of PMO. Also, eight substantial models of PMO are identified. Therefore, the objectives of the focus group were first to confirm the identified drivers to found PMO for Hail public construction projects and then - through linking drivers to PMO models - to confirm the suitable model of PMO for Hail public construction projects.

Second phase, a prime focus group – through the Teams Application - was used to examine the purposes that are driving adoption of PMO. The practitioners were asked to participate their opinions regarding difficulties facing public construction projects in Hail province. The presentation and discussion involved thirteen factors drive founding PMO identified from literature. These drive factors to founding PMO in construction industry include; 1) poor performance of projects, 2) lack of strategic management, 3) unstandardized processes for PM, 4) uncontrolled risk events, 5) absence of key PM components, 6) disregard for cost management, 7) ineffective communication for projects, 8) communication management deficiencies, 9) Lack of documentation, 10) Inability to hire qualified personnel, 11) poor optimizing for resources, 12) poor training and education, and 13) deficiency of project approach. Thus, practitioners were asked to respond on 10 point Likert-scale as well as comments on if any. Therefore, the main factors driving the adoption of PMO in Hail public projects were determined and confirmed. These factors were used to analyze the function and description of models and typologies of PMO in literature, thus justifying which or which not model and typologies to be examined. Therefore, eight models were identified, confirmed as well as explained the function of each model for practitioners.

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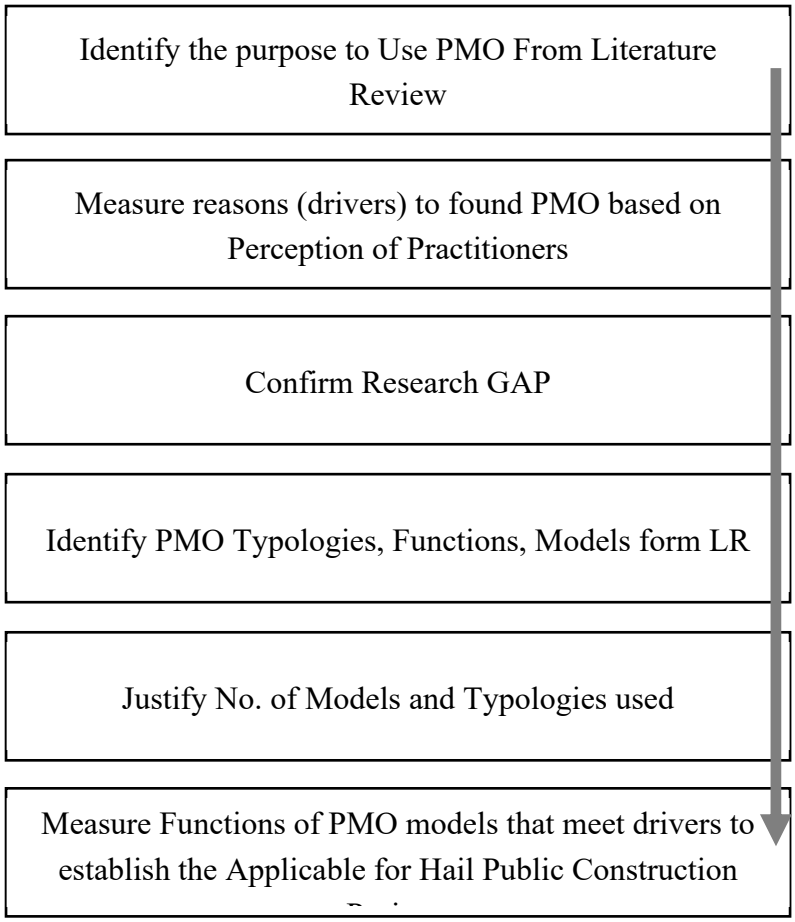

Figure 2. Selection Method for PMO.

Third phase, the eight models were also measured through a focus group in which identifying the applicable model for Hail public construction projects. The presentation and discussion covered all aspects regarding every model in which each has different criteria differentiate from others. These models are Enterprise PMO, Program Management Office, PMOCoE, Business Unit PMO, Controller, Project Support Office, and Project Office. Thus, practitioners were asked to respond on 10 point Likert-scale as well as comments on if any. In addition, practitioners were asked to rank the top three driving factors.

