

# An Analysis of Cost Overruns and Time Overruns of Construction Projects in India

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**Abstract** — The purpose of this research is to assess causes and effects of cost and time overruns in construction projects. This study is descriptive, designed to obtain views from, consulting firms, regulatory boards and construction firms in regard to causes and effects of cost and time overruns in construction projects in India. The main aim of this paper is to identify the major reasons for cost overruns in construction projects in India as well as the critical success factors that are helping to avoid the cost overruns. For this, the existing literature is reviewed and critical success factors are identified. Based on them, survey questions and interview questions are prepared. The findings supported the proposed hypothesis, i.e., lack of certain critical success factors leads to cost overruns in construction projects in India. They also confirmed the proposed proactive and reactive strategies of some researchers. The effective critical success factors include appropriate planning in the initial stages, skills of contractors and architects, good relationship and regular coordination among client and contractor, and early contribution of contractor with the project. The ideal methods that help to reduce cost overruns include efficient planning, proper management of site and supervision of the project, suitable planning and arrangement of project, proper methods for construction, regular meetings on development of the project, and hiring proficient subcontractors and suppliers.

**Keywords** — India, construction, critical success factors, cost overrun

## Introduction

The Construction industry has a greater impact on the economy of all countries. It is one of the sectors that provide crucial ingredients for the development of economy.

Due to poor cost and time management these days, the construction industry is facing a huge amount of cost overrun. This has become quite a problem for the construction industry. Poor cost management and overrun are huge problem and very serious issue when it comes to project cost in both developed and emerging countries. The increasing complexity of infrastructure projects and the environment within which they are constructed place greater demand on construction managers to deliver projects on time,

within the planned budget and with high quality. It is known fact that a larger number of infrastructure projects in India have been delayed due to various issues. Infrastructure plays a paramount role in the economic growth of our country. Today, India is one of the leading outsourcing hubs in the world.

## 1.1 Construction sector in India

The Construction industry of India is an important indicator of the development as it creates investment opportunities across various related sectors. The construction industry has contributed an estimated 308 billion to the national GDP in 2011-12 (a share of around 19%). The industry is fragmented, with a handful of major companies involved in the construction activities across all segments; medium-sized companies specializing in niche activities; and small and medium contractors who work on the subcontractor basis and carry out the work in the field. In 2011, there were slightly over 500 construction equipment manufacturing companies in all of India. The sector is labour -intensive and, including indirect jobs, provides employment to more than 35 million people. The more resources, engineering labour, materials, equipment, and capital market exchange are provided form with in the national economy, the higher the factor of the extent of self reliance. The increasing complexity of infrastructure projects and the environment within which they are constructed place greater demand on construction manager to deliver projects on time within the planned budget and with high quality.

The successful execution of construction projects and keeping them within estimated cost and prescribed schedules depend on a methodology that requires sound engineering judgment. To the dislike of owners, contractors and consultants, however, many projects experience extensive delays and thereby exceed initial time and cost estimates. This problem is more evident in the traditional or adversarial type of contracts in which the contract is awarded to the lowest bidder the awarding strategy of the majority of public projects in developing countries like India. Although the construction industry in the our country has suffered ever since last decade, recent events in the region coupled with the restructuring of economies, joining regional and global free trade organizations, and attracting foreign investment are expected to yield an

unprecedented growth in the construction activities. Therefore, improving construction efficiency by means of cost-effectiveness and timeliness would certainly contribute to cost savings for the country as a whole.

### **1.2 Cost overrun**

It is the phenomenon in which the client has to spend more money for the completion of project than the originally estimated i.e. the project goes over the budget.

### **1.3 Schedule Overrun**

It is the phenomenon in which the project gets delayed beyond its expected completion time due to certain difficulties i.e. more time is required to finish the project than initially planned.

## **2. LITERATURE REVIEW**

- T.Subramani, P S Sruthi, M.Kavitha (2014), “Causes of Cost Overrun in Construction” The industry plays a pivotal role in developing the country’s infrastructure, a pre-requisite for high levels of economic growth. Most construction projects experience cost overrun and it put massive financial burden on the client or owner. Therefore this research was carried out to identify the causes leading to cost overrun in construction projects. Desk study along with questionnaire survey was used to identify the causes of cost overrun. A total of 30 filled questionnaires were collected from clients, consultants and contractors. From the analysis of the results it was 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/ estimation method, and long period between design and time of bidding/tendering are the major causes of cost overrun.
- Ram Singh(2009), “Delays and Cost Overruns in Infrastructure Projects: An Enquiry into Extents, Causes and Remedies” Ram Singh say media reports abound on instances of prolonged delays and excessive cost overruns in infrastructure projects. Only a small number of projects get delivered in time and within the budget. Examples of successful project implementation, like construction of the Delhi Metro Rail, are few and appear only far in between. Indeed, the problem of time and cost overruns in India is widespread and severe. Yet, very few empirical studies exist on the subject. Even rarer are the studies based on completed projects. As a result, the extents as well as the causes behind delays and cost overruns have remained under researched. This study

investigates the various issues related to delays and cost overruns in publically funded infrastructure projects.

- Sai Murali Krishna Reddy. Raya and S.S Bhanu Prakash (2016), “Cost and Time Overrun in Indian Construction Industry” A lot of research and studies have been done to identify the root cause of the time overrun and cost overrun in construction projects which lead to the delay in the project completion Time and cost are the lifelines of any and every project. It is of supreme importance to study, analyze and evaluate the common factors leading to these constraints and suggest the best mitigation measures to overcome time and cost overrun constraints. During the construction phase it is the prime responsibility of the project managers to monitor cost and time and avoid the overruns of the both cost and time. Due to these limitations, this paper discusses the effective cost and time control overrun practices in construction industry.

