

# Assessment of Causes of Delay in Construction Projects and their Impact of Time & Cost Performance

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**Abstract** - Construction delays are a universal problem, particularly in India which often leads to significant curve turbs of time and cost overrun resulting into project failures. This study aims to recognize the main reasons for these delays and investigates their effect on project performance in Ahmedabad, Gujarat. The study based on data from 40 practitioners has identified priority rankings of delay factors using a structured questionnaire and the Relative Importance Index (RII). The findings reveal that insufficient contractor experience and ineffective communication/coordination are the two most significant delay determinants in terms of importance since they tie for first place (RII = 0.86875). Other key factors include delays in material delivery, low labour productivity and owner payment deadlines.

**Key Words:** Construction Delays, Ahmedabad, Relative Importance Index (RII), Cost Overrun, Project Management.

## 1. INTRODUCTION

The construction industry acts as a primary and playing an important role in driving economic growth and development; however, it is alarming to note that up to 32% of mega infrastructure projects are plagued by large time overruns, which proves destructive for their success both economically (in terms of delayed benefits), socially (increase delays translating into increased costs) or politically. These delays are legally defined as failing to finish a project in the specified contractual timeframe, which not only leads commonly lead to loss of professional sapience but also is tremendously more financially destabilizing and economically damaging for every stakeholder.

### 1.1 OBJECTIVES

The main focus is to identify and prioritize different causes of delay using the Relative Importance Index (RII), a quantitative tool in prioritizing factors by their relative importance.

Another goal is to conduct an in-depth assessment of the specific, quantifiable effects these delays have on both overall project cost and Schedule Performance Index (SPI), ensuring that their consequences are fully understood.

Each of those objectives represents an aspect of how the study aims to propose evidence-based and actionable mitigation strategies directly for local construction stakeholders, which can be implemented at a regional level in order to achieve expected project delivery effectively as well improve schedule reliability.

## 2. RESEARCH METHODOLOGY

This extensive study used a well-oriented and focused questionnaire survey concentrated on the residential and commercial sectors in Ahmedabad city, Gujarat State. Sampling: Purposive sample of 40 professionals was chosen to extract primary data. The sample included contractors (40%), engineers (35%) and consultants (the remaining 25%) to round out industry representation. Data Analysis: The Relative Importance Index (RII) method was applied to systematically rank and assess the importance of each of these 50 delay factors —providing a comprehensive quantitative analysis on their relative significance. Equation: The RII was computed as follows:

$$RII = \frac{\sum W}{A \times N}$$

Where,

W is the weight given by the respondents (1-5)

A is the highest weight (5)

N is the total number of respondents (40)

## 3. DATA ANALYSIS & INTERPRETATION

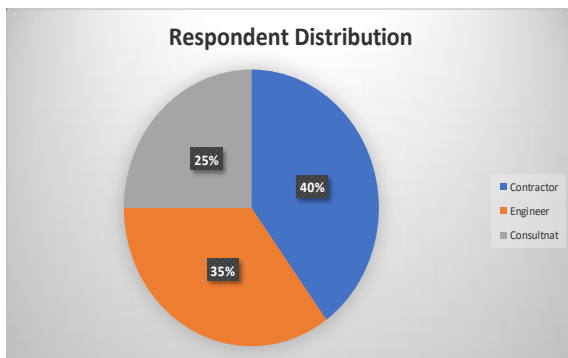
The delays based on less efficiency of management is conclusive and it brings out that the same are more / prominent in Ahmedabad compared to the environmental conditions. Management-oriented delays are the most significant impediments to completing a rail project quickly, making them one of our top priorities for improvement in overall logistics performance.

**Table 1: Top 5 Ranked Delay factors**

Rank	Category	Delay Factors	RII
1	Contractor	Inadequate Experience & Risk Management	0.868
2	External	Poor Communication & Coordination	0.868
3	Material	Delay in Material Delivery	0.862
4	Labour	Low Productivity/Unskilled Labour	0.850
5	Owner	Delay in Progress Payments	0.843

### 3.2 Analysis of primary points

- Contractor Incompetence (Rank 1): This indicates a fundamental gap in technical expertise and risk assessment, leading to cycles of rework that extend the project lifecycle.
- Communication Gaps (Rank 2): Gaps between engineers, contractors, and consultants lead to delayed approvals of shop drawings and misaligned execution.
- Resource Vulnerability (Rank 3 & 4): Material shortages and low labor productivity create "forced idle" time, where overhead costs continue to accrue without progress on the critical path.



**Fig -1: Respondent Distribution**

### 4. DISCUSSION

The research is clear: The delay factors do not act as discrete, independent events they are instead an integrated system of complex cause-and-effect interdependencies that continuously activate and amplify each other across the entire enterprise. The Financial Trigger: When an owner defers or prorogues payments (Rank 5), it shatters the field contractor's liquidity, causing a cash flow bottleneck practically overnight. The lack of financials directly affects the availability and timely procurement (Rank 3) material, while also interrupting labour wage payments causing

overall decline in workforce productivity (Rank 4). Planning Paradox: The Critical Path Method (CPM) is the most widely used technique for project schedule and progress management with up to 80% of projects adopting this method, nonetheless the consistently high ranking in "Poor Planning" factors (RII=0.843), indicates systemic inadequacies either on dynamic schedule updates or proper resource allocation & sequencing tasks External Environment vs. Internal Control: Another interesting finding from my survey was that environmental factors like unfavourable Weather Conditions were rated much lower in terms of causality compared to internal control failures, which indicated clearly what this suggests for the city most delays encountered on projects in Ahmedabad can be avoided and are primarily a result of organizational shortcomings rather than uncontrollable external issues or poor conditions.

### 5. CONCLUSIONS

Delays are a chronic and extremely serious problem in construction projects largely because of lack of funds, poor managerial practices exhausts many resources where the scarcity is the determining factor as well. This thorough research solidified a straight, implicated and definitive relationship between the size of time and related expenses where any delay or extension in project schedule results to an absolute & relatively substantial growth within huge investment on all rounded expenditure for this particular undertaking. Thus, a detailed and systematic identification to evaluation of the various reasons for delay is absolutely needed in order to allow the venture activities be finish inside spending plan limits.

### REFERENCES:

1. Ahmed, S. M. (2015). Excusable and Non-Excusable Delays in Construction.
2. Assaf, S. A., & Al-Hejji, S. (2006). "Causes of delay in large construction projects." International Journal of Project Management.
3. Fellows, R., & Liu, A. (2008). Research Methods for Construction. 3rd Ed.
4. MoSPI (2026). "Flash Report on Central Sector Projects." Government of India.
5. Keane, P. J., & Caletka, A. F. (2008). Delay Analysis in Construction Contracts.
6. Kometa, S. T., et al. (1994). "Relative Importance Index in Construction Performance".
7. Rao, B. P. (2016). "Ranking of potential causes of delay in construction projects".

8. SCL (2016). "Delay and Disruption Protocol." Society of Construction Law.
9. Silva, J. B. C. A., et al. (2008). "Study of contractor financial difficulties".Hastak, M. (2015). Skillset for Delay Analysis and Management.