

SCHEDULE OVERRUN AND COST OVERRUN IN THE CONSTRUCTION OF PRIVATE RESIDENTIAL CONSTRUCTION PROJECT: CASE STUDY OF PUNE INDIA

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Abstract— Project successes are usually measured on the basis of time, quality and works done within budget, hence the need to overcome cost and schedule overruns on construction projects. Cost and schedule overruns on construction projects can lead to disputes among construction parties, escalations of original contract price and contract terminations if not well managed. Therefore, the purpose of this study is to determine the factors causing project schedule and cost overruns, in Pune Province of India by comparing the planned and achieved schedule of the project and by comparing

the actual and planned cost of the project The results of the study revealed the main factors and reasons causing schedule and cost overruns in construction of residential projects included: Delays in decision making; Poorly performed time estimation of the project tasks and activities; Unforeseen circumstances and factors hampered the progress; Internal conflicts within the project team; Poor work organization and planning and No advanced action taken by any of the parties involved. Hence, effective project planning, controlling and monitoring should be established to enhance project performance in order to minimise or avoid time and cost problems in residential construction projects.

Index terms- Private residential Construction; Cost and Schedule Overruns; Factors causing Overruns,

I. INTRODUCTION

Throughout the world, the business environment within which construction organization operate continues to change rapidly [4]. It provides huge employment to the people and plays very significant role in country economy. Project schedule and cost overrun is most common problems in the construction industry. Project overruns due to time and cost result in delays during project execution. In developing countries project schedule and cost overruns is a serious where implementation of project faces many uncertainties. It result in wastage of scare financial resources, delays in providing facilities, development and also make construction costlier. With globalization and technology driven economic growth all over the world, a scientific and systematic approach to project management becomes imperative to ensure that project objectives are attained within the constraints of time and

resources. To study the factors affecting schedule and cost overruns of residential construction project. A comparison study of planned and achieved schedule and cost were studied of the Residential project Rohan kritika Pune Maharashtra.

II. OBJECTIVES OF STUDY

The main objectives of this paper study include the following.

- I. To Study the factor and reasons causing schedule overruns for residential construction projects in Pune Indian context.
- II. To Study the factor and reasons causing cost overruns for residential construction projects in Pune Indian context.

III. LITERATURE REVIEW

Cost is among the major considerations throughout the project management life cycle and can be regarded as one of the most important parameters of a project and the driving force of project success. Despite its proven importance, it is not uncommon to see a construction project failing to achieve its objectives within the specified cost (Memon et al, 2010:42). Al- Najjar (2008:5) defines cost overruns as the change in contract amount divided by the original contract award amount. However, Zhu and Lin (2004) argue that cost overrun can be defined as excess of actual cost over budget.

A "construction project" is a high value, time bound, special construction mission of creating a construction facility or service, with predetermined performance objectives defined in terms of quality specification, completion time, budgeted cost and other specified constraints (Chitkara, 2011). Cost is one of the five main parameters that can sufficiently define a construction project. Other parameters are scope, quality, resources and completion time. The five parameters are interactive, that is, each parameter is a function of other. The evaluation and balancing of interrelationship among the five project parameters is a complicated process. However, in a given project, the scope and quality of work in terms of quantity and specifications are specified and these parameters

are not subjected to change (unless scope changes substantially). Resources and costs are co-related. Therefore, for a given quality, in such situation, time, cost and scope are core parameters. These parameters are interlinked and must be kept in balance to achieve project objective efficiently and effectively within changing environments (Chitkara, 2011). Nowadays, even a marginal cost overburden can sweep away the profit of a job, and continuous cost overburdens in most of the projects of a firm can lead to bankruptcy (Akinci & Fischer, 1998). Organizations face a major challenge in controlling project budgets over the time span between project initiation and the completion of construction. The development of cost estimates that accurately reflect project scope, economic conditions, and are attuned to community interest and the macroeconomic conditions provide a baseline cost that management can use to impart discipline into the design process. Projects can be delivered on budget but that requires a good starting estimate, project management discipline and an awareness of factors that can cause cost escalation (Shane et al., 2009). This necessitates finding the relevant factors and causes that lead to cost overrun.

Causes of schedule overruns are factors or events that occur before and during the construction process that will affect the time of completing a project. Ali, Smith, Pitt, and Choon (2012:2) states that there are four factors that causes schedule overruns and categorized them into the following categories: contractor- related factors, consultant-related factors, client-related factors and external factors. Motaleb and Kishk (2010:1154) five factors that can cause schedule overrun and these include change orders, slow decision making by clients, lack of capability of client representative, construction financial difficulties and late delivery of materials. Furthermore, Sambasivan and Soon (2007:524), describe the following as the main causes of construction project schedule overruns: contractor's improper planning; contractor's poor site management; inadequate contractor experience; client's finance and payments for completed work; problems with subcontractors; material shortages ; labour supply; equipment availability and failure; lack of communication between parties; mistakes during the construction stage.

IV. PROJECT SUMMARY AND CHARACTERISTICS

Data below in Table 1 shows the project summary and characteristics. Data was collected on residential projects comprising total 8 number towers. The nature of work private residential project which is under construction started in December 2013.

