

# Project Manager's Skills for improving the performance of complex projects in Kuwait Construction Industry: A Review

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**Abstract.** The role of project manager is one of the crucial factors in achieving project success. Project managers handling large and complex construction projects have to deal with several factors to ensure coordination in achieving project delivery based on time, cost, and quality. However, recently, several large and complex projects in Kuwait s are facing several delays and overrun. According to previous research, the main factors were communication, teamwork & teambuilding, planning & coordination, problem solving, and interpersonal skills. The aim of this paper is to provide a review on project manager's skills framework (PMSF) that are required in improving complex construction projects in Kuwait. Extensive literature reviews on the project managers skills in the management of the project were identified. It was found that skills such as teamwork, effective communication with staff and contractors, and effective resource management, effective planning and training, risk management are some of the important factor. The findings of this research contribute to exiting literature on developing a project managers skills framework (PMSF) that can be used by academic professional, business practitioners, and policy makers in identifying the issues facing construction projects and providing successful outcomes. Project managers involved in complex projects need to have strong skills to handle their team and every project participant. Project manager has the highest importance and critical to the success of the project. The literature review has indicated several skills that are important for project managers. The type of project determines the type and extend of skills that is required in successful project outcomes.

## 1. Introduction

Complex projects face many challenges during implementing its activities. The critical key for ensuring the success of complex projects is having a skilled project manager [1]. Some construction projects are technically complex such as when using a new technology that are not understandable by the project members [2]. In addition, this type could be specified when there is no qualified manager that could manage the new technology involvement although it is recognized to the organization [1]. Project complexity could be produced through two main features; which are uncertainty and structural complexity. Uncertainty could be produced through the uncertainty in utilised construction methods or either in the required goals [3].

In addition, the complex projects can be classified from another perspective. Amable et al. [4] identified it as complex projects that will demand managers with special technical and managerial skills that could make them able to show a high-quality performance level. Shane et al. [5] demonstrated that in complex project each organisation could face the challenge of continuous changes to cope with the newly technology innovations that could enhance the organisation performance [5]. Complex project



will require a highly committed and hard worker manager with strong planning abilities that could enable such managers to adapt with the nature of complex projects [1].

Meanwhile, Kuwait is one of the Gulf countries which is witnessing a great development in the field of construction industries. In view of the great importance of the construction industry in this country, it is necessary to ensure that construction projects are being completed on time and within the required cost. The construction projects in Kuwait face a delay in delivery and thus exceed the planned budget (timeskuwait.com, 2019). The Kuwait Accounting Office has revealed that there was a delayed in construction projects with hundreds of millions due to errors in management, planning and design. In addition, the actual implementation rate of construction projects reached 67.6%, with a decreased by 32.4%, which necessarily contributed to the delay in completing the construction projects. Previous research by Al-Almutairi [7] related delay of project with project managers' skills.

There is so far very little knowledge regarding Kuwaiti project managers' skills and abilities in managing complex construction projects. The researcher also noticed that there is only a few studies conducted in Arab countries and especially in the gulf region, and with regard to the differences between countries cultures, the availability of skilled and talented managers in each country; all of this make it difficult to generalise these studies findings on other countries. The only vast majority of prior relevant researches, regarding the project managers' skills, were often conducted in Europe and American construction industry. Therefore, this study investigates the challenges faced by complex projects in Kuwait construction industry and determine the potential skills that must be owned by project managers to manage complex projects successfully.

## **2. Construction Project Complexity**

The complexity of construction projects is constantly increasing due to the newly technological and operational initiatives. Construction projects that are recognized as technically complex could be recognized in several forms, such as when using a new technology that are not understandable by the project members [2]. In addition, this type could be specified when there is no qualified manager that could manage the new technology involvement although it is recognized to the organization [1]. The project complexity could be produced through two main features; which are uncertainty and structural complexity. Uncertainty could be produced through the uncertainty in utilised construction methods or either in the required goals [3].

Complex projects from another perspective, where he clarified that these projects could be identified as the projects that will demand managers with special technical and managerial skills that could make them able to show a high-quality performance level [4]. It is also argued that each organisation could face the challenge of continuous changes to cope with the newly technology innovations that could enhance the organisation performance [2]. This will require a highly committed and hard worker manager with strong planning abilities that could enable such managers to adapt with the nature of complex projects [1].