3. Results

The results of this study were delivered from fourteen practitioners in Hail construction sector. Table 1 represents years of practitioners' experience while Table 2 shows their level of education.

Table 1. Years of Experience.

Years of Experience	Participants
10-15	**6**
16-20	**3**
+20	**5**

Table 2. Level of Education.

Level of Education	Participants
Bachelor Degree	**9**
Master Degree	**5**
PhD Degree	**0**

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The PMO's role will differ depending on the nature and type of an organization. Therefore, it was critical to gather input from Hail public construction projects stakeholders in order recognize issues, requirements, and suggestions in order to identify how and where the PMO will function within the Hail public construction projects. Many particular project management difficulties came to light in which the PMO functions intended to remedy them. Table 3 represents practitioners' responses to the driving factors leading to found PMO that the Hail public construction projects' needs. The most important driving factors are; poor performance of projects, lack of strategic management, unstandardized processes for PM, Inability to hire qualified personnel, poor optimizing for resources, and deficiency of project approach.

Table 3. Drive Factors to Found PMO for Hail Public Construction Projects.

	Drive Factors to Found PMO in Public Projects, Hail	$\bar{X}$	Std.	IQR
DF1	poor performance of projects	8.71	0.70	1.0
DF2	lack of strategic management	8.43	0.82	1.0
DF3	unstandardized processes for PM	8.50	0.91	1.0
DF4	uncontrolled risk events	6.64	1.80	3.0
DF5	absence of key PM components	7.86	1.77	2.3
DF6	disregard for cost management	6.71	1.58	3.0
DF7	ineffective communication for projects	7.14	1.51	2.3
DF8	communication management deficiencies	6.64	1.54	3.0
DF9	lack of documentation	6.50	1.59	2.3
DF10	Inability to hire qualified personnel	8.64	0.89	1.0
DF11	poor optimizing for resources	8.29	0.96	1.0
DF12	poor training and education	7.50	1.45	3.0
DF13	deficiency of project approach	8.79	0.77	1.0

It is now evident that operating construction projects in Hail province fronting strategic, methodological, and administrative difficulties. In addition, each model has certain functions in which analyzed in accordance with identified drive factors for PMO establishment. As a result, practitioners evaluated comparable PMO models based on identified driving criteria in order to develop the right PMO for Hail public construction projects. As well as, practitioners ranked the top three models. The PMO models include 1) Enterprise PMO, 2) PMOCoE, 3) Project Support Office, 4) Business Unit PMO, 5) Controller, 6) Project Office, and 7) Program Management Office. Table 4 represents the top three models that are most applicable to running construction project in Hail province.

Table 4. PMO Models for Hail Public Construction Projects.

	PMO models	$\bar{X}$	Std.	IQR	Rank
PM1	Program Management Office	4.07	0.92	2.0	2
PM2	PMOCoE	3.93	0.83	0.5	3
PM3	Project Office	4.21	1.05	1.0	-
PM4	Business Unit PMO	3.43	1.70	4.0	-
PM5	Controller	3.07	1.77	3.3	-
PM6	Project Support Office	3.64	1.15	2.3	-
PM7	Enterprise PMO	4.29	0.83	1.3	1

4. Discussion

According to the study findings, the Project Management Center of Excellence (PMCOE) is the ideal MPO model for Hail public construction projects. The practitioners' evaluation revealed that the main drive factors to founding PMO for Hail include; poor performance of projects, lack of strategic management, unstandardized processes for PM, Inability to hire qualified personnel, poor

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optimizing for resources, and deficiency of project approach. These drive factors are in consistent with literature in different contexts.

