Turkish Online Journal of Qualitative Inquiry (TOJQI)
Volume 12, Issue 6, June 2021:167-179

Research Article

Common attributes influencing PMO practices in UAE Construction Industry

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Abstract

This paper explores the attributes influencing the Project Management Office (PMO) exercise in the UAE construction industry. A qualitative mode of data collection was used to record the perception of the experienced practitioners involved in construction works was collected with the help of a structured questionnaire form. A questionnaire form was devised based on the 30 common attributes influencing the PMO identified from the literature review. The attributes were classified into three categories: resource management containing 12 attributes, project management having ten attributes, and organizational culture containing eight attributes. The relevancy of these attributes with the construction industry of UAE was assessed based on a 5-point Likert scale. Statistical analysis of the data revealed that 28 of the 30 investigated attributes are relevant to the construction industry of UAE. The attribute Implementation period and plan challenge in the category resource management and Reports, data entry, and dashboards challenge in project management are found irrelevant. Besides these, the practitioners highlighted that all the performance indicators used for investigation, i.e. Objectives of implementation, Goal/Aim of implementation and Key performance indicators (KPIs) are relevant for PMO and should be emphasized for achieving successful projects. These findings point out that the attributes should be considered proactively for observing the benefits of PMO in the construction industry of UAE.

Keywords: *PMO, influencing attributes, construction industry, UAE*

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Introduction

The concept of Project Management Office (PMO) was introduced a century ago to manage complex projects in organisation. In the 1930s, the first recorded PMO is by the United States (U.S.) Army Air Corps to monitor the development of aircraft. The PMO was then structured by the U.S. military during the 1950s in complex missile management through System Program Offices (SPOs) to govern the entire project involving training, equipment support, warhead, and logistics support [1]. In the 1980s, the PMO was first exploited in another sector, such as the construction industry, primarily boosted by the emergence of computer technology [2]. In the Middle East, the United Arab Emirates (UAE) oil industry has been the major catalysts towards its economic growth. Given the UAE continued dependence on oil, the government shifting its focus towards investment in large-scale construction projects to make the city of Dubai the ultimate tourist destination [3]. Thus, the authorities are working to implement PMO for its world-class construction projects. This can only be achieved when the right measures are taken to tackle the challenges that may arise due to the PMO implementation. Owners of large construction projects in the UAE are demanding on record time completion, leading to an increase in the risks involved. Such demands put extra pressure on contractors, engineers, and designers, which could ultimately be better managed through the PMO.

Through proper PMO implementation, the UAE construction industry aims to enhance profitability and quality of projects by eliminating inefficiency and waste of resources. However, the main challenge of PMO in UAE is the lack of well-published protocols and standards that are widely accepted for use during operations of construction projects. Most clients demand the use of PMO in their projects even though they do not understand what it means and the implications to finances and quality [4]. Furthermore, there is a global movement in the construction industry championing the adoption and implementation of the PMO. Therefore, the UAE construction industry must catch up with the worldwide market in implementing PMO across all projects being undertaken. Its adoption is the perfect initiative to monitor various projects to guarantee proper coordination and efficiency through construction.

PMO approaches can generally be applied in the management of construction projects, but not all of them result in the successful delivery of set objectives and goals such as completion schedules [1]. The most fundamental factors in PMO implementation are management experience, size of the project and type of organisation [5]. Several studies have suggested that some specific factors are necessary when integrating a successful PMO, including clearly stated objectives, senior management support, clearly defined plan, and good communication [6].

The continued advancement due to globalization clearly depicts why a country such as the UAE investing billions of dollars in construction projects. Since there is limited research on PMO in construction [5], it has made it difficult for organisations to commit financially in large projects through PMO tools and processes. It does not guarantee efficiency and profitability in terms of time and resources. Hence, this study intends to investigate and

assess attributes influencing PMO practices and the performance in UAE construction organisation.

Literature Review

The project Management Office (PMO) is a department in any organisation that establishes the standards and practices for implementation in the organisation during the operation of any project. PMO acts as a central control point for both the project and senior management to adopt professional practices during project management. PMO is implemented in organizations to bring about various improvements in governance, planning of resources, and managing project practices and measurement. PMO creates working standards to practice in the projects [5] and serves different functions for different organisations [3]. PMO is a tool used for coordination within the organization. Unfortunately, PMO is not too much popularized in the construction project. Several attributes influence the implementation of PMO in construction industry. Several researchers have highlighted the challenges faced in implementing PMO for any project. Broadly, the attributes influencing PMO practices in the construction industry are classified into resource management, project management, and organizational culture.

