



جامعة الجميع الذكية
EVERYONE'S SMART UNIVERSITY

Everyone's Smart University

Project (Spring 2021)

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Section

Master

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Advanced project Management

Instructions:

- اخر موعد للتسليم هو يوم الخميس 2021-05-20 في تمام الساعة ٩ مساءً.
- الإجابة متاحة باللغة الإنجليزية أو اللغة العربية مع مراعاة أن تكون المصطلحات العلمية باللغة الانجليزية.
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- يجب مراعاة أقسام البحث الرئيسية (مقدمة Introduction، دراسات علمية سابقة Literature Review، طريقة البحث Methodology، النتائج والمناقشة Results and Discussion ، وأخيراً المراجع References . وان كان هناك ملحقات Appendices يتم إضافتها)
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Instructor's Name: Eng. Dr. Akram M. S. Ali

Divide Tasks and Resources Amongst a Project Team in an Owned House Construction Project

1. Introduction

Building your own property is an exciting prospect, but one that requires precision project management. From budgeting and build schedules to calling in the professionals. Project management is key when it comes to running a successful project, and when you're getting on a big task like building your own home it's essential that you keep track of everything.

According to Hendrickson (2000) The owner normally makes required contractual arrangements for design and construction during the planning and construction of residential construction. Architects and engineers are normally in charge of residential project design, while a contractor is in charge of construction. Various options may be considered during the conceptual planning stage, and the technical and economic viability of each option will be evaluated and compared in order to choose the best project possible.

This project seeks to construct a new house for our family in Riyadh. As an owner I will incorporate the use of experts in the development of the house design. The whole project will last for approximately 61 weeks. It will have various stages including planning, construction, interiors design, and painting.

My role as a project manager in this project to oversee the planning and delivery of the house construction project. And ensure that work is completed on time and within budget, organise logistics and delegate work and keep track of spending. As a project manager, I have to coordinate with construction professionals to arrange schedules and direct activities.

2. Literature Reviews

2.1 Project management

Project management is a collection of planning and control techniques that provide a holistic view of project management in any industrial or commercial environment. It provides a methodological approach to the project. (Burke, 2003, p. 1).

Project management is an application of skills, knowledge and capability to deal with environmental uncertainty while satisfying divergent need of stakeholders from owners to suppliers and employees (Verzuh, 2008; Burke, 2003). While meeting these divergent needs of stakeholders, projects need to meet their fundamental objectives of cost, time and quality optimization in a short term temporary endeavor where each project is unique (Lewis, 2001; Burke, 2003).

2.2 Construction Planning

According to R. Prabhakar and G. Ravichandran (2014) Construction planning is an important part of the overall management process. The planning and management includes organizing the work, executing the work, correlating plan and progress information and controlling the work, the three inter-related factors of time, money and quality need to be managed in a proper way. Scheduling is one of the vital functions in construction project to determine the sequence of activities necessary to complete a project.

2.3 Construction Project Scheduling

The basic functional of a construction's project phases is significant for forming a construction team, and defining its roles and responsibilities, not essentially according to contractual roles. A construction project typically consists of six main phases, namely project briefing, designing, specifying, tendering, constructing, and maintaining. Cornick and Mather (1999) mentioned the functions for each construction project phase are always accomplished on any project, regardless of whether the delivery route is design-bid-build, design-build, construction management, or any hybrid of all three. achieved.

According to Uher and Loosemore (2004), a unique feature of construction teams is their composition varies from stage-to-stage of a project's lifecycle. This is true as the construction project team moves collectively over the life of the project with the function

of the same team member changing as each phase comes into being.. Figure 1.1 illustrates the construction phases and its functions that act as the basis for the general setup of a construction project team.

