



PROJECT PROPOSAL FOR THE COURSE OF MS-100

On

**Assessment of Time and Cost Overruns in Construction
Projects**

(Case Study at Defense Construction Enterprise)

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1. Introduction

1.1 Background of the study

Current practice of the construction industry shows that it is a rare event most construction projects are completed on the scheduled time, budgeted cost and desired quality. The main reason behind is that construction projects are unique in nature, time consuming, cost demanding and they are full of uncertainties. As a result, claims and disputes become common phenomena especially on large civil engineering contracts.

Generally in Ethiopia and particularly in DCE, the number of construction projects is increasing from time to time. However it became very difficult to complete a project in a stipulated time and cost given in the initial contract documents. Time and cost overrun are the common phenomenon in almost all construction projects. Number of unexpected problems and changes from original design arise during construction phase, leading to time and cost overruns.

Frequent causes of time and cost overruns such as necessary variations, changes in design, delayed approval of payments, different site condition and staffing problems are investigated to be faults of consultants. Delayed payments to the contractor, less emphasis to planning, client initiated variations, setting unrealistic time schedule, executive bureaucracy and finance shortage are found to be causes for which the project owners are responsible.

Causes for which the contractors are responsible include provision of unrealistic schedule, late material supply, failure to update schedules on time, staffing and performance problems and poor communication with consultants.

Time and cost overruns in this context is found to be extremely significant and serious problem in DCE, and also in other construction companies in Ethiopia compared to other countries. Most of the projects exceed their completion time and cost higher than their allocated contract time and budget.

1.2 Statement of the problem

The triple constraints to be considered during construction are time, cost and quality of projects. This needs proper planning of time and cost with their acceptable application. But time and cost overruns is created due to different factors by stakeholders, which affects delivery of construction projects to the client on the allocated budget and estimated time. The problem statement is completion and handover of construction projects with in the contract amount and time, or improving time and cost management in DCE.

Major questions that need to be raised are:

- What are the causes of time and cost overruns?
- How could the time and cost overruns can be avoided or minimized?
- What is the trend of projects completion and handover in DCE concerning with time and cost?

1.3 Objectives of the study

The objective of this project is to determine the causes of time and cost overruns in DCE construction projects, and to mitigate their impacts associated with time and cost claim as well as disputes. It has been repeatedly debated that time delays in completion time of construction projects are a frequent problem in DCE.

Therefore, this project analyses the principal cause of delay, their overall effect, and resolution methods and also the responsible parties will be identified based on the causes assessed. This study is undertaken with the following four principal objectives;

- ✓ To assess the extent of time and cost overruns in construction projects with respect to the projects original duration and contract amount.
- ✓ To evaluate the existing problems associated with construction projects completion time and cost.
- ✓ To identify the responsible parties those contribute to critical causes of time and cost overruns.
- ✓ And finally to forward recommendation about minimizing or avoiding cost and time overruns, and hence to reduce its consequential effects in DCE.

1.4 Significance of the study

The primary objectives of construction projects are to optimize quality, cost and time; and hence this thesis studies the causes and presents the resolutions of time and cost overruns. It also assesses how to minimize or avoid additional cost and time in the construction projects of DCE. In DCE, where the necessary databases do not yet exist and the level of construction technology and its management is at infant stage, fulfilling at least one of the requirements is difficult.

Therefore, this study focuses on two of the basic requirements i.e. time and cost. To make the issue specific, only projects constructed by DCE are considered. Consequences of delays in construction projects are discussed and hence identification of causes, their relative impact in delaying projects based on contract time and cost are analyzed in detail.

Therefore the significance of this study is to recommend practices, procedures and methods that can be used to minimize or avoid time and cost overruns of construction projects; and to handover or deliver construction projects to the client within the given time and cost entitled on the contract document.

1.5 Scope and Limitation of the study

The scope of this thesis is to carry out the conceptual and practical review on time and cost overruns of construction projects. When construction projects are performed, time and cost overrun arise due to different causes by stakeholders. These risen overruns need time and cost management requirements, such as preventive and resolution. If these overruns can be controlled smoothly, it can minimize wastage of resources.

This thesis, as a result, takes this context into consideration to develop the preventive and resolution methods to come up with a researchable problem, its methodology together with identifying information sources for the thesis. The limitation of this study is that, it is conducted only on construction projects that are carried out by DCE in different parts of Ethiopia. However the established principle of formulation could be applied for similar construction companies.

