

IDENTIFICATION OF ROOT CAUSE OF FAILURE OF HIGHWAY PROJECTS

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Abstract - Roads and Highways are said to be the veins of a country. In a huge country like India with 1.3 billion people, roads play a very significant role in influencing the economic development. The Indian road network, comprising of National Highways, Expressways, State Highways, Major District Roads, Other District Roads and Village Roads, is globally the 2nd largest spanning 5.5 million kilometers. Roads in India carry 85% of passenger and 70% of freight traffic. India's road infrastructure has seen consistent improvement in the last few years. Connectivity has improved and road transportation has become a focus of rapid development. The government had implemented country wide 5 year plans in development of road and highways and a huge investment is being pumped in to this sector. Government of India has set the target of constructing 40 km of highway per day. This is where the purpose of this study is relevant. Due to various reasons, the highway projects get delayed which results in huge financial losses. This study is carried out to discuss the root causes/factors by risk identification, assessment in Highway Projects, it provides an overview of risk factors & explain the relationship among these factors and cost and time overrun. The methodology to find the root causes of failures in highway project will be done by preparing questionnaires and sending out to professionals and getting the feedbacks and the feedbacks will be compiled to conclude the root causes.

1. INTRODUCTION

India has second largest road network in the world about nearly 7 million km. and consistently increasing every year. This road network transports more than 64.5% of all goods and 90% of country's total passenger traffic. The construction of highways reached 9,829 km during FY18 which was constructed at an average of 26.93 km per day. The Government of India has set a target for construction of 10,000 km national highway in FY19. There is a robust demand, attractive opportunities, higher investments and policy support for highway construction projects in India. In spite all this opportunities, it is widely held that road/highway infrastructure has not been developing at required pace and that the road infrastructure projects have been suffering from several hurdles and delays, thereby affecting project success/ failure. There is an immediate need to find out the important and consistent root causes for the failure of highway projects in India.

1.1 Objectives of the Study

The objective of this study was to find out the most frequent root causes for the failure of highway projects in India. The subsequent analysis and management of risk factors affecting construction performance. The study was focused on risk related with financial, economic, design, planning, and procurement and construction activities of the project. The list of objectives are ;Review literature on risk modelling, analysis and management for highway projects; and Determine the most critical risk factors affecting construction cost and time performance resulting in failures through questionnaire surveys.

2. METHODOLOGY

The methodology developed for this study includes:

A comprehensive literature review of research articles together with some case studies to identify common factors for project failures associated with highway projects.

National level survey to evaluate the criticality of these risks and frequencies of factors causing failures.

- A questionnaire is made for risk management for highway projects.
- This includes general information about the project, risk related Interviews were conducted to various project managers across the country, out of which a detailed WHY-WHY analysis was made.

3. DATA ANALYSIS

Review of research articles and secondary information will be collected from different companies and stakeholders from across the country. The responses will be grouped and common inferences from them will be made. The common inferences will be then compiled to indicate a final inference stating the factors for the failures of highway projects. The factors will be grouped under four main categories viz.-a-viz. Client specific factors, Process related factors, Contractor related factors and Construction related factors.

4. FINAL SUMMARY OF INFERENCES FROM INTERVIEWS

A final summary of inferences for the causes of failure/delays in roads and highway projects were made as tabulated below

KEY AREAS OF CONCERN	COMMON FACTORS
FINANACIAL PROBLEMS	Changes in cash flow
	Withdrawal of financial aid from client
	Slow return of funds
	Faulty financial structures
PROCESSES RELATED PROBLEMS	Long lead items
	Subcontractor monopoly
	Land acquisition problems
	Poor contract documents & specifications.
CLIENT SPECIFIC PROBLEMS.	Lack of support from client
	Vagueness in scope/ ill-defined scope
	Excessive approvals
CONTRACTOR RELATED PROBLEMS	Poor planning and control
	Insufficient site investigation
	Poor forecast / Analysis

5. CONCLUSIONS

- The aim of the thesis is to discuss the root causes/factors by risk identification, assessment in Highway Projects, it provides an overview of risk factors & explain the relationship among these factors and cost and time overrun.
- The study shows that the risk factors affect the project cost & time and contractor, client & consultant suffer from financial loss & waste of time due to the common factors found during the interviews.
- Risk management comes with an experience, with the factors stated one can work for the solution of those root causes as they are common ones occurring during most of the highway projects executed.

- The findings by this thesis work can be used by companies for risk avoidance & can benefit with reduction in time & cost overruns.
- The study also state there is lack of technical & financial expertise in highway projects.
- It also shows that there is lack of risk management awareness among most of the companies which have poor risk management models which results in poor performance of the project.
- The result can be mainly used by the contractors & clients for the most likely impact of factors, assess them & take appropriate measures to improvise.
- From the study conducted, four primary reasons concerned to delay were identified, that is related to finance, client specific problems, process related problems and contractor related problems. The sub causes identified from the interviews are the changes in the cash flow due to cash crunch for various reasons from the client side which eventually lead to withdrawal of financial aid from the clients, keeping a halt to the work causing delay. Also problems related to client is because of unclear communication and negotiation between both the parties causing latent effects in the progress of work. By analyzing interviews that were conducted and from the quoted examples it is clear that all the causes for delay are inter-related and comes down to a few common root causes.

6. RECOMMENDATION

The following recommendations can be given based on factors identified and inferences drawn from interviews:

- Ensure clear and open communication with the client about managing expectations and about how things are progressing.
- Ensure recruitment of skilled staff and labor and also prior training before commencement of the job.
- Use a construction project management software like advanced versions of Primavera rather than excel or MS project to keep track of the important metrics that can help make right adjustments when the project is going off track.
- To address the financial constraints, the effective way to reduce delays can be financing via use of strategic public and private partnerships for large-scale projects, introduction of bank financing schemes for medium-scale projects and community based partnership for small scale projects.
- The responsibility to undertake any solution for the cause of delay is a collective effort right from the higher management authority to the lower staff of both the clients and the contractors.

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