Table 1 project summary and characteristics

Name of Project	Rohan Kritika
Architect	Mind space, Bangalore
RCC Consultant	J-W Consultant
Project Cost	127 Cr Approx
Plot Area	3,27,460 square foot
Built up Area	8,88,902 square foot
Saleable Area	6,59,591 square foot
No of flats	363.
No of Buildings	8 Number
Building Height	21.0 m
Value of work completed	80 Cr Approx
As on time required for completion	12 months

V. DATA COLLECTED AND DISCUSSION

Data collected was site Layout, Microsoft Project Schedule, Monthly Progress Monitoring Meetings Report, Management Information System Report, BOQ of the Project, General Information about the project, List of consultants, Suppliers. Schedule overruns causes and corrective actions report

A. DISCUSSION ON SCHEDULE OVERRUN

Intermediate time of three month of project under consideration was considered for Comparison of planned and achieved schedule. Data collected of the project for all Eight Building namely F,D,E,G,H,I,J AND K under consideration with schedule overruns in days and reasons of Schedule overruns

Table 2 Indicating schedule overruns in days

Sr. No.	Tower	Schedule overruns (If any) In days	Factors causing schedule overruns
1	Tower = F	14	Material shortfall
2	Tower = D	24	Poor communication between parties involved
3	Tower = E	23	Labour shortfall
4	Tower = G	50	Drawing not received from consultant
5	Tower = H	60	Labour shortfall
6	Tower = I	45	Late delivery of materials and equipment
7	Tower = J	30	Labour
8	Tower = K	-	-

1) REASONS OF SCHEDULE OVERRUNS

Poorly performed time estimation of the project tasks and activities (in other words the project schedule was not fully accurate and feasible); Unforeseen circumstances and factors hampered the progress; Internal conflicts within the project team; Poor work organization and planning;

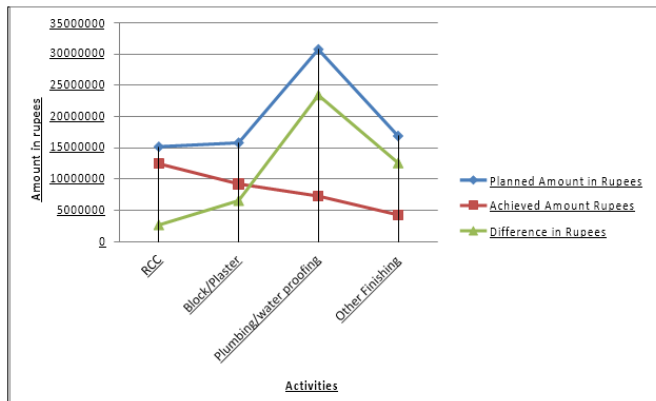
B. DISCUSSION ON COST OVERRUNS

Same intermediate time of three month of project under consideration for Comparison of planned and achieved amount of work done for all Eight Building namely K,D,J,E,G,F,I AND H under consideration with percentage work done and reasons of cost overruns.

Table 3 Indicating planned amount and achieved amount with % work done.

Sr.No	Activities	Planned Amount in Rupees	Achieved Amount Rupees	Difference in Rupees	% Work done
1	RCC	15186475.8	12482416.8	2704059	82.19
2	Block/Plaster	15819777.34	9241317.36	6578459.98	58.41
3	Plumbing/water proofing	30746728.44	7301301.96	23445426.5	23.74
4	Other Finishing	16908312.42	4301301.96	12607010.465	25.44
TOTAL	-	78661293.4	33326338.08	45334955.94	57.63

Chart1 Indicating planned amount achieved amount and difference in planned and actual amount



1) FACTORS CAUSING COST OVERRUNS

Material shortage, Shortage of labour, Late delivery of materials and equipment, Unavailability of competent staff , Delay in progress payment, Financial difficulties by contractor, Drawing not received from consultants, Poor communication and coordination by owner and other parties.

2) REASONS OF COST OVERRUNS

Estimates-A common reason for cost overruns is the inaccuracy of cost estimates; Design-Sometimes, the designs or drawings that form the basis of the project are not realistic; Scope-Changes in the scope of supply within a project frequently cause cost overruns Planning-The project progresses according to a plan that assigns durations to project tasks.

VI. CONCLUSIONS FROM CASE STUDY

After doing the studies of data collected of the case study of residential building project Rohan Kritika-8 Buildings tower, it is clear that the problem of Schedule and cost overrun is not bound to any particular type or size of project, neither it has any limitations for the location or region. All of them faced more or less similar problems of time and cost overruns. The difference was only in the quantum of these overruns. The reasons of these overruns were mostly known and controllable. Still they are facing these problems because of the following reasons:

- i. Poor project appraisal and formulation
- ii. Improper implementation of plans
- iii. No advanced action taken by any of the parties involved
- iv. No advance clearances from the local authorities and other agencies
- v.No adequate measures were taken for the availability and proper flow of funds
- vi. Delays in decision making
- vii. Loosely framed contracts
- viii. Poor monitoring and control of activities

In all, poor planning, labour shortfall and material shortfall are the main reasons for time and cost overruns in the projects. Since most of the reasons are well known and can be controlled if a proper arrangement is made

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