1.6 Research methodology

1.6.1 Research design

The key task in research is to design research process so that the information obtained permits the assessment of their impact. The basic research design selected is an exploratory research methodology using both primary and secondary data.

This design is chosen, since it enables to assess the magnitude and scope of problems and facilitate for the suggestion of solutions. Generally, the research process is designed through defining the research problems, its objectives and questions.

To accomplish these objectives the research is made using the following methodologies:

- Desk study of literature review of different books, master's thesis, web sites of similar cases and sample project reports.
- Survey study: by collecting information and data through questionnaire, interview and case studies.
- Data sources: Study population (Defense Construction Enterprise managers and professionals)
- Research instruments and data collection: Questionnaire, interview and Archival records.
- Data Analysis: Quantitative and Qualitative Analysis.

Overall, the following procedures are conducted and followed throughout the thesis writing:

- Thesis proposal is developed, after background study
- Variables are identified through literature review
- Questionnaire and interview are prepared, conducted and distributed
- Questionnaire response is collected from respondents
- The collected data are analyzed, discussed and findings are taken out

1.6.2 Sample and sampling techniques

Sampling design is a definite plan for obtaining a sample from a given population. It refers to the technique or the procedure the researcher would adopt to select units for the sample. It will also indicate the number of units to be included in the sample also known as Sample size.

The first step in developing any sampling design is to clearly define the aggregate of sampling units, namely, the population. The sampling unit must be identified before selection of a sample.

A sampling unit may be a natural geographical unit such as a state, a district, a village or a constructed unit. It may be a social entity such as a family or a school. It may also be an individual.

Accordingly for this project study:

- ❖ The sample unit is a public enterprise which is called Defense Construction Enterprise.
- ❖ The population is DCE managers, team leaders, professionals and workers as a whole; and the population size is 1417 permanent and contract employees in number.
- ❖ The sample size is determined based on “sample size calculator”, and it is needed to be 48 in number, which are 5 general and process managers, 10 team leaders, 15 project managers and 18 experts.

The basic technique or an instrument used in sampling is purposefully simple randomly selected managers and professionals of Defense Construction Enterprise employees.

1.6.3 Source of data and collection

Different types of construction projects, executed by Defense Construction Enterprise, with their contract and actual completion time and cost are included. This helps to understand how the actual completion time and cost deviates from contract.

Detailed questionnaires are designed for the assessment of cost and time overruns in construction projects. Questionnaires are distributed to the managers and professionals or experts that play dominant role in day-to-day construction activities. In addition data is collected through interview from selected managers.

There are approaches of data collection namely field work (primary data collection) and deskwork (secondary data collection). In this research both fieldwork and deskwork are going to be used. The literature survey is used to limit question that have been raised in the research.

The questionnaires are structured to address causes, impacts, resolution and Defense Construction Enterprise current practices in minimizing and/or administering cost and time overruns. Moreover, opinion of managers is collected through interview.

The questionnaires include the following areas: General information (profile and experience in construction) of the construction managers and professionals.

In general, the data collected has been used to: Identify the root causes of time and cost overruns in construction projects, assess the impacts and practice in use by the Defense Construction Enterprise in mitigating risks, and collect the response of the practitioners on mitigation of claims.

1.6.4 Data analysis

This deal with the analysis of the information gathered from the questionnaire survey and includes identification of rate of occurrences and impacts of time and cost overruns, identification of responsible party, identification of hypothesized causes and identification and analysis of case study projects.

These projects are recognized and analyzed while processing the questionnaires with respondents, and also analysis of the cases of selected projects is carried out through document study,

Analysis of the experience of stakeholders is carried out through questionnaires; and the analysis is carried out based on the responses of the participants, giving special attention to causes, impacts and resolutions of overrun.

Discussions are made based on the analysis made on the gathered data to draw conclusions and answering the question of the problem statement of the study.

Conclusion is produced from the analysis made in the research and recommendations are given for avoiding and/or administrating overrun. In addition some areas of further research are suggested.

1.7 Organization of the study

The project is logically organized into five (5) chapters and references: Chapter one deals with the introduction, which talks about the general idea and relevance of the study. It defines the background, the problem statement, the objectives, the scope and limitation, as well as the organization of the thesis. Chapter two comprises of literature review, and quotes the various related works done in this area of study.

Chapter three attempts to describe in detail the methodology of the project followed in this research study. Chapter four contains data presentation, analysis of the information gathered through the data survey and interpretation. Chapter five provides summary of findings, conclusions and recommendations of the study.

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