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Factors Causing Obstacles and their Effect on Infra Projects (A Case Study)

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Abstract - The budget of Infrastructure projects in India are worth around Rs.100 lakh crore according to the budget 2019. Also a huge number of these projects are getting delayed invariably. According to the MOSPI reports, of the 1634 infrastructure projects in the country, 373 projects reported cost overruns, while 552 projects saw time escalation.(Express News Service / Published 09th December 2019) This is indicative of the fact that the causes of delays and their implications on the cost and time overruns warrant the need of studying. This study covers the various causes of delays in detail, as well as delays which are caused at various stages of the project.For this study only the transportation infrastructure projects are considered.

The various issues plaguing these projects are studied. The study also includes an in depth literature review of the subject and the various works carried out on the subject. As a part of data collection, the study includes the random sample of road, railway, civilian airports and sea ports. The delays and the time and cost overruns thatthey have caused have been studied. Also, the locations of the projects need to be considered for drawing certain conclusions. The study basically carries a qualitative and quantitative assessment of the causes of the delays. It establishes a link to the analysis of the delays in order to quantify the severity of each type of delay with respect to the time overruns.

Keywords - Infrastructure Projects., Delay , time overruns., Time Overrun

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INTRODUCTION

Delays are an integral part of any construction project; they may be insignificant or otherwise. However considering the Indian scenario, the later i.e. the significant delays are almost universally associated with the word 'delay'. Almost every other Infrastructure project in the country gets delayed, barring an odd Hyderabad airport or a Delhi Metro.

India being a rapidly developing country needs an equally rapidly developing infrastructure. The infrastructural development is the backbone of the country's economic progress and constitutes a great extent of the fiscal spending. India is no different to this exception and the government has duly increased spending on the infrastructure projects. According to the budget of 2019 the government has planned a spending to the tune of 100 lakh crores on infrastructure projects. This comes to about 40% to 45% of the GDP of India.

These are figures which indicate a drive towards infrastructure projects of far greater size and complexity on a never seen before scale. The number of mega- projects i.e. projects costing over Rs.1000 crores have grown exponentially. . However all is not rosy, as the figures show. With increasing size have come increased problems.

SIGNIFICANCE

Construction projects have troubles with construction methods and administration also as limitation of resources, budget and time. The critical problems are failure to finish the projects on schedule and budget. In recent years, experiencing time cost overrun is common in most of the infrastructure projects. So to find the remedies on these problems is necessary.

OBJECTIVES

1. To find common are the time overruns in transportation infrastructure projects in India.

2. To study the different stages in the project life cycle and the salient causes ofdelays in each of the different stages.

3. To analyze the main causes of delays prevalent in transportation infrastructure projects. To suggest the probable remedies

to the identified causes of delays.

METHODOLOGY

Project Questionnaire

Following brief questionnaire framed primarily to collect data.

1. The questions asked are based on the probable causes of delays.

2. The questionnaire consists of 4 parts: Road, Railways, Civilian Airports, Seaports. Every section has 2 sections.

   a. The macro level

   b. micro level

3. The macro level section of the questionnaire consists of ranking the various stages of the project vis-à-vis the delays caused in the respective stages of the project. For eg. Pre-construction, construction etc. are the stages which would be rated on the basis of severity of the delays caused in each particular stage.

4. The micro level section consists of the problems faced in each of the construction phase, as mentioned in the macro level questionnaire.

5. Each question is to answer on three parameters:

   a. Probability of the delay occurring due to the cause.

   b. Severity of the delay.

   c. Degree of Unavoidability of the particular cause.

6. Please rate the causes which are mentioned in the questionnaire as follows:

   a. For the macro level – On a scale of 1 to 6

   b. For the micro level – On a scale of 1 to 10.

   c. If any important cause is found missing please mention it along with its rating.

1. Road Projects

Section 1. Macro level Questionnaire

Please rate the various stages mentioned vis-à-vis the severity of delays caused inthose stages. Rating should be on a scale of 1-6

Stages of project	Probability	Severity	Unavoidability
Concept and feasibilityStage			
FundRaising and Financial closure			
Tendering bidding and Award of project			
Project planning and main procurement			
Contract execution monitoring and control			

Section 2. Micro Level Questionnaire Stage 1 Concept and Feasibility stage

Cause of delay	Probability	Severity	Unavoidability
Disagreement on the final concept			
Environmental Impact of the project			
Environmental impact due to location			
Rehabilitation of affected people			

Stage 2 Fund Raising and financial closure

Cause of delay	Probability	Severity	Unavoidability
Delay in financial Closure			
Delay in payments by the client			
Bankruptcy of client/contractor			

Stage 3 Tendering, Bidding and Award of Project

Cause of delay	Probability	Severity	Unavoidability
Appointment of incompetent Consultant/Contractor			
Contaminated ground ornpredictable underground conditions			
Encroachment problems			
Changes in statute and taxation provisions			
Changes in the import/export regulations			

Stage 4 Project planning and main Procurement

Causes	Probability	Severity	Unavoidability
Ambiguity in contract			
Land Acquisition			
Delay in timely mobilization by thecontractor			
Delay in ordering main equipment			
Design errors by Consultant			
Delays in drawings and other approvals			

Stage 5: Contract Execution, Monitoring and Control

Cause	Probability	Severity	Unavoidability
Changes in scope ofwork or specification			
Accidents on site			
Delays due to improper executionof work			
Political instability			

