Construction Management Projects

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Construction Management Projects

# **Introduction**

Project management forms the basis for which construction management projects are founded. During various staged of project management projects, i.e. from the initiation to completion, there is a vast number of interests, which may affect project either positively or negatively. Notably, various issues relating to construction project management can be point. Such issues are not limited to allocation of the required resources to aid in construction, selection of the required team to facilitate the process, developing plans to ensure that the whole work has been completed successfully. According to Milosevic (2010, para 7), information about the project environment with the insights that facilitate team from understanding the project possibilities is vital in enabling the team to understand critical success factor of such a project. Additionally, in the construction management projects, what mostly determines the project success is by aligning the project goals to the stakeholder(s) expectations.

Notably, effective construction management depends on the integration of various components, which include the objectives of the customers, the ability of the contractor to complete the work, and lastly the ability to complete work within the budget and time frame given. In the construction, all issues that can affect the project negatively, can be scrutinized and discussed by the construction project management team, to ensure that any risk associated to any given project, has been dealt with accordingly (Tesfaye, Berhan, & Kitaw, 2016, p.1). In this report, the goal is to identify and critically examine a construction management issue. What determines the critical success factors in the construction projects is proper planning and preventing all the issues associated to the projects scope, objectives, and budget, among others. The project also aims at identifying the underpinning principles and concepts of construction project management, with a case study of United Arab Emirates (UAE).

Understandably, there has been a lot of issues discussed recently, relating to the construction management projects in UAE. One of the underlying issue is based on improvement of collaboration within the construction industry. The collaboration in this case is between the clients, contractors, consultants, among other stakeholders who are involved in construction management projects. Additionally, there are efforts being made to make some improvements, by enforcing a construction Contracts Act, which seem to have issues, so that payments timeframe can be codified, certification terms, etc. In addressing this issue in the construction management projects, improvement of collaboration between different stakeholders is also meant provides safety guidelines, and quality of the work. Key goas of this project include:

* Identifying the underpinning principles and concepts of construction management
* Analyzing and evaluating topical issues in the construction management project.
* Undertaking some creative analysis and thinking

# **Literature Review**

The world of literature presents different researches and findings relating to construction management projects. Most of the issues emanating from construction management projects can be found in literatures. In assessing the work of Akkoyun & Dikbas (2008, p.717-718), increased competition, demands for higher quality requirements within the global environment, has forced the construction industries to be keen on the performance, in the last two decades. The substantial body of literature affirms that performance and performance measurement is one of the underlying issue that the stakeholders must pay attention to. As noted in most of the contemporary studies, performance measure has been a subject of a considerable research, as far as construction management is concerned. Undoubtedly, there can be little dispute that performance is a subject of importance in construction management projects.

Further studies on the construction management projects, shows that project management has a set of evaluation dimensions, which forms the basis of the underlying principles and basis of some issues. Hu et al (2008, p.2-5) affirms that the valuation dimensions in construction management comprises of various constraints, and requirements, which include defined beginning and end. With this requirement it encompasses the project completion time. The second requirement is specific and preordained goals for the project, which is all about the performance expectations of the project. Other requirements include a series on interrelated activities as well as the project budget.

As affirmed in several studies, project planning is paramount in analyzing the successive increments and different phases of project management. Additionally, the research acknowledge that dividing the project into manageable chunks, makes it easier to manage the project easily (Hu et al., 2008, p.2-4). Further reviews shows that among the issues that need to be addressed in any given project. Khodeir (2015, p.143-144) affirms that constructions projects are vulnerable to the unprecedented changes which may affect their success. Nevertheless, such changes can be seldom eliminated by adoption of the best and recommended risk management approaches. Studies also shows that the construction projects may vary due to considerable number of issues, which include type, complexity and scale. In all these issues from the construction projects, complexity is considered to be most common, due to the dynamic nature of such projects, without forgetting on other aspects such as risk emergence.

# **Principles of Construction Management Projects**

The principles of construction management projects provides methods and procedures that can be used effectively manage the projects from the execution of the contract to the closure. The core principles that have been used and should be used in managing the key aspects of the construction projects, which include budget, quality of work, schedule, scope among other aspects. Another principle is meant to provide an understanding the fundamental project management processes, which include the communication between all the project management team, management of materials, procurement and document management. The construction management projects, should always focus on learning on the importance of managing change, from both business and technical perspective. The forth principle on management of issues and disputes in case of their emergence. It is important to note that dispute is a major issue that may affect the execution of construction management projects. The last objective is based on the relationship that exist between construction project management and business management aspects, which include risk management, regulatory compliance , financing, and human resources. All these aspects are very critical to complete the project successfully.