Resource management is the allocation of resources and follow-up activities to obtain project results in the required time frame [7]. It is one of the complex functions in construction projects [8]. Construction works are resource-driven and for success, appropriate numbers of resource must be made available [9]. Resource shortages can plague managers' ability to deliver project successfully. Thus, understanding the resource capacity and skillsets within the organisation gives the ability to balance demand and apply the right resources at the right time [10]. Multi-project resource management is entirely different because it solves resource conflicts among different projects and achieves optimal allocation of limited resources [11]. Several attributes related to resource management influence the practising PMO in construction projects, as in table 1.

Table 1: Resource Management Related Attributes

Resource Management Attributes Influencing PMO practices	**References**
Inconsistency of PMO resource	[12] [13] [14]
Inexperience PMO leadership	[15] [16] [17] [18]
Unskilled project management personnel	[19] [20] [21] [22]
Inability to identify soft skills for PMO personnel	[23]
Poor strategies	[24]
Lack of training	[25]
Inability to encourage and gain motivation	[26]
Lack of PMO functional tools	[12] [13] [14]
Lack of funds	[27] [28] [29]
Selection of PMO manager	[30]
Lack of professional staff	[31]

On the other hand, Project management is stereotypically discussed concerning completing project-related responsibilities within a specific period border in addition to budget [32]. It is

considered the application of planning, organising, and managing resources to successfully complete specific project goals and objectives [33]. Project management is widely used to address the innovative administrative challenges besides organisation situation, where intricacy, vagueness, and haziness remain the regulation. The four significant project management problems are undefined goals, change in scopes, improper risk management, and impossible deadlines [34]. Different project management related attributes identified from the literature are presented in table 2.

Table 2: Project Management Related Attributes

Project Management Attributes Influencing PMO practices	**References**
Conflict over project management ownership	[35] [36] [37] [38]
Lack of top management support	[12] [39] [40]
Additional administrative workload	[41] [42] [43]
Poor communication strategy	[44]
High bureaucracy	[45]
Poor integration of organisational function	[46]
New procedures and process challenge	[47] [48]
Selection of PMO system	[49]
Inaccurate information reporting	[23] [50]

Organisational culture is essential aspect for experiencing creating company's competitive advantage to business environment. Organisational culture is a reflection of the basic assumptions shared by members of a group, which defines the group's view and its environment as well as its way of performing daily activities [51]. There are four types of organisational culture: clan, adhocracy, hierarchy, and market [52]. Clan culture focuses on sharing values among people, emphasizing teamwork and empowerment, and developing an environment that stresses human relationships. Adhocracy culture emphasizes adaptive, flexible, and innovative characteristics in organisations. The hierarchy-type culture is focused on its operations and seeking a high degree of integration. Market culture is result-oriented organisation towards profitability and productivity. Organisational culture is important as it directs the decisions and behavior of management and employees and the main instrument of strategy implementation. The most robust organisational control system determines the organisation's image, and integrates the various subsystems of the organisation. Different attributes influencing organizational culture in PMO system are shown in table 3.

Table 3: Organisational Culture Related Attributes

Organisational Culture Related Attributes Influencing PMO practices	**References**
Resistance to change	[53] [54]
Lack of a working organization culture	[53]
Inefficient change plans	[55]
Unproductive/ inappropriate changes	[56]
Lack of trust	[57] [58] [59] [60]

Clarity on degree of control/ influence of PMO	[61]
Political challenges	[62] [63] [64]

Research Methodology

In this study questionnaire survey was used as mode of data collection. The questionnaire is a tool for acquiring information on knowledge and perception from targeted respondents. The principal requirement of questionnaire format is that questions are sequenced in a logical order [65] to ensure that respondents understand the purpose of the research and carefully answer questions [66]. For this study, questionnaire form was designed in accordance with the guidelines devised by [67]. The prime goal of this survey to examine the attributes which influence the PMP practices in construction projects of UAE. The questionnaire for this study was developed based on 30 common attributes influencing PMO practices, as discussed in the literature review section. The respondents' perception regarding the attributes with respect to the investigation goal was collected with the help of Likert scale. Likert scale was originated by Rensis Likert, an American social psychologist, in 1932 [68]. Likert scale is a psychometric scale that has multiple categories from which respondents choose to indicate their opinions, attitudes, or feelings about a particular issue [69]. The original Likert scale included five symmetrical and balanced points. It has been used with different measurement ranges in terms of a number of response options from 2-points to 11-points Likert scale [70]. Likert scale does not collect only simple responses with yes or no but also allows the respondents to indicate the degree of opinion. The Likert scale adopted in this study is in accordance with recent articles published related to construction studies that used 5-points Likert scale to assess the relevancy of the attributes with respect to the UAE construction industry, the scale adopted in this case is presented in table 4.