Questionnaires Analysis:

Causes of delay	Probability	Severity	Unavoidability	Total score
1. Delay in payments by the client	6.67	7.67	7.00	5962.96
2. Delay in financial Closure	7.00	7.33	6.33	5418.52
3. Land Acquisition	7.00	8.67	7.00	4105.11
4.Environmental impact of the project	6.67	7.00	5.67	3966.67
5. Environmental impact due to location	6.00	7.00	5.67	3570.00
6. Delays due to Improper Execution of the work	6.00	8.00	4.67	3061.33
7. Disagreement on the final concept	5.33	6.67	5.67	3022.22
8. Delays in Drawings and other Approvals	6.00	7.00	7.00	2842.00
9. Changes in the scope of work or specification	3.67	7.33	5.67	2082.40
10. Force Majeure	2.33	7.33	7.67	1792.86
11. Political Instability	3.67	7.00	5.00	1753.89
12. Ambiguity in Contract	5.00	7.00	4.33	1466.11
13. Encroachment problems	4.33	6.00	4.67	1172.89
14.Bankruptcy of client/contractor	3.00	5.00	4.67	1166.67
15. Appointment ofincompetent Consultant/contractor	4.67	6.33	4.00	1142.81
16. Rehabilitation of affected people	3.67	5.67	3.67	1142.78
17. Contaminated ground water or unpredictable groundconditions	5.00	6.00	3.67	1063.33
18. Changes in the statute and taxation provisions	3.00	5.00	6.33	918.33
19. Design errors by Consultant	3.67	6.67	3.33	787.65
20. Changes in the import/export regulations	4.00	4.00	4.67	721.78
21. Delay in ordering main equipment	3.67	4.67	4.00	661.63
22. Suspension of work by the contractor	2.33	5.00	3.67	584.63
23. Accidents on site	3.00	5.00	2.67	546.67
24.Delay in timely mobilization by the contractor	3.00	5.33	3.33	515.56

Hence, from the analysis we can conclude that the top five causes of delays in transportation infrastructure projects in India are:

1. Delay in payment by the client.

2. Delay in financial closure.

3. Land acquisition.

4. Environment impact of the project and due to location.

5. Delays due to improper execution of the work.

In India unfortunately we have taken for granted that delays in transport projects are a certainty. This attitude within the construction fraternity must change. We have shining examples of projects like the Delhi metro, Hyderabad airport and Konkan railway which have been completed not just on time but ahead of schedule as well. This means that it is a question of will and determination which if present can achieve great results. With India well on the march to achieve greatness it will slowly but surely wake up to these challenges and emerge stronger.

DATA COLLECTION

Case Study:

NAME OF THE PROJECT : Navi Mumbai Airport

CLIENT : AAI (Airport Authority of India)

PROJECT CONSULTANT : ICAO (International Civil Aviation Organization)

LOCATION : Kopra-Panvel, Navi-Mumbai, Maharashtra.

COST OF THE PROJECT :Rs 3,200 crore and Rs 4,000 crore (PPP).

AREA : 9.5 km² accommodating two parallel runways

DATA ANALYSIS

CAUSES OF DELAYS IN PROJECT

1. Delay caused due to detail report:

Cidco had been given the charge for the development of the Navi Mumbai international airport but it has already asked the consultant not to proceed wi the detailed report of the project. The reason for the same has been the Union ministry of environment and forests or the MoEF and the department has not given them their clearance yet. The Cidco officials have stated that they had already spent Rs 13 crore on the first report and this second report was going to cost them a whopping amount.

2. Delay caused due to permissions:

Even though the Union cabinet has provided them with in-principle clearances for this project, they are still waiting for the permissions, which have not come from the ministry. According to sources 456 hectares for the airport fell in CRZ-I, while 152 hectares fell in CRZ-II and 12 hectares in CRZ-III. But to facilitate the project and ensure its smooth clearance, the Centre permitted them to make a **green-field** airport in the proposed Coastal Management Zone or the CMZ. Apart from the MoEF nod, the state would also be expected to assure the department with forestation of the displaced mangroves, which is already being

disputed in an ongoing case in the high court. .

3. Delay in Land Acquisition:

Like large road projects, airport developments require acquisition of land both for Greenfield as well as modernization. This area has a strong interface with political maneuvering and management and is the toughest area in terms of uncertainty in airport project progress. Historically in India even if project promoters are aware of issues involved and adequate steps in stakeholder management are taken, projects run into rough weather – making it a strong case for addressing it at the control stage rather than just the planning stage.

4. Government Policy:

The Government of India has been proactive in enabling regulations and introducing policy initiatives .Significant among these are easing out FDIregulations in airports and airlines, tax exemption for airport development projects and allowing domestic private airlines to fly on international routes. Current aviation policy of GOI includes 100 percent FDI in many cases and 100 percent tax exemption for a period of 10 years PPP or Public-Private Partnership is a system in which a government service.

CONCLUSION

This study regarding the transportation infrastructure projects has provided us valuable insights about the most significant causes of delays in such projects. The ranking system of causes that we have devised is both simple and effective.According to our analysis, the ranking of causes of delays in transport projects are:

Table 1: Relative Ranking of Identified Causes of Delays

Causes of delay	Probability	Severity	Unavoidability	Total score
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8. Land acquisition.
9. Environment impact of the project and due to location.
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FUTURE SCOPE

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