

# Factor Causing Time Delay in Construction Malaysia

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**Abstract**—The construction industry nowadays has higher complexities with increased scope of work, number of parties involved and is technically more advanced. However, the industry does not give adequate attention to proper delay management. The causes of delay need to be identified and assessed. The methods on delay mitigation need to be mapped out to cater for these delays. Even the smallest mistake or unforeseen causes can lead to major lost and even bankruptcy to construction firms. Therefore, the aim of this study is to provide a compilation of causes and effects of delay data for Malaysian construction industry. The discussions related the field of causes and effects of delay in construction projects has been reviewed. Result of delay identification from other countries have been studied and compared to make this paper more comprehensive. The overall discussion will focus on the causes of delay related to each specific group; the direct effects of these delay, and also the correlation between the causes and effects. The data is collected by conducting structured questionnaire surveys and distributing it out to government agencies, consultants, and contractors involved in the construction industry. An in depth study is also done on different methods of delay identification available in project management.

**Keywords:** Delay causes, Delay Effects, Construction Industry, Malaysia, Correlational Analysis

## I. INTRODUCTION

Delay in construction project is considered one of the most common problems causing a multitude a negative impact on the project and its participating parties. The problem as factors that affect the delay in construction projects and will affect company's performance and overall economy of the country as well. Therefore, it is essential to identify the actual causes in order to minimize and avoid the delays and their corresponding expenses. The delay in construction projects by many factors is usually linked to the performance of time, cost, and quality.

The main purposed of this study is to investigate the causes and effects of delay on completion of projects in Malaysia. After analysed the data, the objective of this research was done, where the causes were identified and categorized into 8 factor. Which the factors are project-related, client-related, contractor-related, design team-related, material-related, equipment-related, labor-related, and external-related factor. Besides, the effects of delay also have been identified such as time overrun, cost overrun, dispute, arbitration, litigation and total abandonment. There are correlation between the causes and effects of delay.

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## 1. TYPES OF DELAY

In construction delay, the types of delay can be categorized into two types, namely excusable delay and non-excusable delays that has been shown in Figure 1 as given by [1].

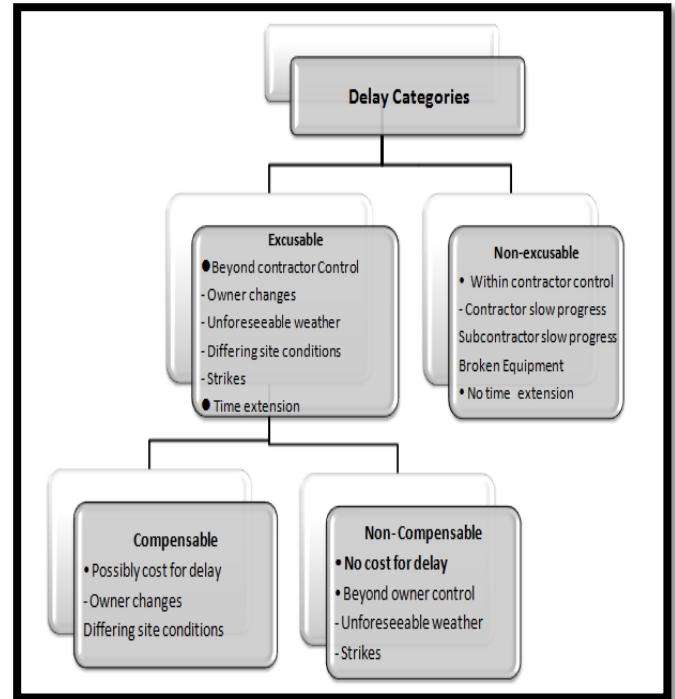


Figure 1 Types of delay

An excusable delay is a delay that is due to an unforeseeable event beyond the contractor's or the subcontractor's control. Excusable delay is further divided into two compensable and non-compensable delays. According to [2] compensable delay are caused by the owner or the owner's agents. An example of this type of delay would be the late release of drawings from the owner's architect. An excusable, compensable delay usually leads to a schedule extension and exposes the owner to financial damages claimed by the contractor, Non-compensable delay are caused by third parties or incidents beyond the control of either the owner or the contractor and are not attributable to any of the parties. Example typically includes acts of God, unusual weather, strikes, fires, act of government in its sovereign capacity. In this case contractor is normally entitled to a time extension but no compensation for delay damages.

Non-excusable delay are caused solely by the contractor or its suppliers, Fugar and Agyakwah-Baah (2010). The contractor is generally not entitled to relief and must either make up the lost time through acceleration or compensate the owner. However, non-excusable delay usually results in no additional money and no additional time being granted to the contractors. A non-excusable delay is events that are within the contractor's control or that

are foreseeable. These are some example of non-excusable delays:

## II. CAUSES OF DELAY

Delay is one of the biggest problems in construction nowadays. There are numbers of activities that, when not managed properly can lead to delays in the construction. Delay is occurred due to some different factors. Therefore, the actual cause of delay is essential which be identified in order to minimize and avoid the delays in constructions. Ten most important causes of delay [3] in Malaysia are:

1. Contractor's improper planning,
2. Contractor's poor site management,
3. Inadequate experience,
4. Inadequate client's finance and payments for completed work,
5. Problem with subcontractors,
6. Shortage in material,
7. Labor supply,
8. Equipment availability and failure,
9. Lack of communication between parties, and
- Mistakes during the construction stage.

