

A STUDY ON COST OVERRUN IN CONSTRUCTION INDUSTRY

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ABSTRACT: *The Indian construction industry is an integral part of country's economy and its growth and a conduit for a substantial part of India's development investment. 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 18 filled questionnaires were collected from clients, consultants and contractors. The respondents were asked to list causes on the basis of probability of occurrence and severity of impact. Importance of each cause was calculated on the basis of cumulative effect of occurrence and impact. 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. The major causes as identified by this research were compared with the findings from other countries and there were fairly relevant similarities.*

I. INTRODUCTION

Due to poor cost 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 the huge problem and very serious issue when they come to project cost in both developed and emerging countries. This is an issue which needs attention, because projects are rarely being finished within budget.

Cost is always one of the most important reasons for the success of a project. Generally, most of the main factors influencing project costs are qualitative like importance of a client on construction time, the planning ability of constructor, locating methods, and some market conditions. A successful project is one which can overcome the cost limitations applied to it.

One of the most vital tasks for completing a project successfully is to have a good management of construction cost. However, most of the times, it is not possible to achieve good cost management and the project would generally have a considerable amount of cost overrun. 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. Cost overrun is described as the ratio of the change in the original contract amount to the original contract award amount. For the ease of comparison, the cost overrun can be converted into a percentage value. Mathematically it can be expressed as:

$$\text{Cost overrun} = \frac{\text{Final Contract Amount} - \text{Original Contract Amount}}{\text{Original Contract Amount}}$$

(Endut et al., 2005)

Chitkara (2011) reported that the cost is the budgeted expenditure, which the client agrees to commit to creating or acquiring the desired construction facility. Cost overrun is the difference between the actual final cost of a construction project at completion and the contract amount, agreed by the contractor the owner during the signing of the contract. Cost overrun also called cost increase, cost escalation or budget overrun.

The construction industry in India is one of the key economic industries and an important indicator of the development as it creates investment opportunities and is the main motivating force in Indian national economy. (Patil et al.2016). The industry is segmented with a fistful of major companies involved in the construction activities, mainly medium-sized companies specializing in activities and small and medium contractors who work as sub-contractor and carry out the work in the field.

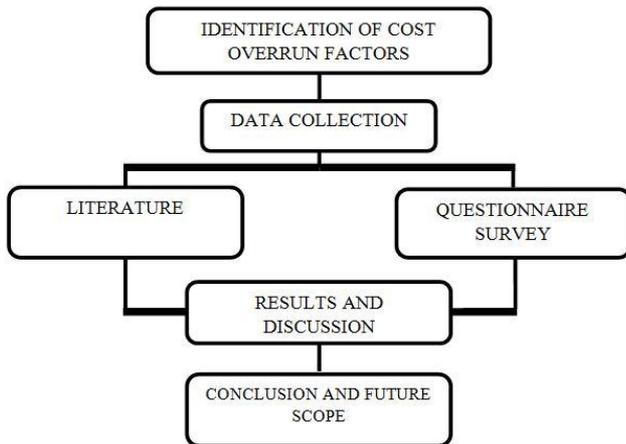
In India, construction industry has suffered ever since last decade, recent events in the region coupled with the restructuring of economies, attracting foreign investment are expected to yield an unprecedented growth in the construction activities (Shanmugapriya et al. 2013) hence, improving construction efficiency by means of cost impressiveness and timeliness would definitely contribute to the cost savings for the country. They further reported that cost overruns on construction projects of India are considerable. Few projects get delivered on right cost but most of them lead to cost overruns. However, the major causes and magnitude behind these overruns remain understudied.

RESEARCH OBJECTIVES

- To identify the factors that causes cost overrun in various construction projects.
- To get opinion on these causes from major players in the construction industry namely contractors, clients and consultants.
- To rank the causes of cost overrun on the basis of importance.
- To assess how frequent each of these causes occur.

- To assess how severe the impact of these causes will be on the total cost of the project.
- To assess which causes need the most attention by stakeholders.
- To compare the findings of this thesis with the findings of research based on other countries.
- To compare the results with those of previous studies from other countries.

II. METHODOLOGY



Adopting Literature Review

A Literature review helps to identify the major and common cost overrun factors in construction project. The strategy followed in this research was first started with problem identification which has been done through unstructured literature review, archival study and informal discussion with colleagues and professionals in the sector; and then the research design was formulated. Then data and information sources were determined based on the formulated research design. On the basis of the data and information sources the research instruments were decided; and available documentary sources relevant to the research were reviewed. The review includes books, journals, internet sources and other documents. After an in-depth literature review and desk study a questionnaire listing the various causes of cost overruns were distributed to reputed construction contractors clients and consultants to get their professional opinion based on experience.

Survey Questionnaire

A questionnaire survey has been prepared with the help of a literature review of past works of various factors that causes cost overrun. The questionnaire was designed in such a way so that it is easy to read and response and is easy to fill in. It included the comparison between factors that were identified through literature reviews. The forms were distributed to engineering staff who involve in the process of construction (engineers, Contractors, project manager etc). The respondents were randomly selected from construction sector. Care was taken to select different respondents from contractor, client and consultant groups. The questionnaires were given to potential respondents either personally and in a few cases through e-mail. The questions were open (allowing

respondents to freely give their comments) or closed (limiting responses to specific criteria selected by the researcher).

