

Factor Affecting Construction Cost and Time in road project

Pavan pal¹, Dr. Mukesh Pandey², O.P Bhadaoriya³

¹M.Tech. Student, Civil Engineering Department, ITM University, Gwalior, M.P, INDIA

²Professor and Head of Civil Engineering Department, ITM University, Gwalior, M.P, INDIA

³professor of civil engineering department, ITM University Gwalior M.P, INDIA

Abstract - Most construction projects in developing countries are characterized by overruns in time and cost. This research was conducted in an attempt to identify major factors that most responsible for affecting of construction cost and time. A descriptive study was carried out and two types of data were collected. The overrun variables were extracted from the literature and from a thorough examination of the questionnaire survey. The study is conducted with reference to existing theoretical literature, published and unpublished research. The study is mainly a literature review/survey on the affect of the time and cost on the road construction project. The primary findings emanating from the study revealed that empirical studies have identified a number of important factors which affected construction cost. There are fifty (50) factors are collected from the literature survey and divided into the seven group such as consultant related, material related, labor related, client related, equipment related, contractor related and external related group of the factors. Furthermore, it was observed that time overrun, cost overrun, were the effects of road construction project's schedule. The study explores the causes and effects of construction projects cost and schedule overruns and presents a robust background on the theories of construction project cost and schedule overruns.

Key Words: Analysis of the factors that affects the road construction projects.

1. INTRODUCTION

The Construction industry is one of the key economic industry in India and the main motivating force in Indian national economy. But, it suffers from a number of problems that affect time and cost performances. Successful management of construction projects is based on three major factors i.e. time, cost and quality. Time and cost are the lifelines of any and every road project. The success or failure of any project depends largely on these two factors apart from its quality. There are 50 common factors are collected from the literature survey and divided into the seven group in the guidance of guide such as group of consultant related, group of material related, group of labor related, group of contractor related, group of client related, group of equipment related, and group of external related that affected cost and time of the projects. questionnaire survey have completed at the twenty two(22) number of construction road project site. The twenty two number of the questionnaire form filled up with the valuable opinion of the experts. The fuzzy methods is the most important techniques to find out the top rank of the factors.

1.1 LITERATURE REVIEW

In this chapter the data is collected from the literature survey and find out the major factor affecting construction time and cost in the construction road project. In the literature survey we observed that the most of the project have cost and time affect and from these projects collected the fifty major factors of the construction cost and time affecting.

According to Rajakumar cost overruns are more common in infrastructure projects especially, more common in road construction activities. The impacts of cost overruns are very high in developing countries compared to developed countries. In fact 100% of projects are suffered by cost overruns in developing countries.(42)

According to Ibrahim Mahamid¹+1, Amund Bruland² this study is conducted to identify the cost overrun causes in road construction projects in the West Bank in Palestine from consultants' view. A questionnaire survey of 40 consultants from was performed. The survey included 51 suggested factors through literature review. The factors are ranked according to the degree of importance as assessed by the respondents. The findings reveal that the top five affecting factors are: materials price fluctuation, insufficient time for estimate, experience in contracts, size of contract, and incomplete drawings.(45)

According to Abdullah Alhomidan the aim of this study is to identify the factors causing cost overrun in road construction projects in Saudi Arabia from contractors' viewpoint. The risk map of 41 factors considered in a survey indicates that the most factors affecting cost overrun in road construction projects are: internal administrative problems, payments delay, poor communication between construction parties, and delays in decision making.(34)

Okpala and Aniekwu investigated causes of high costs of construction in Nigeria. The study revealed 27 factors contributing to high cost and delays in completion time. A questionnaire survey was conducted which included engineers, architects and quantity surveyors. The top ranked factor was identified as price fluctuations. The factors identified in this study are largely influenced by the locality of the country in which the research was conducted (Okpala & Aniekwu, 1988).[37]

T.Subramani, P.S.Sruthi and M.Kavitha (2014), The study was based on the road projects in India. They found that inadequate project formulation, poor field investigation, bad cost estimates, poor planning during execution stage,

inadequate equipment supply plan, lack of project management during the stage of execution, insufficient working, changes in scope of work, change of law and order were the major contributing factors for the cost overruns of road construction projects in India [42].

In a study conducted by Ogunlana et al. (1996) comparing Thailand as a fast-growing economy country with other economies, 12 skyscrapers construction projects showed that the main reason of delays was resource

According to (Chitkara, 2011).supply problems in the boom-years of the construction sector. Shortage of supply of materials especially cement was the reason why projects were kept behind schedule.