## III. EFFECT OF DELAY

Construction delay is considered to be one of the recurring problems in the construction industry and it has an adverse impact on project success. The impacts occurred from the delay in construction will effect the development and economy of country, which the quality of development become lower and the increasing of financial. The effects and ranked of the delay construction effects [4] are as follows; time overrun, cost overrun, dispute, arbitration, litigation and total abandonment of project . These finding were agree for the study that carried out by [5], [6] and [7].

## IV. METHODOLOGY

Relative importance index (RII ) is a very commonly used method to rank out data with relative importance to each other. It is most commonly used because of the ease of calculation as no complicated equations are used ; yet it is a very accurate measurement as seen in many researches. These ranking made it possible to cross the relative importance of the items as perceived by the seven different groups. The same method is adopted here to find the relative importance between the causes of delay. In this study within various group (i.e clients, consultant or contractors), a five-point scale ranged from 1 (not important) to 5 (extremely important) was adopted.

Relative importance index between the causes of delay within various group (i.e clients, [6] consultant or contractors) was found by (1).

$$Relative\ Importance\ Index.\ RII = \frac{\sum W}{A \times N} \quad (1)$$

Where,

W is the weighting given to each factor by the respondents ( ranging from 1 to 5)

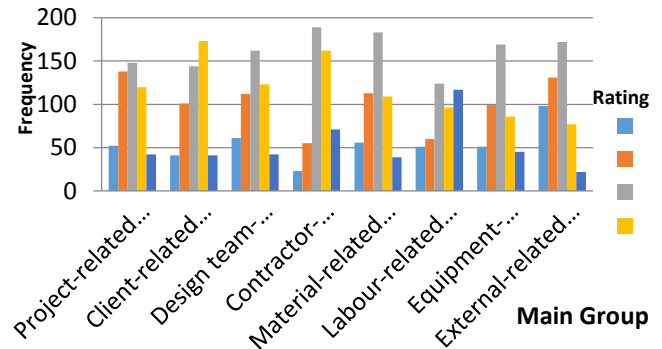
A is the highest weight (i.e 5 in this case )

N is the total number of respondents The survey feedback includes two groups of data, the causes of delay related to eight major groups in the Malaysian Construction Industry and the effect of each source.

## V. RESULT

### 1. Causes of delay

RII was used to determine the relative importance of the various causes of delay within different groups (Project, client, design team, contractor, material, labour, equipment, external) related factors. The five-point scale from 1 (very unlikely) to 5 (very likely) was adopted and transformed to the relative importance indices (RII) for each factor as shown in Figure 2.



**Figure 2. Effects of total abandonment on the delay related to the eight main groups**

### 2. Effects of Delay

The effects of delay was then analysed from the data collected through the second part of the questionnaire. This analysis is important to see which effect of delay is most affect the Malaysian construction industry. This is done so that a clearer relationship can be established between the causes and effects of delay. The ranking of six main effects is done by adding up the total occurrence and basing it on a direct volumetric analysis. The top six effects of delay as stated by the respondents are; (1) Time Overrun, (2) Cost Overrun, (3) Dispute, (4) Litigation, (5) Arbitration, (6) Total Abandonment as shown in Table 1.

**Table 1 Effect of dealy**

Effect of delay	Total Occurrence	Ranking
Time Overrun	2319	1
Cost Overrun	826	2
Dispute	470	3
Arbitration	114	4
Litigation	102	5
Total Abandonment	70	6

There are top six main effects of delay have also been identified based on the causes above.

## VI. CONCLUSION

The main purpose of this study was to investigate the causes and effects of delay on completion of projects in Malaysia. The causes were identified and categorized into eight factors namely; project-related, client-related, contractor-related, design team-related, material-related, equipment-related, labor-related, and external-related factor. Furthermore, analysis shows that there are 15 most significant causes of delay



have identified and ranked it out using the Relative Importance Index. Which are (1) Poor of site management, (2) Low productivity level of labours, (3) Poor site management and supervision by the contractor, (4) Difficulties in financing project by contractor, (5) Nationality of labours, (6) Delay's in sub-contractor's work, (7) Delay in progress payments by owner, (8) Slowness in decision making process by owner, (9) Conflicts in subcontractors schedule in execution of the project, (10) Poor communication and coordination by contractor with other parties, (11) Ineffective planning and scheduling of project by contractor, (12) Changes in material types and specification during the construction, (13) Unqualified workforce, (14) Shortage of labour, (15) Lack of quantity of labour. Besides, the effects of delay have also been identified which are time overrun, cost overrun, dispute, arbitration, litigation and total abandonment.

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