III. RESULT AND DISCUSSION

DATA ANALYSIS

The Questionnaire was distributed to the 30 people. The respondents involved in this survey are civil engineers, contractors, owners, practitioners who are working in construction industry. Out of 30 questionnaires 18 responses were received. Fig 6.1 shows the percentage of respond received.

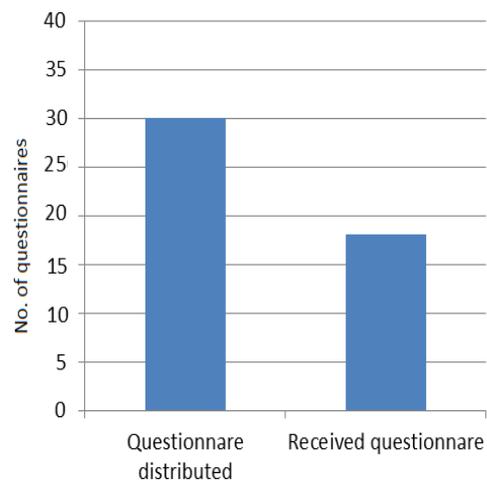


Fig. 1: Questionnaire survey

Table 1 shows the response of participants on the various causes of cost overrun based on the questionnaire survey

Table 1: Response of Participants on the various causes of cost overrun

S. No	Causes	No. of Participants	%age of Participants Agreeing
01	Large size and value of the project	12	67%
02	Escalations in material costs	12	67%
03	High cost of environmental safeguards	13	71%
04	Construction cost overruns	12	67%
05	Labour problems	12	67%
06	Financial problems	9	50%
07	Material, weather related, etc.	9	50%
08	Delay due to land acquisitions	16	88%
09	Delay in approval of loans and their disbursement	14	77%
10	Procurement delay	15	83%

11	Delay in recruiting consultants	14	77%
12	Delay in hiring project staff	16	87%
13	Delay due to government procedures	13	72%
14	Delay in material delivery	17	94%
15	Lack of safety measures in site	14	77%
16	Severe weather conditions	14	77%
17	Unanticipated ground conditions	11	61%
18	Antagonistic political conditions	9	50%
19	Unreasonable time schedule	16	88%
20	Non-accessibility of designs on time	16	88%
21	Amendments in work due to errors in design	13	72%
22	Amendments in work due to errors in execution	13	72%
23	Improper management and supervision	15	83%
24	Lack of skilled workers to operate special equipment	14	77%
25	Lack of proper coordination among various associated parties in the project	13	72%
26	Regular change of contractors	14	77%
27	Clashes between owners and other parties	13	72%
28	Outdated construction methods	14	77%
29	Ineffective equipment	13	72%
30	Lack of labour skills in using the machinery	12	67%
31	Financial limitations of contractors	12	67%
32	Site costs	16	88%
33	Transportation costs	14	77%
34	Machinery costs	10	55%
35	Labour costs	14	77%

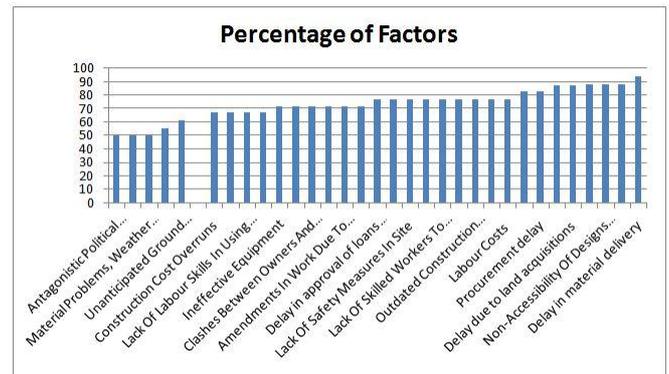


Fig. 2: Weightage of Prominent Reasons

DISCUSSION

Many causes of cost overrun have been listed from the literature review in chapter 2. 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.

“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. But it is interesting to note that it was ranked only 4th in probability of occurrence. 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, yet they are ranked a lowly 13th by contractors. Keeping up with the schedule is a responsibility of contractors.

The most important cause according to contractors was “non performance of sub contractors”. It is usual practice by contractors to award smaller works in the main contract to sub contractors. Many a time, this is not based on technical qualifications or eligibility criteria. Sub contractors may not have sufficient experience or technical knowhow to efficiently do the work. “Non performance of sub contractors” was ranked comparatively low by both clients and consultants, because ultimately the contractors have to bear the responsibility for it. “Increase in material/machine prices” was also ranked high in second place. It was also ranked high by both clients and consultant.

Fig two shows the Weightage of prominent reasons

IV. CONCLUSION

From the findings and analysis, it can be concluded that certain critical success factors are essential for the performance of construction projects and to avoid cost overruns. It is interesting that these critical success factors also affect the objectives of construction projects, like budget, performance and quality, and completion of project on time. Consequently, recognizable proof of basic achievement elements can help dodge expense invades in the development ventures. That is the reason this examination attempted to distinguish the discriminating achievement components to evade the expense invades in the development ventures in India. In spite of the fact that the discriminating achievement components may change with distinctive ventures, the vast majority of the undertakings require some regular critical success factors like legitimate arranging in the introductory stages, abilities of builders and designers, and fitting coordination in the middle of customer and foreman to succeed. Thus, it could be inferred that the findings of the study upheld the proposed theory that absence of certain critical success factors reasons expense invades in development ventures in India. In view of this, it might be presumed that the examination goals were attained to some degree.

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