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**"Constructability Analysis for Administrative
Buildings in Consultancy Firms"**

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Abstract

Introduction:

Successful Construction projects are a result of proper planning, scheduling, designing, executing and controlling the various aspects of the projects. It is essential to monitor and control the projects budget, time and performance. Subsequently, an efficient planning and control over the design phases of such construction projects is vital. Hence, avoiding any deviation from the planned project's schedule and budget. In addition, failure of design professionals to consider how a builder will implement the design can result in scheduling problems, cost escalation, delays and disputes during the construction phase.

The integration of construction knowledge and experience during the design phase is called 'constructability'.

Hence, the main objective of the research is to determine whether the constructability process is known by designer and construction engineers. A questionnaire was prepared to check this and also to determine the main factors and benefits of applying a constructability review by design firms.

From the questionnaire, it is found that many of the design engineers don't take into consideration time and money spent on re-engineering due to an error or omission which appeared in the construction of administrative building projects in Egypt in addition to all projects which leads to many problems in construction phase that causes a project failure in achieving its objectives. So, it is essential to have a constructability review in the design phase in order to achieve our concept, and the objective of the research. Also, a case study was performed to assess the impact of applying constructability review concept during the design phase.

CHAPTER (1)

INTRODUCTION

1.1 General:

The Owner, considers Construction Cost, Time and project quality as the major influencing factors to his/her plan and strategy. Subsequently, an efficient planning and control over the design phases of such construction projects is vital. Hence, avoiding any deviation from the planned project's schedule and budget. Failure of design professionals to consider how a builder will implement the design can result in scheduling problems, cost escalation, delays and disputes during the construction phase.

The integration of construction knowledge and experience during design is called '*constructability*'. Today, project team members sometimes perform constructability reviews during the design phase to ensure that the design is buildable within budget.

Measuring the success of the adapted constructability process starts at the advertisement and ends with the completion of the project. Such indicators will appear early in the conceptual design phase.

1.2 Problem Statement:

It has been noticed that some of the design engineers don't take into consideration time and money spent on re-engineering or rework due to an error or omission which appeared in the construction of administrative building projects in Egypt, in addition to all projects which lead to many problems in construction phase that causes a project failure in achieving its

objectives. So, it is essential to have a constructability review in the design phase in order to achieve our concept as shown in Fig (1-1).

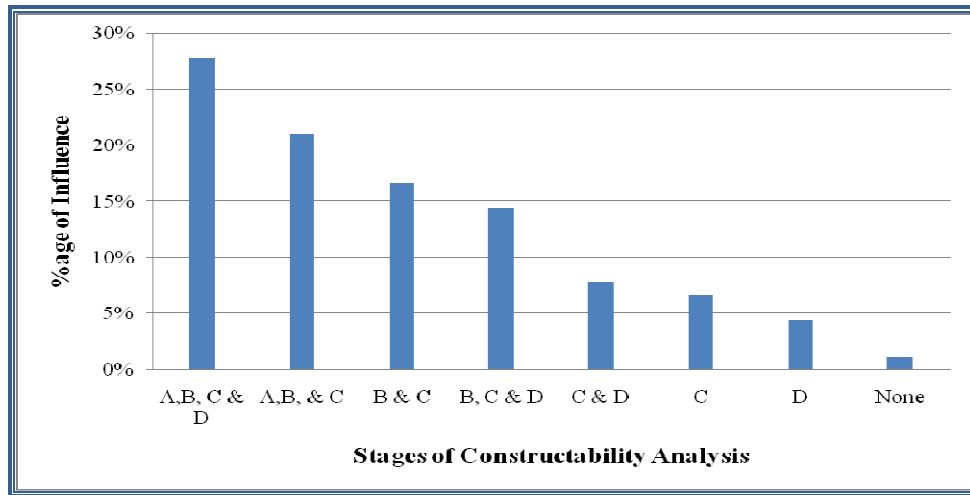


Figure 1-1: Timing of Constructability Reviews (*Adapted from M.ASCE et al., 2002*)

A: Conceptual Planning Stage;
C: Developed Design Stage;

B: Preliminary Design Stage;
D : After Finishing the Design

An administration building was selected in this study for the following reasons:

- 1- The owner expects to make a profit which will be delayed as a result of the delay in building construction or another purpose which is using the building.
- 2- Sometimes duration of construction is very critical as the cost of the project will increase with increasing the construction duration or any delay in the project.
- 3- In large scale projects there is a lot of needed coordination between all disciplines to ensure that there are no problems during construction phase or keeping them to a minimum level.

1.3 Research Objective:

The aims of this study are as following:

- a) Checking if the concept is known to the design and construction engineers or not
- b) Identifying the main factors that affect the implementation of the constructability in the design phase.
- c) Identifying the benefits as a result of constructability implementation.
- d) Identifying the main factors affecting the constructability in all project phases.

1.4 Methodology:

- 1- Defining the problem and thesis organization
- 2- Definitions and expressions related to constructability
- 3- Reviewing of the relevant previous literature
- 4- Identifying the factors that affect constructability in the projects through conducting questionnaire and interviews with experts of construction and design
- 5- Analyzing the collected data
- 6- Conclusions and Recommendations for further researches
- 7- References

1.5 Thesis Organization:

The work of this research will be organized as follows:

Chapter 1: INTRODUCTION

This chapter includes the introduction to the research, problem statement, research objectives, scope of the study and thesis organization.