

# Analysis of Cost and Schedule Overrun in Construction Projects

Mandar Borse<sup>1</sup>, Pranay Khare<sup>2</sup>

<sup>1</sup>P.G. Student, Civil Engineering Department, Savitribai Phule Pune University  
Dr. D Y Patil School of Engineering and Technology, Lohegaon  
Pune, Maharashtra 412105, India

<sup>2</sup>Assistant Professor, Civil Engineering Department, Savitribai Phule Pune University  
Dr. D Y Patil School of Engineering and Technology, Lohegaon  
Pune, Maharashtra 412105, India

## Abstract

In construction industry time and cost performance are the fundamental criteria for success of any project. Unfortunately construction industry facing poor performance leading to failure in achieving effective time and cost performance. Therefore to complete the project on time it is necessary to reduce the causes which are responsible for time & cost overrun. The aim of the study is to analyze the construction projects to determine construction cost and schedule overrun in various types and size of the projects. Number of samples were collected and analyzed to find various factors responsible for the cost and schedule overrun. This study will help the practitioners to implement the mitigation measure at planning stage in order to achieve successful construction project.

Keywords: *Cost overrun, Schedule overrun, Construction Project, Analysis*

## 1. Introduction

The construction industry plays a central role in the creation of any nation's wealth. For developing economies, it forms the backbone of most industries. Cost escalation, schedule overruns in construction projects often offset the intended contribution of the industry to the economy. Time delays, cost overruns generally due to factors such as design errors, unexpected site conditions, increases in project scope, weather conditions, and other project changes.

A commonality among construction industry is the inability to complete projects on time and within budget. This is a chronic problem for the construction industry due to factors such as design errors, unexpected site conditions, increases in project scope, weather conditions, and other project changes. As the construction industry continues to grow in size, so do planning and budgeting problems. This is because it is common for projects not to be completed on time and within the initial project budget. In fact, it is one of the most important challenges facing the construction industry today. An out of control construction cost adds to investment pressure, increases construction

cost, affects investment decision-making and wastes the national finance. Cost overrun in construction is a worldwide phenomenon, and its effects are normally a source of friction between owners, project managers, and contractors. Hence, it is important to identify the factors that contribute to cost and time overrun and propose mechanisms that could be used to systematically address the causal factors to avoid and reduce the problems.

The aim of the study is to establish significant causes of cost escalation, schedule overruns and propose mechanisms that could be used to systematically address the causal factors.

## 2. Objective

1. The aim of the present study was to investigate the increasing frequency of cost overruns and time delays on construction projects, and to provide recommendations for addressing the situation.
2. Identification of the distribution and trends of the cost overruns and time delays of contracts.
3. Investigation of the reasons and the responsibilities for cost overruns and time delays by collecting, reviewing, processing and analyzing change order and contract information data.
4. Analyses for identifying the factors that significantly influence cost overruns and time delays.
5. Development of a set of recommendations to help construction industry manage the problem of cost overruns time delays.
6. To assess which causes need the most attention by stakeholders.
7. To assess how frequent each of these causes occur.

### 3. Literature Survey

T.Subramani , P S Sruthi, M.Kavitha (June2014) found that consensus of opinion exists between respondents on the causes of cost overrun. The results showed that, slow decision making, poor schedule management, increase in material, machine prices, poor contract management, poor design, delay in providing design, rework due to wrong work, problems in land acquisition, wrong estimation and estimation method, long period between design and time of bidding, tendering are the major causes of cost overrun.

According to Ahmed et al. (2002), delays on construction projects are a universal phenomenon. They are usually accompanied by cost and time overruns. These have a debilitating effect on parties to a contract such as owners, contractors and consultants in terms of growth in adversarial relationships, mistrust, litigation, arbitration, cash-flow problems and a general feeling of trepidation towards each other.

Falqi in 2004 takes into account several factors, however, are particularly noteworthy because of their significant impacts on the quality, cost and time of construction. It is axiomatic of construction management that a project may be regarded as successful if it is completed on time, within budget, and is of the desired quality. Cost escalation, schedule overruns and quality shortfalls can occur due to a wide range of causes on various types of projects. If project costs or schedules exceed their planned targets, client satisfaction would be compromised..

### 3. Problem Statement

A commonality among construction industry is the inability to complete projects on time and within budget. This is a chronic problem for the construction industry due to various factors related with owner, contractor, consultant, design, material, equipment and other project changes.

As the construction industry continues to grow in size, so do planning and budgeting problems. This is because it is common for projects not to be completed on time and within the initial project budget. In fact, it is one of the most important challenges facing the construction industry today. An out of control construction cost adds to investment pressure, increases construction cost, affects investment decision-making and wastes the national finance.