# **Key Aspects and Requirements of Construction Project Management**

As highlighted earlier, construction project management involves a lot of requirements, which must be put in place to curb the issues that might arise during the management of these kinds of project. First, it is important to understand the environment, within which the construction is to take place. Understandably, the construction site manager or site engineer, who can ensure that things like site clearing, excavation, structural base preparation etc. The idea of preparing work breakdown structure and other models such as Gantt chart can be helpful in in the construction management project since it describes all the activities of the project. Construction management project can capture the following aspects that can guide the project management in the construction management projects. Such aspects are very essential in projects

## ***Construction Project Risks***

Just like in any project, construction projects are not inevitable from risks. Risk can be identified as an event has a potential impacts on the objectives of a project (Iqbal, et al., 2015, p.66). Project risks associated to the construction work include budget under estimation, which may affect the overall completion of the project. With underestimation of the budget issue, it can also affect the completion timeframe of such projects. Secondly, construction project risks can also be associated with the infrastructure, for example, using obsolete tools and equipment, during the construction phase. Project constraints are the limitations involved during the implementation of the project. In this case, one of the major project constraints is transportation of the material from the source, whereby it is quite a distant. Also, poor road networks from the source makes it difficult to transport the materials on time.

## ***Work Breakdown Schedule (WBS)***

Work breakdown structure, and can be defined as a deliverable oriented tool for managing and breaking down the project into smaller components (Pawel, n.d). For the purposes of implementing the construction management projects, the requirements can be captured in WBS phase’s project as illustrated in the table below.

|  |  |  |
| --- | --- | --- |
| **Levels**  | **Descriptions** | **Criteria** |
| **I** | Subproject phases | The requirements are self-determining end product deliverable requires a large amount of work to be processed  |
| **Ii** | Tasks Phases | Comprises of more than one work packages deliverable |
| **Iii** | Works Packages Phases | A recognizable and manageable work item of activities. |
| **Iv** | Activity Phases | Lower-level jobs that consume a substantial amount of resources. In this phase, it captures all the activities |
| **xi** | Operations PhasesComprises of project itself | Comprises of day to day activities of the project which is part of an activity. All the project operations are highlighted here |

Table 1: WBS Phases in Construction Management Projects.

In simple terms, a project is broken down into various levels of the deliverables until the final deliverable for the project is given. Based on the diagram below, it captures the WBS for

Figure 2: The construction project management companies.

## ***Organization Chart***

 Organization chart provides an outline of the structure of how specific activities are directed in order to achieve the goals of an organization, in this case is the construction industry. Within the construction industry especially in UAE, the construction management organization structure provides a snapshot of the flow of information, between different levels of company. Based on the construction management projects, the organization chart cab take this format. Under the construction management administration in UAE, there is the raw material manager who will be bestowed on ensuring high-quality materials are available for the construction of the gymnasium. The primary goal for the organizational chart is to show graphically how leaders relate to each other in the company (Ahmady, Mehrpour, & Nikooravesh, 2016, p.456). It is the role of raw material manager to oversee the planning and coordination of the company's as well as the purchasing departments. The overload goal of this chart is show the leadership in a project.

Apart from the raw material manager, there is a construction area supervisor and the project manager at the same level. The other personnel under the construction area supervisor is architect and design team, whose role is to take the idea from the client and check the feasibility of the concept, and then translate it to design or model to enable the construction team to proceed. Also, there is an engineering team whose role is to ensure that as the construction is going on, the installation of various equipment such as electricity and machines required has been done effectively. Solar cell installers will be responsible for installing the solar modules and panels to the gymnasium. The water pump and installer will be accountable for installing the piping systems and ensuring there is adequate water supply to the whole building. The organizational structure can be presented using the organizational chart below.

The diagram blow provides a snapshot of the construction of the construction management

Figure 3; Figure 2: Construction Management Organization Chart.

As shown in the table above, the overall structure of construction management projects companies from the top is the CEO and then below there are other managers, who include raw material manager, the construction engineer, and the project manager. All these managers are in the tactical level of management. Other team members who are in the lower levels in the construction project include the construction and the planning team, architect and design team, engineering team, solar cell installers, and water pump installer.