Table 4: 5-points Likert scale

	Likert scale				
	1	**2**	**3**	**4**	**5**
Level/Degree	Strongly not relevant	Not relevant	Neither not relevant nor relevant	Relevant	Strongly relevant

Results and Discussion

Data collection task was performed with the help of a structured questionnaire survey to validate the attributes influencing PMO. Questionnaire survey was developed based on the common attributes identified from literature. For qualitative data collection, the number of samples is 10 to 30 [71] [72] [73]. Other researcher work highlighted that at least 12 samples are required for data validation [74]. In this study, 18 samples of data were collected from the various stakeholders and the characteristics of the respondents are summarized in table 1 below:

Table 1: Characteristics of the Respondents

Category	Items	Numbers of respondents	Percentage of respondents
Academic qualification	Master degree	11	61.1%
	Doctor of philosophy	7	38.9%
Working experience	Less than 5 years	1	5.6%
	5 to 10 years	3	16.7%
	11 to 20 years	7	38.9%
	21 to 30 years	4	22.2%
	31 to 35 years	1	5.6%
	More than 35 years	2	11.1%

Table 1 depicts that 61 per cent of the respondents have obtained a master degree while 39 per cent of the respondents are PhD holder. These respondents have vast experience of handling construction projects where fourteen of eighteen respondents have experience of more than ten years while only 4 respondents have experience of less than five years. The above characteristics testify that the respondents are qualified for data collection to understand the attributes of the PMO. Hence, the collected data was further analyzed statistically, and the findings are discussed in the following sub-sections.

4.1 Reliability of the data

Reliability is the internal consistency of research instruments [75]. It is the way to determine the quality of research instrument, and it refer to the extent to that test scores are free of measurement error [76]. For assessing reliability, the widely used method is Cronbach's alpha coefficient. Its value ranges between 0 i.e. the lowest internal consistency to 1 i.e. the highest internal consistency [77]. The measure is considered reliable if Cronbach's alpha value equals or exceeds 70% [78]. Cronbach Alpha value for the indicators in this study was computed with the help of SPSS software package, as presented in table 2.

Table 2: Reliability test of the data

PMO performance indicator		Number of item	Cronbach's alpha	Remark
		3	0.700	Acceptable
Factors affecting PMO implementation	Resource management	12	0.946	Excellent
	Project management	10	0.927	Excellent
	Organisational culture	8	0.854	Good
	Reliability for total item	30	0.968	Excellent

Table 2 demonstrates that the Cronbach's alpha value for the 3 categories of the attributes of PMO is 0.700, which indicates internal consistency the categories is acceptable, while the combined alpha value for all 30 attributes influencing the PMO implementation is 0.968 which indicates that the consistency level of the attributes is excellent. Similarly, the

cronbach Alpha value for attributes in each category is also above 0.7 i.e. the internal consistency of the attributes of each category is satisfactory.

4.2 Relevancy analysis of the attributes

The relevancy of the attributes was evaluated based on five-point scale as *1 for strongly not relevant, 2 for not relevant, 3 for neither not relevant nor relevant, 4 for relevant,* and *5 for strongly relevant*. The experts selected the level of relevancy for PMO performance indicators as well the attributes in various categories of PMO attributes to indicate the relevancy with respect to UAE construction industry. The data was analyzed with mean value and the relevancy level for PMO performance indicators is presented in table 3.

Table 3: Relevancy of items in PMO performance group

PMO performance indicator	Frequency according to Likert scale					Mean	Remarks
	1	2	3	4	5		
Objectives of implementation	0	0	2	7	9	4.39	Relevant
Goal/Aim of implementation	0	0	2	6	10	4.44	Relevant
Key performance indicators (KPIs)	0	1	2	3	12	4.44	Relevant

Table 3 depicts that the mean score of all the 3 PMO performance indicators is in the range of 4.39 to 4.44. Based on Likert scale and level or degree of relevancy used for data collection scale of larger and equal to four (≥ 4.00) is considered relevant. Thus, these results indicate that the considered PMO performance indicators are relevant to UAE construction scenarios. Data for attributes influencing PMO practices were also analyzed with mean value, and the results are presented in Table 4.