The literature points out that there are various factors that contribute to the success of complex projects. However, one of the common and most important factors is the role of PM. Complex projects require highly skilled and knowledgeable individuals to head the project. There should be a strong link between skills of the PM and the elements of the projects to ensure successful outcomes.

### *2.1 Challenges faced by Complex Projects*

Kuwaiti construction projects are facing several problems and issues that cause projects' delays, cost overruns, and poor quality. Several researchers had investigated the reasons and the reasons and causes of delays showing up the most common causes and the most influential ones that lead to financial loss and project workflow crashes. Al-Tabataba [8] conducted a survey in which he ranked the causes of delay in governmental construction projects utilizing 53 delay questionnaires. According to a relative importance index, the top ranked ones are slow decision-making process, payment and financial procedure, lack of planning and utilization of CPM, lack of design coordination and poor subcontractors' scheduling.

Koushki, AL-Rashid and Kartam [9] reported the three main causes of delays in construction projects, which causes cost overruns and complexity of projects were: owners' financial problems and his lack of experience in the construction business as well as the changing orders. In accordance to cost overruns, the three key causes were recognized as material-related issues, owners' financial issues and contractor-related problems. They recommended several measures in order to mitigate the delay and complexity of construction residential projects would including the allocation of adequate money and time at the design phase, availability of satisfactory funds, and choosing of a reliable contractor and competent consultant to execute the project.

Moreover, Al Zubadi and Al Otaibi [10] identified five critical factors to delays and overrun of Kuwait's building and infrastructure projects are: delay in in approval and preparation in variation orders as well as the delays in government permits and approval , additional work requested by client beyond the original scope and outline , variations and alterations on engineering conditions on the contract document and the decrement in the productivity of labours due to the climatic conditions. A different study by Soliman [11] survey the delay causes in Kuwaiti construction industry utilizing of 30 questionnaires. It was noticed that the most important delay factors were the conflicts occurred between the consultant and contractor, owner financial problems, delaying from owner in payments of contractor and contractor financial problems.

Additionally, Al Marri, Ibrahem and Nassar [12] found Kuwaiti highway and infrastructure projects utilizing a thirty questionnaire divided into five sections according to project time stages. They obtained that the most important causes of delay in infrastructure projects in Kuwait were at all stages of the project and not only in the construction stage. They concluded also that most important causes were: multiplicity of agencies in order to gain approvals, coordination problems between the different ministries that are responsible for project's implementation, delay in receiving the project contractor document by the consultant and the increased cost of materials and projects.

Al-Almutairi [7] added that delay in construction projects represents one of the most important factors that is significantly affecting Kuwaiti construction projects in a negative way and required a solution and a well management from their project managers. He also stated that time and cost overruns in Kuwait have largely been because of issues of attempting to utilize technically advanced solutions in construction while there is a huge lack in Kuwaiti project managers' skills and experiences. He also demonstrates that the lack of qualified Kuwaiti project managers that are unable to manage simple projects, not just complex projects, and the non-existent of specific Kuwaiti Project Manager's Skills Framework (PMSF), explains why the Kuwaiti construction industry is always faced with financial, delaying and insoluble conflict problems between its parties. This can be both time consuming and costly which may develop into great risks that affect the achievement and management of different Kuwaiti construction projects. Khalid [13] also supported that delays can be reduced or prevented by an increased pre-project planning and through successful project management as they are one of the most critical success factors of the construction project accomplishment.

### **3. Project Manager**

Various authors have emphasised that the complex demanding, and the dynamic requirements of the complex projects call for project managers with high capabilities who can manage the construction process from the early stage to the final stage of the construction project successfully [3, 4, 14]. Remington and Crawford [15] and Mouchi et al. [1] pointed out that complex projects require a project manager who holds critical specifications that differ from the specifications of the project manager of simple projects. The complexity of complex projects requires the manager to be able to develop new initiatives and new ideas that are not consumed in order to ensure the success of the project. On the other hand, Pollack and Remington [14] stressed that the successful complex project manager must be able to transform the complex areas of the project into easy elements that are easily understood and realized by employees. This means that the project managers must have the necessary management skills that will help them succeed in the project.