Cost overrun in construction is a worldwide phenomenon, and its effects are normally a source of friction between owners, project managers, and contractors.

Hence, it is important to identify the factors that contribute to cost and time overrun and to propose mechanism to reduce risk

#### 4. Methodology

A thorough literature review was done and also the expert opinions from industry experts were taken through which a number of causes of cost overrun and time overrun were identified in the local construction industry scenario.

Number of factors were finalized to made part of the survey questionnaire.

Questionnaire was developed to obtain information about causes of cost overrun in construction industry, it was asked to rate those initially identified factors according to their severity.

A survey was conducted through postal mail and personal interviews.

Analyze the data received from the survey to find the significant factors resulting into cost overrun and schedule overrun in construction projects.

### 5. Data Collection

Number of factors were finalized to made part of the survey questionnaire. Questionnaire was developed to obtain information about causes of cost overrun in construction industry, it was asked to rate those initially identified factors according to their severity. Factors considered for questionnaire survey is as below.

1. Owner related
1. Contractor related
2. Consultant related
3. Design related
4. Material related
5. Equipment breakdowns
6. Labor related
7. External factors

The Questionnaire was distributed to the 70 members of top and middle management of private and government construction firm. The respondent involved in this survey are civil engineers, contractors, owners, practitioners who are working in construction industry. Out of 70 questionnaire 52 responses were received. The reliability of survey is high as all respondents are well experienced officials in construction industry. Fig 1 shows the percentage of respond received.

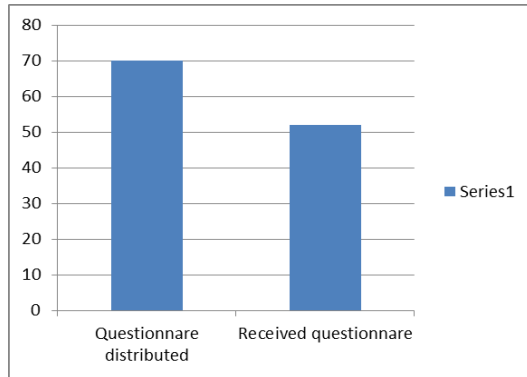


Fig 1 Questionnaire survey

## 6. Analysis

Data received from the survey is analyzed using following formula.

$$\text{Average Rating} = \frac{X_1 + X_2 + X_3 + \dots + X_n}{N} \quad (1)$$

Where,

$X_1, X_2, X_3, X_n$  - Rating given to factor mentioned

$N$  - Number of projects.

This rating is used to judge severity and likelihood of the factors responsible for the time and cost overrun in construction projects.

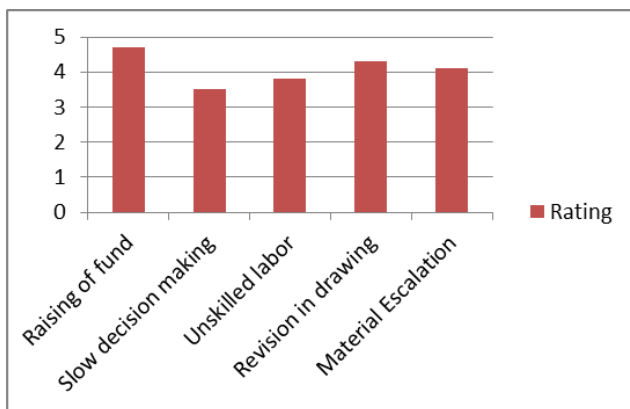


Fig 2 Analysis of data received from questionnaire survey

Questionnaire Survey is carried out for number of local construction projects. Rating from this survey was analyzed using above method to find severity and likelihood of the risk responsible for cost and schedule overrun. From survey and its analysis it is found that slow

decision making, design change, fund, lack of planning, extra claims, political risk are the more severe and most occurring problem responsible for time and cost overrun in construction projects.

## 7. Conclusions

1. Time and cost overruns is a severe problems faced by large construction industries in India. It is resulted from various factors which had been identified in this study.
2. It was found that most significant factors causing time and cost overruns in Indian construction are material market rate, lack of planning, slow decision making, raising of fund, contract modification, project location, depends on the fresher's to bear the whole responsibility for time overruns and high transportation cost, change in material specification, escalation of material price, frequent breakdown of construction plants and equipment's, and rework for cost overruns.
3. So this implies that a need of urgent attention is to be put on these factors to avoid time and cost overruns
4. Construction industry need to be aware of planning.
5. New techniques need to be introduced to reduce problem responsible for time and cost overrun in construction projects.

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