Table 4: Results of pilot study onfactors affecting PMO

Group	Factors affecting PMO implementation	Frequency according to Likert scale					Mean	Remarks
		1	2	3	4	5		
Resource management	Inconsistency of PMO resource	0	1	3	7	7	4.11	Relevant
	Inexperience PMO leadership	1	2	1	5	9	4.06	Relevant
	Unskilled project management personnel	0	2	2	5	9	4.17	Relevant
	Inability to identify soft skills for PMO personnel	1	1	1	8	7	4.06	Relevant
	Poor strategies	0	1	2	9	6	4.11	Relevant
	Lack of training	0	3	1	6	8	4.06	Relevant
	Implementation period and plan challenge	1	1	4	7	5	3.78	Irrelevant
	Inability to encourage and gain motivation	0	1	1	6	10	4.39	Relevant
	Lack of PMO functional tools	0	2	1	9	6	4.00	Relevant
	Lack of funds	0	3	0	9	6	4.00	Relevant
	Selection of PMO manager	1	1	1	8	7	4.06	Relevant

	Lack of professional staff	1	1	3	3	10	4.11	Relevant
Project management	Conflict over project management ownership	1	1	1	5	10	4.22	Relevant
	Reports, data entry, and dashboards challenge	0	4	4	5	5	3.61	Irrelevant
	Lack of top management support	3	0	0	4	11	4.06	Relevant
	Additional administrative workload	0	2	5	2	9	4.00	Relevant
	Poor communication strategy	0	2	2	6	8	4.11	Relevant
	High bureaucracy	0	2	3	5	8	4.06	Relevant
	Poor integration of organisational function	1	2	1	4	10	4.06	Relevant
	New procedures and process challenge	0	3	2	2	11	4.17	Relevant
	Selection of PMO system	0	1	5	0	12	4.28	Relevant
	Inaccurate information reporting	0	4	0	4	10	4.11	Relevant
Organisational culture	Resistance to change	1	1	3	4	9	4.06	Relevant
	Lack of a working organisation culture	0	0	3	4	11	4.44	Relevant
	Inefficient change plans	0	3	3	1	11	4.11	Relevant
	Unproductive/ inappropriate changes	0	2	3	6	7	4.00	Relevant
	Lack of trust	1	2	3	1	11	4.06	Relevant
	Clarity on degree of control/ influence of PMO	1	2	2	2	11	4.11	Relevant
	Political challenges	0	2	2	3	11	4.28	Relevant
	Environmental challenges	0	0	6	3	9	4.17	Relevant

From table 4, it is apparent that 28 of 30 attributes have a mean value above 4, which mean that the practitioners consider that 28 attributes influencing PMO practices are relevant to the UAE construction industry. At the same time, the attribute *Implementation period and plan challenge* in the category resource management has a mean value as 3.78, which is below 4. Hence, this attribute is considered as irrelevant. Similarly, the attribute *Reports, data entry, and dashboards challenge* in project management are reported as irrelevant with a mean value of 3.61. These findings are useful in understanding the parameters to consider for effective implementation of PMO in getting maximum benefits and achieving successful projects in construction industry.

Conclusion

The Project Management Office (PMO) concept is used for managing complex and large projects. In UAE construction industry also, PMO is getting popularized for managing construction activities. Several attributes influence the PMO use and effect of successful implementation of PMO. These attributes were investigated for the UAE construction industry through a questionnaire survey among experienced and highly qualified construction practitioners. The questionnaire was developed with 30 common attributes identified from the literature. The analysis of the 18 collected questionnaire forms revealed that 28 factors are relevant to the construction industry of UAE. In contrast, the attribute Implementation period

and plan challenge in the category resource management and Reports, data entry, and dashboards challenge in the category of project management are found irrelevant. Similarly, the 3 performance indicators i.e. Objectives of implementation, Goal/Aim of implementation and Key performance indicators (KPIs) are endorsed by the practitioners for adopting in PMO system to achieve a successful project in the construction industry of UAE.

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