Leung et al. [16] stated that there is a set of characteristics and attributes that should be owned by the project manager to ensure the success of the project, where earning these qualities and characteristics is being through exposing to a wide range of complex projects. One of the main skills that each project

manager must have is the ability to deal with various kinds of individuals in good way in different situations throughout the whole life cycle of projects. As the main responsibility of the project outcomes comes to the project managers; they must have the required skills that could enable them to influence the work members in effective way to cover the project objectives [1].

The discussion here indicates that there is a difference between PM that handle complex project and simple projects. The characteristics and attributes of PMs in complex projects relates to the outcome of complex projects. This indicates the need to study the PM skills and project elements to identify and design a framework.

### *3.1 Project Manager Skills*

Patanakul and Milosevic [17] added that each project manager must create strong relations with the team members to meet the project objectives, in addition to increasing organisation profits with keeping in mind customers' expectations. Fisher [18] clarified that there are six main skills must be owned by each project manager to make them succeed in their managerial practices. One of those skills is the manager cooperation, sincerity and his /her ability to understand various behavioural characteristics of the team members. Adding effective leadership style is another skill that must be owned by project managers. The third proficiency is managers ability to influence and motive work team toward covering the organization objectives. This reflects the ability of project manager to respect each work member and accept individuals on their situation and without any attempt to change them by force. Managers must also have the ability to recognize the conflict sources, influences and should own the managerial skills to solve conflicts. The final ability that must be owned by project manager is the awareness toward the cultural differences of the work members.

Furthermore, Paglis and Green [19] clarified that self-confidence is another factor that could influence the ability of project managers to succeed. Self-confidence could provide managers with the ability to take the right decisions in the correct time. Self-confidence could also enable managers to perform complex responsibilities and solve expected problems smoothly [1]. Additionally, project managers feeling toward their performance has an enormous effect on the project success, and this managerial skill play a vital role in succeeding construction projects [20].

### *3.2 Project Manager Elements*

Shane et al. [2] clarified different elements for project complexity, those elements were classified in different categories and each category comprised of several elements related to it. Some of those elements are: cost elements (material cost, cost analysis and estimation, payment restrictions), schedule elements (unclear sequence of the construction process, resource availability, uncertainty in process and materials used in structure, risk analysis), technical elements (design methods and specifications, scope of the project, delays, technology usage and details required to complete the project clearly), political issues and legislative process, size and location of the project.

Mouchi et al. [1] have also investigated a number of complexity elements from the viewpoints of five senior managers of complex projects in five different organizations including: unclear project scope, type of project participants, technical problems of the projects, complex requirement of customer, uncertainty in scope and aspects of projects, uncommon feature and unfamiliar construction elements, political issues around clients, unusual structure design, incomplete and unknown elements in design, size and location of the project, lack of details, high level of risks and resources unavailability.

Dao et al. [21] mentioned that construction project complexity refers to the interactivity between project elements and the number of project complex elements that make it difficult to be managed and achieved. So, he represented thirty-seven different attributes and elements that were truly representative of construction project complexity. Some of those mentioned elements are: stakeholder management (complexity of customer requirements, inspection and approvals from regulatory agencies and entities, etc.), Governance (number of project's partners, number of times a change order on project has occurred, etc.), Fiscal planning (difficulties in paying to labours, number of funding phases, etc.), Quality (quality of materials utilized in project), Legal (number of permits to be required, difficulty in obtaining design approvals, etc.), Design and Technology (difficulty and integrity in structural design, unfamiliar and uncommon construction elements, Uncertainty in the utilised construction methods, lack of details in

design, company unfamiliar with technologies involved in construction phase), Location and size of projects (execution hard site, include many risks, huge size of the project), Scope (undefined and uncertain project scope), Project Resources (quality of labours, quality of materials, sequence of the projects due to the availability of sources).