 Apart from the above aspects, there are other key aspects that can lead to project success, which include use of Gantt chart, which is a diagram that represent the project schedule on how any given project should be implemented. Additionally, other approaches such as us of RACI matrix, which represents chart that represents the responsibility assignment in a project and mapping out every task, milestone or any critical decision involved in the tasks completions.

## ***Budget and Scope***

 One of the key issue and constraints in project management is budget to facilitate the whole process. It is well known that construction management projects require an extensive and tight budget require. For the cost control on the construction project, the whole plan and cash flow estimates can provide a comprehensive baseline reference for the subsequent monitoring and control. The final cost estimate in a project provides a comprehensive baseline that can be used in assessing the financial performance during construction project management. With a detailed cost estimate for the project, it means all project activities can be implemented successfully and efficiently. In terms of cost elements in construction management projects, various aspects that need to be considered include procurement of raw materials, cost of labor, cost of site clearing, excavation, legal requirements such as obtaining the construction license, etc. In terms of scope of the project, it is paramount to have a clear definition. Additionally, the scope of the project must solely be based on what the project intends to achieve.

# **Discussion**

This section presents the assessment of the results based on different literature done. One of the key areas of discussions as per the research done, revolves around the communication process in the construction projects. As per the related reviews, the communication process seems to have variable codes together with their respective descriptions. Most of the constructions management projects must depicts the project stakeholders, and to what extent the communication process must happen in a project. According to the discussion presented by the National Research Council (2015, p.12-15), the communication involves project management communication, inter-skilled management communication, and two-way communication, among others. The discussion of the communication processes various aspects of the project like the communication on the project funding, meeting between the management and all the stakeholders in the construction projects, etc.

Based on the interpretative summary of different test results from different literatures that effective communication is evident in the construction management projects, and this is one of the underlying issues that need to be addressed. Another fundamental issue that the construction project management team need to look at is the factors the management of the construction infrastructure. Notably, environmental factors is considered to be one of the fundamental areas for the requirements for the environmental assessment, within the construction management ought to have taken center stage in the management of these kinds of the projects. The environmental factors considerations include effects on the environmental cost. Construction engineers and other stakeholders must be environmental factors experts and water resource experts. Therefore, it is worth to highlight than the construction environment is critical.

Undoubtedly, construction management projects typically focus on the pre-construction and construction stages of a building project. In the pre-construction, it is all about the management and the construction team meeting and discussing on the plans, budgets and critical issues that may arise during the execution of a project. As affirmed by Waida (2019, para 3-5), the construction process starts at the point biddings have been received from the contractors. Thereafter, several stages must be followed, which include the initial stage, where the client shares ideas relating on the construction works. The construction management company is then requested to provide a design, which act as a blueprint for the construction work. The second stage as per that follows is pre-construction, whereby contract negotiations are made, and field testing is made at this point. Tools and equipment needed must also be identified, based on the agreed upon drafted budget. With proper tools then project can be completed effectively.

The actual construction begins at the execution stage, with the individual responsibilities assigned to the construction team members. During the execution stage, the construction project manager is responsible ensuring that everything is moving on smoothly. The next stage is commissioning of the project, where the construction and all the equipment are tested to ensure that everything has been done as per the requirements of the underlying project (Waida, 2019, para 5). Upon review of the construction, any issue arising from the work is directed to the construction manager, to ensure that everything is as per the contractual agreement. In some construction projects, the management and all the stakeholders must agree on some issues, such as warranty period, repair and maintenance, additional finances to the construction team, among others. Project completion being the last stage assumes that the construction has been completed as per the expectations of the customers. Upon completion, the contract is terminated.

# **Conclusions and Recommendations**

 Effective construction management depends on the integration of various components, which include the objectives of the customers, the ability of the contractor to complete the work, and lastly the ability to complete work within the budget and time frame given. The construction project management need to evaluate critical issues, to select the competent construction team to ensure that the project has been completed successfully. Issues relating to project objectives, scope and budget require careful consideration, to prevent any conflict between the contractor and the construction team. In terms of the recommendations, it is paramount for the project management team together with the clients, to have several meetings during the construction of the project, to ensure that everything is moving on smoothly. Such reviews serves as platform for deliberations and reviews of work done by the team. Lastly, since budget, scope, and contractor’s abilities are the one that can bring conflict during and after completion of the project, it is ideal to provide a comprehensive budget, and clearly define the scope of the project. Additionally, select the competent contractor is imperative, in ensuring that quality of work has been achieved.

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