4.1. Drive Factors to found PMO for Hail Public Construction Projects

The drive factor "poor performance of projects" is in concord with Swan et al. since indicated that central oversight of schedules and expenses would probably enhance project managers' attention on temporary outcomes of the project while decreasing their incentive for transferring inter-project learning [24]. The drive factor "lack of strategic management" is in accordance with Carvalho where stated that the strategic oversight role may direct projects by analyzing the organization approach then advocating the governing the business's commercial objectives in the project context [25]. The drive factor "unstandardized processes for PM" matched statement of Aubry et al. in which Standardized management of projects is commonly used to cope the daily and planned work [9]. More, the drive factors "Inability to hire qualified personnel" and "poor optimizing for resources" are in concord with Engwall and Jerbrant since stated that there is project interconnectedness and limited resources, disruptions or inefficiencies in a single project can have an adverse effect on other projects when manpower is split between projects [26]. The drive factor "deficiency of project approach" is also in concord with Bersman as stated that, engaging in person is generally preferred by project managers over looking for data within paperwork and systems in which depending on social interface for past experience [27].

4.2. Linking Drive Factors to Functions of PMO Models for Hail Public Construction Projects

Certain functions distinguish one PMO model from another. Meanwhile, the main drive factors that lead to found PMO in Hail public construction projects include poor performance of projects, lack of strategic management, unstandardized processes for PM, Inability to hire qualified personnel, poor optimizing for resources, and deficiency of project approach. These drive factors describe the weaknesses in running projects while also expressing the functionality offered by PMO models. However, the Enterprise PMO allows providing for information on projects in deciding processes and builds entire project portfolio management ability [18] include aligning project and program work to business strategy, monitoring of departments, prioritizing initiatives, and choosing projects [15]. In addition, the Program Management Office approach emphasizes entire project oversight and accountability for project manager recruitment and development as well as choosing for proper projects [20]. Nonetheless, the PMoCE model offer improving the effectiveness of personnel [15], enhancing project execution throughout standards, methodologies, and tools that allow effective project delivery [6]. Thus, practitioners were fully aware of the main motives that lead to found PMO for Hail public construction projects, thereby understanding the functions of PMO that provide resolutions for these weaknesses.

4.3. Applicable Model of PMO for Hail Public Construction Projects

Consequently, the Enterprise PMO, Program Management Office, and PMOCoE models that emerged from this research are appropriate for Hail public construction projects. The Enterprise PMO model was ranked as the first fit for Hail public construction projects. The second fit is the Program Management Office model while the third fit is the PMOCoE model. The Practitioners in entirely three groups highly agreed on the Enterprise PMO model and the Program Management Office model among other models of PMO. This is due to the specific interrelated between identified drive factors to found PMO and the functions of both models. According to Kerzner, the Enterprise model mainly oversees organizational activities along with supports across the organization, concentrating on organizational as well as strategic concerns [28]. Meanwhile, Program Management Office model is an enterprise with several divisions, several assistance divisions, and active projects across every division [8]. The PMOCoE model received moderate agreement in this research due to its general aspects. Aspects include creating and maintaining project organizational practices, education, methodology, training, standards, and project management skills across the business [15].

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5. Conclusions

The Saudi government is undergoing an accelerated development period that will last through 2030, and this development includes the construction industry including Hail public construction projects. The construction business, like other critical industries, requires administrative and technical solutions to improve the sector's work. PMO shows serious potential as a managerial tool in several industries including construction. Meanwhile, the PMO models incorporate functions that each model serves differently. Hence, this study investigated the suitable model for Hail public construction projects, with the goal of improving the delivery of construction projects. The findings revealed that the Enterprise PMO is the applicable model for Hail public construction projects based on the circumstances of projects' delay and failure. The research suggested that the Enterprise PMO is the ideal paradigm for Hail public construction projects based on the drive factors to found PMO. This is due to the nature and scope of the Enterprise model, which serves the concept of portfolio management while also focusing on internal concerns like standards, methodology, and development. More, the Program Management Office model and the PMOCoE models were ranked the second and third options. This research contributes to the use of focus group method in the field of construction. In addition, this research contributes to the presentation of a workflow for selecting the suitable model for an organization, establishing a rapid method for further selection of PMO model for various construction businesses. This workflow includes the measurement of driving factors to found PMO, merging those drive factors into the functions of PMO models, and eventually evaluating the matched PMO models. Because the implementation of PMO in an organization takes at least three years to provide results, this study suggests further research into the way of monitoring and managing the process of implementing PMO in the construction industry.

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