

**A study on cost overrun and lack of time in construction project**

K.Sathish,

*Guided by Mr.K.Soundhirarajan.
Assistant professor, Department of civil engineering
Gnanamani college of engineering, Namakkal.*

Abstract: *This paper is study about the major reasons of cost overrun and lack of time in construction project. The important of this project is after starting a project how the construction professionals can implement the control of cost and time by measuring to avoid recurrence of problems. This project is pre-requisite for the successful completion of construction project. Which it are socio-economic advancement and with the help of knowledge we have asked a question to contractors, supervisor and engineers about how to control the cost of the project with estimation and here we have provided the literature review that will be used to obtain data from various practitioners. This data will be used to find out the major reasons causing cost overruns and lack of time periods*

1. INTRODUCTION

The Construction industry has a greater impact 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.

Cost overrun is considered as one of the most important problems that affect construction projects progress, since it reduces the profit leading to enormous losses, and leaving the project in great troubles. Construction cost is one of the peak criteria of success of a project throughout its lifecycle and is of high concern to those who are involved in the construction industry. Cost overrun is common in infrastructure, building, and technology projects all over world. Cost overrun should be distinguished from cost escalation, which is used to express an anticipated growth in a budgeted cost due to factors such as inflation.

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.

2. LITERATURE REVIEW**Analysis of typical causes of project in time****Author name: K.DEEPA and LKRISHNAMURTHY****Reviewed year: 2012**

The study is carried out with an objective to find out measure factors leading to cost and time overruns which are indicated for improving the performance of the industry and which would the benefit the infrastructure industry.

Identifying the possible reasons for overrun

Author name: Chin tan Hitesh Patel, Himanshu Chaturvedi, Megha R.Rao, Priyanka Kati and K.N.Narasimha Prasad

Reviewed year: 2015

The study revealed that a cost overrun in Government construction project is a norm which continues despite introduction of new bidding models, e-tendering techniques and third-party inspections. It suggested that on identification of a project, team of experts either from within the

Department, private consultants or in combination is to be constituted. This committee should go through project in a scientific manner and assure responsibility for its proper planning and execution.

Factors Influencing Time and Cost Overruns in Construction

Author name : Naveenkumar.G.V, Prabhu

Reviewed year : 2014

The study clarified that "Less outcome of labour", "Delaying in Bill settlement", "Lack of maintenance of the equipment" "Poor procurement programming of materials, Strikes, riots and other external factors was the most critical factor that influence project delay. The study illustrated that "delay in preliminary handing over the site" was one of the most important factors that may lead to cost overrun. Also it clarified that contractor's delay of material delivery and equipment has led to cost overrun. The study also clarified that prices inflation highly contributes to cost overrun.

Cost and Time Overrun in Indian Construction Industry:

Author name : Sai Murali Krishna Reddy. Raya and S.S Bhanu Prakash

Reviewed year : 2016

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.

ANALYSIS OF COST OVERRUN IN ROAD CONSTRUCTION ACTIVITIES

Author name – Rajakumar A C, Abhishek Bhargavaetal

Reviewed year :2010

Proposed analysis based on Time and Cost Overruns in Indiana highway projects using three-stage least-squares technique to investigate the factors affecting time delay and cost overrun against the background of their simultaneous relationship. They identify a number of factors that significantly affect cost overrun and time overrun and the effect of these variables vary by attributes such as project type and results of the bidding process Three-stage least-squares regression models was used to explain cost overrun and time delay as a function of variables that are available at planning phase.

Time and Cost Overrun in Saudi Arabian Oil and Gas Construction Industry

Author name: Abdul-Aziz Bin Settee, Mohammad A.Hassanain

Reviewed year: 8thfeb2019

This paper suggests an approach to carry outranking of causes of delay by different types of techniques: Relative importance index and Importance index based on degree of severity and degree of frequency and also discuss about the ranking of the causes of delays .Results were shows that out of top 10 factors total 5 factors were common in ranking by both methods. In that original contract duration is too short, shortage of labours, delay in material delivery, low productivity level of labors, delay in progress payments by owner. Moreover, by using both methods labour related factors ranked first while external factor was considered having minimum effect on delay as it is ranked last. All three parties agreed on that labour related factor was most important while external factor was least important.

3. ANALYSIS OF DATA

Various methods are used for analysing the factors as per the previous studies mentioned. The questionnaires were collected and analysed using various methods to find the most significant factors influencing the cost overrun. Following are the various data analysis methods,

- Frequency Index
- Severity Index
- Importance Index Method
- Relative Importance Index

Table 1: Summary of project estimate cost, actual cost and cost overrun at different phase of project development process in commercial building work.

DESCRIPTION	ESTIMATE COST	ACTUAL COST	COST OVERRUN	COST OVERRUN IN PERCENTAGE
Earth work excavation	43248.75	56223.37	12974.62	30%
Sand Filling	44800	56000	11200	25%
Shuttering	893750	983125	89375	10%
Steel work	717600	775008	57408	8%
Labour work	1400000	1470000	70000	5%
Cement	625000	677500	52500	8.4%
Sand	350000	455000	105000	30%
Bricks	321000	369150	48150	15%
Steel	71760	—	—	—
Total	4467158	4842006	374848222222	10.73%

Table 2: Summary of project estimate cost, actual cost and cost overrun at different phase of project development process in Residential building work.