### **2.1 Causes of Time Overrun**

Majority of infrastructure projects in India are affected by time overruns. These overruns vary from few months to as high as five or more years placing the project viability at risk. Survey respondents identified the bottle neck which affect their projects and the challenges they face in conquering them. These bottlenecks, as enlisted below, are divided into two phases – (i) pre-execution phase and (ii) execution and closing phase.

Delays in land acquisition and site handover is the primary reason for time overruns in pre-execution phase Delays in land acquisition are driven by several factors. One of the prime factors for these delays is the resistance by the local community. This resistance is on account of poor compensation and the undervalued market price of land – leading to many disputes with the local community. Manifold regulatory approvals from several agencies leading to delay in Construction. Poor program management resulting in ineffective co-ordination with other projects and schedule delay Insufficient management of Project design/scope change is widely prevalent in the infrastructure sector availability of resources for infrastructure sector is limited plans, specifications, etc are not received by the contractor in time .Extra work has to be carried out unforeseen problems like adverse weather, natural calamities, etc.

### **2.2 Causes of Cost overrun**

Many causes of cost overrun have been listed from the literature review. But the causes of cost overrun in those previous studies were from the view of a particular stakeholder or focusing on a particular area or country. This makes it necessary to know the view of construction stakeholders in our region, in

India. Knowing the causes allows us to prioritize action to mitigate cost overrun. The basis of results in this thesis is the questionnaire survey conducted among the stakeholders in construction industry. The causes of cost overrun were first examined on the basis of responses from clients, consultants and contractors separately. The causes were ranked on the basis of occurrence, impact and importance as responded by the different stakeholders the rankings by each category of stakeholders will be correlated using spearman's rank correlation to see if the responses can be taken as a whole to determine importance. "Slow decision making" was ranked as the cause with the highest probability of occurring and having the highest impact, and making it the most important cause of cost overrun according to clients. Many of the clients who responded were part of government authorities and they worked with government infrastructure projects.

"Poor design/delay in providing design" was ranked first in importance by consultants. It was also first in terms of impact on cost. Since the responsibility of providing the design lies with the consultants themselves, the high ranking suggests consultants acknowledge a critical area of project management. "Poor schedule management" was ranked 2nd in terms of importance and was 1st along with increase in material/machine prices in occurrence. "Poor schedule management" was ranked similarly high with similar importance by clients also, Keeping up with the schedule is a responsibility of contractors.

### **3. DATA COLLECTION & ANALYSIS**

Based on the all the projects, this section analyses the main reasons for cost overruns and delays and they have many risk factor. This section is based on the results of all the projects. The interviewees were asked about the main reasons for cost overruns in the poor cost performance projects and the factors which avoided it in good performance projects. The interviewees were explained with the definition of cost overrun, according to this research so as to prevent their own perception from clouding the responses. The data about each case were mainly collected from the interviewees, so it is important to make sure that they knew the definitions of the research. Some information was also collected from Internet.

In this research, two renowned Indian construction companies with similar characteristics were chosen. Due to confidentiality issues, the name of the companies will not be revealed.

The answers given by the project managers, contractors, consultants, construction managers, and representatives of clients from the survey are analyzed. Some information about the company has been given from the interviewees and the information given has been verified with Internet research. Four case studies were used in the research from the reputed contracting company in India. The

interview protocols were sent to various people by the researcher.

Four interviewees have acknowledged to have a one-hour semi-organised meeting. Along these lines, the whole research configuration of this thesis was focused around the four meetings which were conveyed by the two task administrators of an organisation and the review aftereffects of members. Each of the undertaking administrators was talked with around two separate activities unified with great execution and an alternate with poor execution. According to the necessities of the exploration, the interviewees must be either senior venture pioneers or at the base ought to be working at a managerial level. To guarantee that the interviewees met the necessities, a portion of the inquiries were about the points of interest of interviewees.

### **4. CONCLUSION**

This study is conducted to investigate the cost overrun in building construction projects from consultants' perspective through a questionnaire survey. The analysis of the participants' responses reveals that the cost overrun in building construction projects is a severe problem. 100% of the respondents indicated that the average cost overrun that they have experienced is between 10% and 30% of the project's estimated cost. Inputs of the consultants underline that the top five factors affecting cost overrun in building construction projects are: political situation, fluctuation of prices of materials, level of competitors, currency exchange, and economic instability. There is a good data consistency and agreement between consultants on the severity and frequency of the identified cost overrun factors. It also shows that the participants are highly agreed on the impact and frequency of the top affecting factors. Based on the study findings, the following points are suggested in order to minimize and control cost overrun and time overruns in building construction projects.

- Paying a lot of attention to project planning
- Material prices and labour rates should be updated continuously.
- Sufficient time should be given for preparing feasibility studies, planning, design, information documentation and tender submission. This helps avoiding or minimizing late changes.
- Attempt to stay within the scope that was originally planned
- Constantly track and measure the progress
- Resources should be ideally available on site
- Adequate technical and financial management

- Sourcing the materials
- Increase the speed of construction
- Reduction in the wastage
- Procurement cost control
- More communication and coordination between project participants during all project phases.
- Top management must react positively to political and environmental changes by means of managerial and financial policies.

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