Cost is the budgeted expenditure, which the client has agreed to commit for creating/acquiring the desired construction facility

Table. Group of the factors

| S.N O | GROUPS OF FACTORS | S.NO | FACTORS |
|-------|-------------------|------|---|
| 1 | consultant | 1 | Frequent design changes |
| | | 2 | Mistakes and errors in design |
| | | 3 | Unclear specifications |
| | | 4 | Late approval |
| | | 5 | Late design works |
| | | 6 | Late inspection |
| | | 7 | Late in reviewing and approving design document by consultant |
| 2 | materials | 1 | Delay in materials procurement |
| | | 2 | Fluctuation in prices of materials |
| | | 3 | Lack of raw materials sources |
| | | 4 | Shortage of materials |
| | | 5 | Late delivery of materials |
| | | 6 | Unavailable construction materials |
| | | 7 | Rework from poor material quality |
| | | 8 | Wastage of the materials |
| | | 9 | Thefts of materials on site |
| 3 | LABOR | 1 | High cost of labor |
| | | 2 | Shortage of technical personnel(skilled labor) |
| | | 3 | Labor productivity |
| | | 4 | Labor absenteeism |
| | | 5 | Shortage of site labor |

| | | | |
|---|------------|----|---|
| 4 | contractor | 1 | Incorrect planning and scheduling by contractors |
| | | 2 | Inadequate contractor experience |
| | | 3 | Contractor's poor site management and supervision |
| | | 4 | Cash flow and financial difficulties faced by contractors |
| | | 5 | Slow in making decisions |
| | | 6 | changes in management ways |
| | | 7 | late issuing of approval documents |
| | | 8 | Postponement of project |
| | | 9 | late submission of nominated materials |
| | | 10 | Incorrect material take off from drawings and design document |
| | | 11 | improper construction method |
| | | 12 | poor communication between construction parties |
| | | 13 | undefined scope of working |
| | | 14 | Incompetent subcontractors |
| 5 | client | 1 | Owner interference |
| | | 2 | Delay in progress payment by owner |
| | | 3 | Financial difficulties of owner |
| | | 4 | Change orders. |
| | | 5 | Client requirements on quality |
| 6 | equipment | 1 | High cost of machinery and its maintenance |
| | | 2 | Equipment availability and failure |
| | | 3 | Insufficient Numbers of equipment |
| | | 4 | Late delivery of equipments |
| 7 | External | 1 | Unforeseen ground conditions |
| | | 2 | Social and cultural impacts |
| | | 3 | Poor technical performance |
| | | 4 | Government requirement |
| | | 5 | Effect of weather |
| | | 6 | Accident on site |

3. CONCLUSIONS

In the present time, the construction industries is biggest industries in India and it support to developing and attaining object of the society.

The main objective of this study which have been find out at the beginning of study was identifying the critical factor of the cost and time affecting in the construction road projects. These objectives were performed by the questionnaire survey that was designed with regard to the knowledge of Indian construction industries and their respond had a significant influence on this study. Also the during the process of filling questionnaire and oral interviews helped in realizing the good answer to the main factor of the construction time and cost affecting.

During questionnaire survey, they gave their opinion related to construction time and cost affecting and according to these valuable opinions of the experts, find out the top most factors of the construction time and cost affecting using the fuzzy methodology

REFERENCE

1. Endut, I.R., Shehu, Z., Akintoye, A., and Jaafar, A., 2009, "Cost and Time of Construction Projects in Malaysia," in Fifth International Conference on Construction in the 21st Century (CITC-V) "Collaboration and Integration in Engineering, Management and Technology" May 20-22, 2009, Istanbul, Turkey.
2. Memon, A. H., I.A. Rahman, Abdullah, M.R., & Azis, A.A.A. (2011). Time Overrun in Construction Projects from the Perspective of Project Management Consultant (PMC). *Journal of Surveying, Construction and Property*, 2(1), 54-66
3. Rajakumar A C 04 | Apr-2016. Analysis of Cost Overrun in Road Construction Activities – A Critical Review M.E. final year in Construction Engineering and Management Meenakshi Sundararajan Engineering College, Chennai 24 – India
4. Ibrahim Mahamid¹, Amund Bruland² 2011 Cost Overrun Causes in Road Construction Projects: "Consultants Perspective 1PhD, Norwegian University of Science and Technology (NTNU), Civil Eng. Dept., Trondheim, Norway. 2Professor, Norwegian University of Science and Technology (NTNU), Civil Eng. Dept., Trondheim, Norway.
5. Abdullah Alhomidan June 2013 Factors Affecting Cost Overrun in Road Construction Projects in Saudi Arabia Chairman, Civil Engineering Department, Hail University, Hail, KSA.
6. Valdete Ballhysa¹, Marsela Blloku² 2, February – 2014 Critical Factors Affecting Construction Cost In Albania Msc .Eng.Valdete Ballhysa¹ Specialist, General Directorate of Water Supply and Sewerage, Tirane, Albania Eng.Marsela Blloku² Consulting Project Planning Enginner at Facilization shpk, Tirane, Albania
7. Ogunlana, S. O., Promkuntong, K., & Jearkjirm, V. (1996). Construction delays in a fast-growing economy: comparing Thailand with other economics. *International Journal of Project Management*,
8. Chitkara, K.K. (2011), "Construction Project Management - Planning, Scheduling and SsControlling", 2nd Edition, Tata McGraw Hills.