

Chapter One

Introduction

1.1 General

Just as so how most things are; an unforeseen delay on a construction site is inevitable. Several factors fall responsible for this setback, but the two most common are due to either confusion or lack of communication. In an effort to evade that, most contractors calculate the additional amount of the expected time to be wasted and add it within the whole time schedule created.

So at first, one has to know how well every side in the project should be managed in order to have control over the time. In construction projects; the set of objectives that should be accomplished rely on implementing a series of operations which are subject to resource constraints.

Potential conflicts are always present, between the stated objectives with regard to scope, cost, time and quality, and the constraints imposed on both human and financial resources. After discovering which factor is responsible for the delay, those conflicts can then be well judged so they can be resolved at the onset of a project by making the necessary tradeoffs or creating new alternatives.

1.2 Research problem

Delay in construction projects lead to great losses in time and cost, which not only do they effect the project parties, but also the economy of the country as well. So when a delay occurs it should immediately be addressed, so as to determine what is responsible for it. There are four levels of conflict that take place, starting with **arbitration** that might cause **appeal** which may lead to **claim** ending in a **disagreement** that can go out of hand and in to a complicated situation that can stop the whole work.

1.3 Importance of research

In the Construction field, it is constant to face delays. This affects the project's objectives which lead to negatively affecting all partners of the project in sectors of cost, quality and time.

There are several factors that affect this industry depending on the general conditions within every region, those that economically affect the country and therefore cause losses in time and money.

Discovering the common factors in Sudan, which cause these delays in site projects, is a necessity if we want to find a solution that reduces, to the most, the loss in time and money, and to adopt a method to be followed in the construction projects.

Subsequently, the functions of construction project management generally include the following:

1. Specification of project objectives and plans including delineation of scope, budgeting, scheduling, setting performance requirements, and selecting project participants.
2. Maximization of efficient resource utilization through procurement of labor, materials and equipment according to the prescribed schedule and plan.
3. Implementation of various operations through proper coordination and control of planning, design, estimating, contracting and construction in the entire process.
4. Development of effective communications and mechanisms for resolving conflicts among the various participants

1.4 Research questions & Hypothesis

This research simply focuses on three questions. What are the pros and cons of the construction management style in Sudan? Are they subject to

standards and scientific methods? How do can we develop the gaps in the construction industry in Sudan?

These are the main three questions in this study which the researcher will work upon to find solutions, and by also shedding light on some previous studies, in addition to the data obtained from the distributed questionnaires.

Hypothesis

Project management focuses on eight distinct factors that the knowledge and attention paid to them is a requirement for every project manager:

- 1- Project integration management to ensure that the various project elements are effectively coordinated. Is it applicable to be in contract in the Sudan construction industry?
- 2- Project scope and document management to ensure that all the work required (and only the required works) is clearly included in the contract from the beginning.
- 3- Project time management to provide an effective project schedule. Are schedules realistic according to the availability of resources? Is there a regular and suitable update?
- 4- Project cost management to identify needed resources and maintain budget control. Cash flow availability? Are payments received on time?
- 5- Project human resources management to develop and effectively employ project personnel. Are they efficient in their positions as required?
- 6- Project quality management to ensure that the functional and technical requirements are met. Which of the common type of resources are of better quality?
- 7- Project communications management. Does it to ensure effective internal and external communications?

- 8- Project risk management to analyze and mitigate potential risks. Is the decision based upon scientific method of risk analysis?

All of these eight hypotheses should thoroughly be studied in order to discover the weaknesses in the management system in Sudan.

1.5 Objectives and scope

The goal of this research is to provide solutions that help delivering construction projects on time and budget. So the objective will be divided as the following:

Objective 1: To Promote and enforce the benefits of the current changes in the knowledge triangle (contractor, owner and consultant).The conflict between these three should be resolved at the onset of a project by making the necessary tradeoffs or creating new alternatives from the beginning to clear the one's responsible for the delay.

Objective 2: To identify the major causes of delays in building construction projects in Sudan using an opinion survey and previous studies.

Objective 3: To identify the perceptions of the three main parties regarding the causes of delays and to suggest possible ways of eradicating or minimizing them.

Objective 4: To study well, the tools of time controlling, and improving them to be more effective.

1.6 Research methodology

Field of study: the qualitative data was generated from literature review to measure the project performance, while the quantitative was generated from a questionnaire survey.

The latter was analyzed using average index technique, and the summary of that analysis will be tabulated in chapter four.

This questionnaire was distributed among thirty different companies in Khartoum sector, including the two types of opinions of contractors and consultant companies, and this analysis is applied on them both simultaneously.

This study was prepared using references that talk about how delay in construction projects should be handled. Internet was also a helpful source in this study which has provided rich information. The questionnaire was made to gather important information and details which help in reaching a solid conclusion. In addition, interviewing experts who are involved in this industry and recording their opinions was very beneficial to this work. All of these approaches will be gathered and analyzed using decision analysis to determine in which is the delay laid, then their values are assessed in proposal delay module. Optimal solutions are then determined as recommendations at the end of this research.

A questionnaire was used to carry out the study. The questionnaire was divided into seven parts. The first one consists of basic questions and background of the project, and the rest of the parts discuss every factor that has an impact in the delay, grouped into ten different categories such as engineering, material, etc. The researcher interviewed project engineers, mid level employees and contractors. It has created a brief idea of the causes of delay to figure out the major one's responsible for delay in Sudan, and then started focusing on each & every element of delay separately.

1.7 Research contents

The research contains five chapters. Here is a summary for each one:

Chapter one:

The researcher starts with a **guideline** reflecting the reason of the study. Then in paragraph two, comes the **importance of the problem**, showing the reasons why this subject is important to be studied. A brief **introduction** to note which items should be managed in every construction project, the chapter mentions a few. The researcher then describes the four **objectives** which she aims to reach in her study, and ends the chapter by the research's **methodology** which explains the criteria that she has followed to reach her objective.

Chapter two:

The theoretical background obtained from several references about the management criteria and control system. It discusses the knowledge of construction management and delay management in the industry, which both show in points how to manage delays. The researcher discusses delay management systems and techniques used in construction to reduce the delay. The researcher ends the chapter by discussing management tools and techniques and by reviewing some **previous studies** to shed light on the different thoughts and experiences in this subject.

Chapter three:

This chapter talks extensively about the **research importance** and the identification of the problem and all factors causing it. A **Questionnaire flowchart** follows after, describing all parts of the questionnaire, and then finally the researcher lists the **advantages and disadvantages of the Questionnaire** in several points.

Chapter four:

The sample covered by the questionnaire survey was a small one, of about 30. The questionnaire's results were analyzed using SPSS statistical program. In this chapter there is an articulate analysis for each question through tables and charts that simplify the results for all questions, and discussing every result.

Chapter five:

In this chapter the researcher puts her conclusions from the study, followed by her recommendations for constructions stakeholders and further researchers.