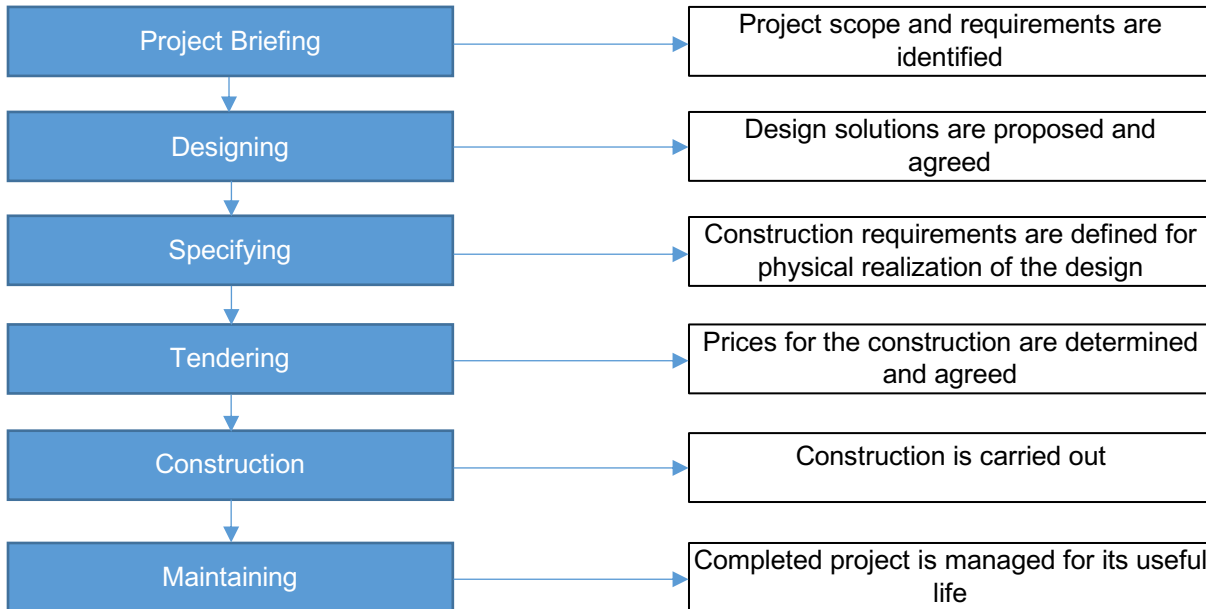


Figure 2.1. Generic phases in a construction project (Adapted from Cornick and Mather, 1999)

Project scheduling entails incorporating complexity into tasks and going beyond tools like "CPM" and "PERT" to terms like "critical chain," which adds a human element to the algorithm. This procedure aids in the reduction of time overruns, which can be as high as 40% to 50% (Khodakarami et al., 2007).

2.4 Construction Project Teams

The construction industry is a project-based industry. Each project needs different people in accordance with their professionalism, knowledge, and experience, and requires them to work and coordinate with others from different companies (Adair 1983).

According to Emmitt and Gorse (2007), construction project teams are a loose grouping of interested parties brought together for a specific construction project. People often portray a typical construction project team as a team that includes a project manager as an owner's representative, architect, or engineer for the design team and the contractor.

3. Methodology

This project seeks to construct a new house for our family in Riyadh with an area of 350m². The whole project will last for approximately 61 weeks. It will have various stages including planning, construction, interiors decoration, and painting. The cost for the project has been estimated for about 1 million Saudi Riyals.

In this project our focus is the construction phase. In such projects scheduling often begins tentatively; detailed schedules are developed as along the process. A contractor has been assigned that will coordinate all tasks in the construction project.

Scheduling has been developed based on construction project specification and lesson learned from previous projects in the market as shown in table 3.1.

Task	Description	Normal duration (Weeks)	Normal Cost (SAR)
A	Site preparation	2	10,000
B	Main Structure	26	500,000
C	Plumbing	5	50,000
D	Electrical	4	40,000
E	HVC	3	50,000
F	Elevator	2	60,000
G	Decoration	4	100,000
H	Plastering	4	45,000
I	wood works	2	25,000
J	Blacksmiths	2	30,000
K	Painting	3	35,000
L	Facade works	3	45,000
Total		61	1,060,000

Table 3.1: Project Schedule

Contractor helped in the resource allocation, a calculation of the whole project resources demand has been done according to the resource usage for each task, take up proportion being undertaken schedule, cost and effort. Resources are the materials or consumables or labors that are used to complete the tasks allocated to the project. These also define the expenditure or cost that will be incurred for the materials used in the project.

Critical path is very important to optimize of the project plan. It is well known that any kind of adjustments to the critical path can lead to the change of project's finish date resulting in changes in the resources, budget and scope of the project. Here, in this project we have used CPM and PERT methods for the determination of critical path.

In this project Microsoft Excel has been used for planning and scheduling and and store all project data.

4. Results and Discussion

Unexpected changes between the project scope and the budget, schedule or quality occur, not having a proper resource plan to begin will guarantee extra trouble. Rather obviously, if you don't know exactly how much of each resource you have at the present time and expect to have in the future, you cannot plan effectively.

A clear project scheduling plan will put into action the details that prepared during the forecasting step using data-driven conclusions. This includes having the team acquainted with the details of the project and its course of action. For project managers and schedulers, a resource planning tool will help you determine which staff members and what skillsets will best deliver on the owner expectations.

Working with such experience contractor help a lot in forecasting based on the market situation. He is also responsible about coordination all tasks on-site on this project to ensure that the project keeps moving toward on time completion regardless of setbacks.

Along with this there was some weakness in the planning and scheduling, because of the lack of technology. Using Microsoft Excel limits the analyzing of the project data which can be more effective to determine exactly the workload of the team.

Using CPM and PERT has a good effect on the planning as highlighting the critical activities and critical path duration required for completion for some activities. Which indicate that some activities are delayed. This help us to allocate resources for those labor, material and activities which are delaying the project.

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