

Detail Analysis of Delay in Construction Projects

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Abstract

The construction industry is large, volatile, and requires tremendous capital outlays. Delays occur almost in every construction project and the significant of these delays varies considerably from project to project. In construction, delay could be defined as over run of a time either beyond completion date specified in a contract, or beyond the date that the parties agreed upon for delivery of a project. It is a project slipping over its planned schedule and is considered as common problem in construction projects. To the owner, delay means loss of revenue through lack of production facilities and rent-able space or a dependence on present facilities.

Keywords: *Delay Analysis, Delay in Construction, Detail Delay Analysis.*

1. Introduction

Delays are one of the biggest problems facing by the construction industry. The delays in construction projects have significant financial and social impact to all parties involved in the projects. Construction delay is a major problem facing by the construction industry. In most construction projects, there are delays and their impact level varies from project to project ranging from a few days to years. It is generally understood that the construction delay is the most critical factors affecting to deliver the project in time, within budget, and expected quality. It can be found rarely that a project was completed within the specified time.

There are various negative effects of delays such as lawsuits between owners and contractors, increased costs, loss of productivity and revenue, and contract termination. Effects of delays which predominantly affects are loss of Interest by the Stakeholder, blacklist by Authorities, waste of Money and Time, Declination of Reputation etc. Delays caused by contractors can generally be attributed to poor managerial skills. Lack of planning and a poor understanding of accounting and financial principles have led to many a contractor's downfall. In

this study, most critical factors causing delay and their effects in large residential construction projects in India

2. Objectives of Study

1. To identify the source of delays for construction projects.
2. To study cost of delay and methods to mitigate delays.
3. To study the effect of delays for construction projects.
4. Analysis of data collected of live projects regarding delays of activity.
5. Give the discussion and suggestion for minimum of effects of delays for construction projects.

3. Methodology

1. The first step involves general information collection, including both firsthand and second-hand data, in order to identify major themes from the literature.
2. The second step that Surveys and interviews are conducted, in which a list of important factors causing delay in construction are identified. With these factors, expert interviews, conducted in the second step, are used to decide the most significant factors among them.
3. The third step is the conclusions and suggestions for researchers or practitioners.

4. Types of Delay

Many construction projects suffer from delay. Suspension means stoppage of work directed to the contractor by a form from the client, while delay is a slowing down of work without stopping it entirely

4.1 Critical or non-critical delays

Delays that affect the project completion or in some cases a milestone date are considered as critical delays, and

delays that do not affect the project completion, or a milestone date, are noncritical delays.

4.2 Excusable or non-excusable delays

All delays are either excusable or non-excusable. An excusable delay is a delay that is due to an unforeseeable event beyond the contractor’s or the subcontractor’s control.

4.3 Compensable or non-compensable delays

A compensable delay is a delay where the contractor is entitled to a time extension and to additional compensation. Relating back to the excusable and non excusable delays, only excusable delays can be compensable. Compensable delays are caused by the owner or the owner’s agents.

4.4 Concurrent or non-concurrent delays

The concept of concurrent delay has become a very common presentation as part of some analysis of construction delays. The concurrency argument is not just from the standpoint of determining the project’s critical delays but from the standpoint of assigning responsibility for damages associated with delays to the critical path.

6. Causes of Delay

Cause of delays in construction projects are mainly as:

- 1) Project related delay
- 2) Owner related delays
- 3) Contractors related delays
- 4) Consultant related delays
- 5) Design related delay
- 6) Material related delays
- 7) Equipment related delays
- 8) Labour related delays
- 9) External factors related delays

6.1 Effect of Delay

Following are the effect of delay in construction projects

1. Overtime
2. Overcost
3. Disputes
4. Total abandonment
5. Litigation
6. Arbitration

7. Analysis of Data

In this a detail analysis of data and result will be shown and elaborated by using Frequency Analysis and Average Index Analysis. Construction organizations were randomly selected as the targeted respondents to determine factors of delay through questionnaire survey.

Frequency Analysis

Frequency analysis will be using tabular form to represent result of data analysis of frequency of response that respondent give to the different variables in the questionnaires. The result was tabulated in the form of frequency number and percentages according to total respondents.

Average Index Analysis

The result will be further summarized to obtain the overall level of importance and evaluation in local construction industry. The respondent were requested to evaluate project manager’s roles and responsibilities based on five-points scale starting with 1 for not important, 2 for less important, 3 for average, 4 for important, 5 for very important.

The average index analysis for each variable is calculate by using:

$$\text{Average Index} = \frac{\sum(1 X_1+2X_2+3X_3+4X_4+5X_5)}{5 (X_1+X_2+X_3+X_4+X_5)} \quad (1)$$

Where,

- X₁ = number of respondents for not important,
- X₂ = number of respondents for less important,
- X₃= number of respondents for average,
- X₄ = number of respondents for important,
- X₅ = number of respondents for very important.

Table 1: Average index analysis

<i>Average index</i>	<i>Level of Importance</i>
0.00 Average Index 1.50	Not Important
1.50 < Average Index 2.50	Less Important
2.50 < Average Index 3.50	Average
3.50 < Average Index 4.50	Important
4.50 < Average Index 5.00	Very important

8. Conclusions

1. Construction delay is a critical function in construction projects.
2. In general, the amount of time-delay and cost-increase (overrun), increased with an increase in the total cost of a residential project.

3. Cost overrun and time overrun (elongation of project duration) were the two most frequent effects of delays which significantly affects the construction projects.

4. There are loss and expense claims arising from delay and fluctuation claims during the delay period which have significant effects on cost overrun.

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