DESCRIPTION	ESTIMATE COST	ACTUAL COST	COST OVERRUN	COST OVERRUN IN PERCENTAGE
Earth work excavation	43200	56160	12960	30%
Sand Filling	35100	43875	8775	25%
Plastering	57330	64209	6879	12%
Wood work	127900	147085	19185	15%
Painting	413100	450279	37179	9%
Brick work	34020	35721	1701	5%
Design work	123750	129937	6187	5%
Total	834400	927266	92866	8.46%

4. RESULT AND DISSCUSSION EARTH WORK EXCAVATION

Reason:

- Labour cost
- Type of soil

In case of earth work excavation, the cost is increased by two main factors labour cost & type of soil. The type of soil determines the cost. Hard soil rock takes much time for excavation than the loose soil. Thus it's also increases the labour cost and the fuel cost of the equipment. Hence type of soil directly affects the labour cost. So the earth work excavation cost gets increased than the estimated amount.

Solution

Earth work excavation should be done with proper planning from the initial step. Earth work excavation should be completed within short span of time with greater worker's strength. Delaying of work may lead to cost overrun, climate may not support the excavation work. Proper communication is required to complete the work without any careless work which may lead to excessive amount than the estimated cost. The excavation work should be in an organized manner, that helps to complete the work in a faster and perfect manner.

WOOD WORK

Reason:

- Demand & Taxes
- Transport cost

The taxes on the wood material get increased due to the raise of fuel and transport cost. And also the demand of the material increases the rate of wood.

Solution

Only solution to avoid cost overrun due to wood is to reduce the wood work. The alternatives such as aluminum framed window, upvc framed window, fiber window and the reuse of old woods with good quality can reduce the cost overrun of wood works.

PLASTERING

Reason:

- Demand of sand
- Poor workmanship

Increases of sand and cement materials may result in the cost overrun in the project. The main factor in raise of plastering work is increase in the rate of sand. The sand rate is increased due to the unavailability which leads to the greater demand. As the demand increase the price also get increased automatically. The other factor is workmanship. The proper workmanship is needed for the perfect finishing of plastering. If it's not, then the cost of plastering gets increased.

Solution:

- Brick work is the most important factor of the cost overrun at plastering.
- Bricks should be layed in a proper manner and finishing should be neat to avoid cost overrun of plastering.
- Increasing of plastering thickness may result in cost overrun than the estimated cost.

LABOUR WORK

Reason:

- Lack of supervisor
- Greater strength of labour than the required strength.
- Carelessness in work.
- Improper leading of team by supervisor
- Lack of experience leads to the repairing of work which result in cost over run

Solution

Proper guidance of the labour team by head. Proper planning and division of work among the labours according to their knowledge. If result in completion of work in good manner. Workers from the local area helps in the less cost than the labour from the other places.

PAINTING

Reason:

In the overall project, painting is less cost overrun comparing all other types of work. The factors of cost overrun is variety of painting work. Even weather condition also has its impact on the painting and the carelessness of the painting work may lead to the increases in cost.

Solution

The cost overrun can be reduced by the proper planning and proper use of paints. Plastering should be clean in outer to get smooth wall, so that paint will not get wasted. And painting in the good weather also helps in reduction of cost overrun of painting

STEEL WORK

Reason:

Cutting of excess rod usage of improper size of steel in reinforcement can cause cost overrun. Labours without experience may leads to cost overrun. Increasing rate of steel and construction material also leads to cost overrun. Transportation from the distance places also increase the cost overrun.

Solution:

Experienced labour helps in the completion of work in good manner. Getting of construction materials near the construction site will help to reduce transportation cost, which results in reduction of cost in steel work.

SHUTTERING

Reason:

- Waste of shuttering and wood materials
- Delaying of work may lead to cost overrun
- Shuttering work on rent materials cause cost overrun

Solution:

- Work on rent materials should be done quickly, so that the cost overrun is decreased
- Changing the structural design often increases the cost. So the design should be fixed, it helps in reduction cost overrun.
- Design should be done in material size.

SAND FILLING

Reason:

Demand in sand increases the rate of sand filling. Transportation of material from the distant place also increases the cost of sand filling. Usage of labour in greater strength increases the cost of sand filling.

Solution:

Usage of JCB, Hitachi instead of labours can decrease the cost overrun. Quarry dust is the best filling material and also economically cheaper Comparing river sand.

DESIGN WORK

Reason:

Unwanted client confusion of architecture design & structural design. It makes the design cost in to double.

Solution:

Proper clarification before the execution result in clearance of design work. Proper communication with the client can reduce the cost.

BRICK WORK

Reason:

- Dis-quality of bricks
- Increase in the rate of bricks
- Demand of brick materials
- Miscommunication during brickwork leads to confusion which results in improper work, that cause cost overrun due to the repair of work.

Solution:

- Transporting bricks from nearby areas to construction site.
- Avoiding the wasting of brick materials.
- Usage of quality bricks.

5. CONCLUSION

Cost overrun is one of the critical problems faced in the construction industry. The basic goal is to achieve the completion of project within stipulated time and cost budget. Based upon various literatures review, various factors causing cost overrun can be identified. And with the most significant factors influencing the cost overruns can be analyzed. Cost overrun can be identified by using two methods, one is ranking method and another one is comparison of estimated cost with the actual cost. Major causes of cost overrun found to be improper planning, unavailability of material, increase the material and machinery prices, weather condition and lack of experience in site can yield cost overruns.

6. REFERENCES

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