### *3.3 Project manager potential skills for managing complex construction projects*

Several researches have proposed the project manager to the most successful skills that must be possessed in order to achieve and manage their projects successfully. Other than that, Project Management Body of Knowledge (PMBOK) guide was also available, issued by the Project Management Institute in order to be an assistant and guidance for project managers in their complicated management journey. This manual is certified for application within the United States and is also certified by the American National Standards Institute (ANSI), which is highly valued and significant in the project management's world. This also explains why many institutions and individuals interested in project management and contracting sector are interested in the PMP Certificate and in having a project managers with a PMP certificate, in which he is following the management strategies of this Guide and characterized by its professional managerial skills, in order to maximize the chances of success of the projects, and also to ensure the appropriateness and successfulness of managers in managing complex projects in which large investments have been pumped annually to plan and implement them [2].

This PMBOK Guide defines three characteristics of an effective project manager which are personal, performance and knowledge. Performance indicates what the project manager can actually accomplish and achieve. Is the project moving forward? Moreover, Knowledge specifically refers to the project managers' possessed knowledge about project management. Such as, can the project manager develop a project management plan and write a project schedule? However, Personal refers to the project manager's personality, leadership and attitude. It can be presented as: is the project manager relating effectively to all the stakeholders with whom they must interact [22].

Furthermore, PMBOK Guide describes eight interpersonal and managerial skills that must be possessed by project managers in order to manage projects successfully and effectively. Such skills are Leadership, Motivation, Communication, Team building, Influencing, Political and cultural awareness, Decision making and Negotiation [23]. It would be interested to note that a significant number of these mentioned skills are straightforwardly related with the capacity of manager to impact others to do what is important for the project to convey an item, administration, or result on time, on target and on budget. The capacity to impact and influence on others is particularly imperative since project managers frequently don't have formal authority over the general individuals with whom they are working [23]. Also, PMBOK Guide the most important skills for project manager which qualified him/her to manage complex construction project efficiently are Self-Awareness, Leadership, Self-Confidence, Quick Thinking, Flexibility, Integrity and Honesty, Intelligence, Imaginative and Creativity, Persistence and Decision making.

Additionally, several researches had proposed the most common skills that must be owned by project managers (project managers' skills, PMS) in order to manage complex projects successfully is shown in Table 1. It can be seen that the skills are in line with the PMBOK Guide the most important skills.

**Table 1.** Summarized required complex construction project managers' skills obtained from literatures.

No.	Skills	Previous researches
<b>Category: Communication</b>		
1	Owning high communication skills	1, 17, 20, 23, 29, 30, 31
2	Good communication skills with different stakeholders.	1, 17, 20, 23, 29, 30, 31
3	The ability to negotiate	1, 17, 20, 23, 29, 30, 31
4	The ability to give constructive feedback	1, 17, 20, 23, 29, 30, 31
<b>Category: Teamwork &amp; Team building</b>		
5	The ability to create strong relations with the team members	1, 17, 20, 23, 24, 29, 30, 31
6	The ability to understand various behavioural characteristics of the team members	1, 17, 20, 23, 24, 29, 30, 31
7	The ability to influence and motive teamwork	18, 23, 24, 30
8	Supporting the team	18, 23, 24, 30
<b>Category: Planning &amp; Coordination</b>		
9	Be able to develop new initiatives and new ideas	1, 17, 18, 20, 31
10	The ability to keep up with changes	1, 24
11	The ability to plan effectively	1, 24
12	The ability to strategically planning	1, 24
<b>Category: Problem Solving</b>		
13	Be able to transform the complex areas of the project into easy elements	18, 24
14	The ability to recognize the conflict sources	18, 24
15	The ability to solve conflicts	18, 24
16	The ability to deal with risk easily	1, 24
<b>Category: Interpersonal Skills</b>		
17	The ability to deal with various cultures in good way and in different situations	18, 24
18	Owning self-confidence	1, 17, 20, 32
19	The ability to focus	1, 24
20	Owning a clear project vision	1, 32
21	The ability to organize the work	1, 24
22	Keeping Flexible	1, 17, 20
23	Owning high technical skills	1, 24, 31

There are altogether 23 skills that project managers must have to successfully manage complex projects have been mentioned in several studies, some of them has been mentioned in specific studies and not mentioned in other studies. This is due to the fact that most of those studies have investigated the skills needed by the project manager for successfully managing construction projects in general regardless of their types and complexity, so they weren't directed specifically for complex construction projects which is the major target of this study. However, it was noticeable that the studies of [24] and [1] were the closest studies to this study because they mentioned and examined the majority of skills matching the skills chosen in our study as long as these two studies were specifically designed to investigate the skills required by managers for complex projects only and not for all projects generally as the situation was for the other studies. In general, these 23 skills come under the categories of teamwork, effective communication with staff and contractors, and effective resource management, effective planning and training, risk management are some of the important factor.

**3.3.1 Communication.** Communication can be through various forms such as oral/verbal, written, and comprehensive communication skills. Oral communication skills are the ability to communicate efficiently with other orally, and the ability to make effective presentation. Written communication skills mean the ability to communicate efficiently by writing documents, letters and reports. Comprehensive skills are the ability to understand both the stated and implied meaning of others [25].

**3.3.2 Teamwork & Team building.** Teamwork and team building skills are important skills for a project leader. These skills include team structure, design skills, identifying the ability of different project team members, delegation skills and integration skills [26].

**3.3.3 Planning & Coordination.** Planning and coordination include being able to build harmonious relationship in order to achieve project goals and dealing with conflicts from both inside and outside [27]. The project leader must know how to plan, control and coordinate the various stages and move it in an objective-oriented direction.

**3.3.4 Problem Solving.** Problem solving skills include problem-finding, analyzing and solving skills, which are the ability to discover problems in a timely manner, problem-analyzing skills, judging and decision-making skills, as well as problem solving and controlling skills [25].

**3.3.5 Interpersonal Skills.** Interpersonal skills include being able to deal with people of different backgrounds, which means the skill of developing relationships with different kinds of people when needed [27]. Interpersonal skills also involve persuading motivating and incentive skills. Persuading skills refer to persuading and influencing others to support you in realizing the objectives of the project [28]. Motivating and incentive skills refer to carrying out special strategies to motivate team members to work hard by identifying their feelings, needs and expectations [27, 28].

#### **4. Kuwait**

It is noticed that the Gulf Cooperation Council (GCC) is witnessing a remarkable development in the construction industry due to many reasons which include the existing economic conditions, the increased population growth and prosperity of various sectors. Kuwait is one of the Gulf countries which is witnessing a great development in the field of construction industries. The facts have pointed out to the significance important of the construction industry at Kuwait. Further, decreasing the oil prices in Kuwait will contribute in continuing the expanding of Kuwait's projects market and thus will affect the government finances. According to MEED Projects, Kuwait has awarded KD 1.5 billion (\$4.8 billion) worth of contracts in first quarter of 2016, where this has effect on the total size of the local projects market (private and public, active and planned) to reach KD 76.6 billion, i.e. an increase of 2.8% year-to-date.

The previous figures emphasised on the importance of improving the performance of complex projects in Kuwait regarding the significant contributions of this sector in the Kuwaiti economy. In addition, the previous studies indicated that complex projects will demand managers with high managerial abilities and skills that could enable them to manage such projects successfully, including; strong communication, managerial and personal skills and intensive managerial knowledge. As a result of the importance of this aspect and the seriousness of its impact on the performance of complex construction projects in Kuwait; this study aims to develop a framework that could be utilized to enhance the complex projects overall performance, especially in Kuwait, through improving project managers skills and abilities.

#### **5. Conclusion**

This study describes that the challenges faced by complex projects in Kuwait construction industry. The biggest challenge faced by the complex project are the of delay and overrun that lead to financial loss and project workflow crashes. To overcome it, a technical solution and a well management from their project managers are required. The latter requires the project manager to have skills as suggested by PMBOK Guide and several previous literature reviews. The potential skills for project manager such as shown in Table 1 consist of 24 elements. It was found that skills such as teamwork, effective communication with staff and contractors, and effective resource management, effective planning and training, and risk management are some of the important factors. The findings of this research will contribute to exiting literature on developing a project managers skills framework (PMSF) that can be used by academic professional, business practitioners, and policy makers in identifying the issues facing construction projects and providing successful outcomes.

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