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THE CAUSES AND EFFECT OF DELAY IN CONSTRUCTION INDUSTRY PROJECT

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ABSTRACT

The most common problems in the construction project is delays, it's very linked to each other. Delays of a construction project can be defined as the late completion of works as compared to the planned schedule or contract schedule. Projects can be delayed due to number of reasons that may be due to the client, the contractor, acts of God, or a third party. They may occur early or later in the project development, alone, or with other delays. Delays can be minimized only when their cause are identified. The objective of this study was to identify the major causes of construction delays and the effects of delays construction delays. This study was carried out based on literature review and a questionnaire survey. A total of eight causes were contributed to the cause of construction delays and six factors that effects construction delays were identified based on literature review. From the survey, this study presents the results of a survey undertaken to determine and evaluate the most frequent factors causing delay construction projects. A survey based on a questionnaire was distributed out among randomly selected contractors, consultants, and owners. The main causes of delay are analyzed and ranked according to their frequency of occurrence. The objectives of the study have been successfully achieved based on the results of the study. The most important factors that contributed to the causes of delays, for example, insufficient numbers of equipment, changes orders, poor site management and supervision, shortage of construction materials, incompetent project team, improper project planning and scheduling, and contractor's financial difficulties. Management factors was ranked the most significant cause delays, followed by economy factors, manpower factors, site factors, contractual factors and external factors. Time and cost overrun were the common effects of delays in construction projects.

ABSTRAK

Masalah yang paling umum berlaku dalam projek pembinaan adalah kelewatan, ia sangat berkait rapat antara satu sama lain. Kelewatan projek pembinaan boleh didefinisikan sebagai lewat siap kerja dibandingkan dengan jadual perancangan atau jadual kontrak. Kelewatan projek boleh disebabkan oleh bebrapa sebab diantaranya adalah sebab pemilik projek, kontraktor, takdir Allah, dan pihak ketiga. Ini boleh terjadi pada awal atau di akhir pembangunan projek secara tersendiri atau bersamasama dengan kelewatan yang lain. Kelewatan boleh diminimalkan hanya apabila sebabnya dikenal pasti. Objektif kajian ini adalah untuk mengenal pasti sebab utama kelewatan dan kesan kelewatan projek pembinaan. Kajian ini dijalankan berdasarkan kajian literatur dan pengumpulan maklumat menggunakan borang borang soal selidik. Sejumlah lapan faktor utama yang telah menyumbang kepada sebab kelewatan, dan enam jenis kesan kelewatan pembinaan telah dikenal pasti berdasarkan kajian ini. Dari kaji selidik, kajian ini membentangkan keputusan kajian yang dijalankn untuk menentukan dan menilai faktor paling kerap yang menyebabkan kelewatan pembinaan projek. Kaji selidik yang berdasarkan selidik telah diedarkan di kalangan kontraktor, perunding dan pemilik yang dipilih secara rawak. Objektif kajian telah diperolehi dengan jayanya. Punca-punca utama kelewatan dianalisis mengikut kekerpan. Antara faktor utama yang menyumbang kepada sebab kelewatan adalah kekurangan bilangan peralatan, perubahan arahan, pengurusan dan penyeliaan tapak yang tidak teratur, kekurangan bahan binaan, pasukan projek yang tidak cekap, perancangan dan penjadualan projek yang salah, dan masalah kewangan kontraktor. Faktor pengurusan telah ditarafkan sebagai punca yang paling penting yang menyebabkan kelewatan, diikuti oleh faktor ekonomi, faktor tenaga kerja, faktor tapak, faktor kontrak dan faktor-faktor luaran. Lebihan masa dan kos adalah kesan yang paling umum berlaku daripada kelewatan di projek pembinaan.

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CHAPTER 1

INTRODUCTION

1.1 Background

The construction industry in Malaysia is one of the important sectors that contribute to Malaysia's economic growth. The industry acts as catalyst for our economy through the creation of industries such as education, financial, manufacture, service and many others. The problem of delays in the construction industry is a global issues. A construction project is usually defined as successful project when it is completed on time, within the budget, with appropriate quality, follow with accordance the specifications and to stakeholders' satisfaction. Other than that, functionality, profitability to contractors, and absence of claims have also been used as measures of project success.

Delay is a situation when a project are not complete within the agreed contract period. The project is skid over its planned schedule and is considered as common problem in contruction projects. It is very infrequently to see a construction project is completed on time. Delays can make the disruption of work and loss of productivity get rise, other than that completion of project are late, increased time related costs and third party claims and abandonment or termination of contract. Delays are very costly and always result in disputes and claims. Therefore, it is important to keep track of project progress to avoid the possibility of delay occurrence or identify it at early stages.

1.2 Problem Statement

Many construction projects will be faced various types of problems and make the project delay and this is one of the main problems. Usually, there is additional cost if a project are delayed, they are either extended or accelerated. The common practices normally allow a percentage of the project cost as a profit or an allowance in the contract price and this profit is usually based on judgment.

The risk of the delay in the project creates different by parties involved. For the client or owner, delay means that when intend to use the asset, it's cannot be used, leading alternative accommodation costs to be certified or a delay in receiving income from the asset. Financing cost of the project could also increase, and depending upon the contractual allocation of risk causing the delay, the delay could increase the claims by the contractor. Towards the contractor, delay means an increase in overheads, such as site staff and facilities, ability liabilities to the supply chain and relying on the reason for the delay it can mean a liability for delay damages to the owner. The delayed recovery of payments and the bind up of resources in the project can also create cash flow problems and the risk of insolvency.

1.3 Objective Of Study

This research was aimed to identifying the major causes of delays and effects of delays in construction projects industry. To achieve this aim, the following objectives have been identified:

i. To identify the major factors that contributes to the delay in construction project.
ii. To identify the effect of delays in construction project.

1.4 Scope Of Study

The scope of the research is mainly focus on literature review and a questionnaire survey. This study is needed to evaluate the level of understanding and applying these delay concepts in planning, design and field operation. The questionnaire survey would be designed based on the causes of construction delays and effects of construction delays. The respondents for this research involve consultants and construction company that registered with Construction Industrial Development Board (CIDB).

1.5 Significance Of Study

Basically, this study is expected to identify the answer or result for some of the irregular issues that exist in construction industry such as issues that related delay in construction project. Normally, the purpose why these issues arise in the event of delay is due the parties who are unclear and not alert to the causes of delay. Thus, by identifying the causes of delay in construction project, this study of result will be the guideline to the certainly parties involve, so that it will avoid any source that will happen in their project and carrying out the works within the time, budget and quality as in the contract.

In addition to that, it can be as a basic guidance for those who are involved in construction industry for instance, developers, architects, engineers, quantity surveyors and others in relation to the issue of delay. Finally, hopefully it assists in avoiding unnecessary disputes while assuring project success and better relationship among the contractual parties.

1.6 Methodology of study

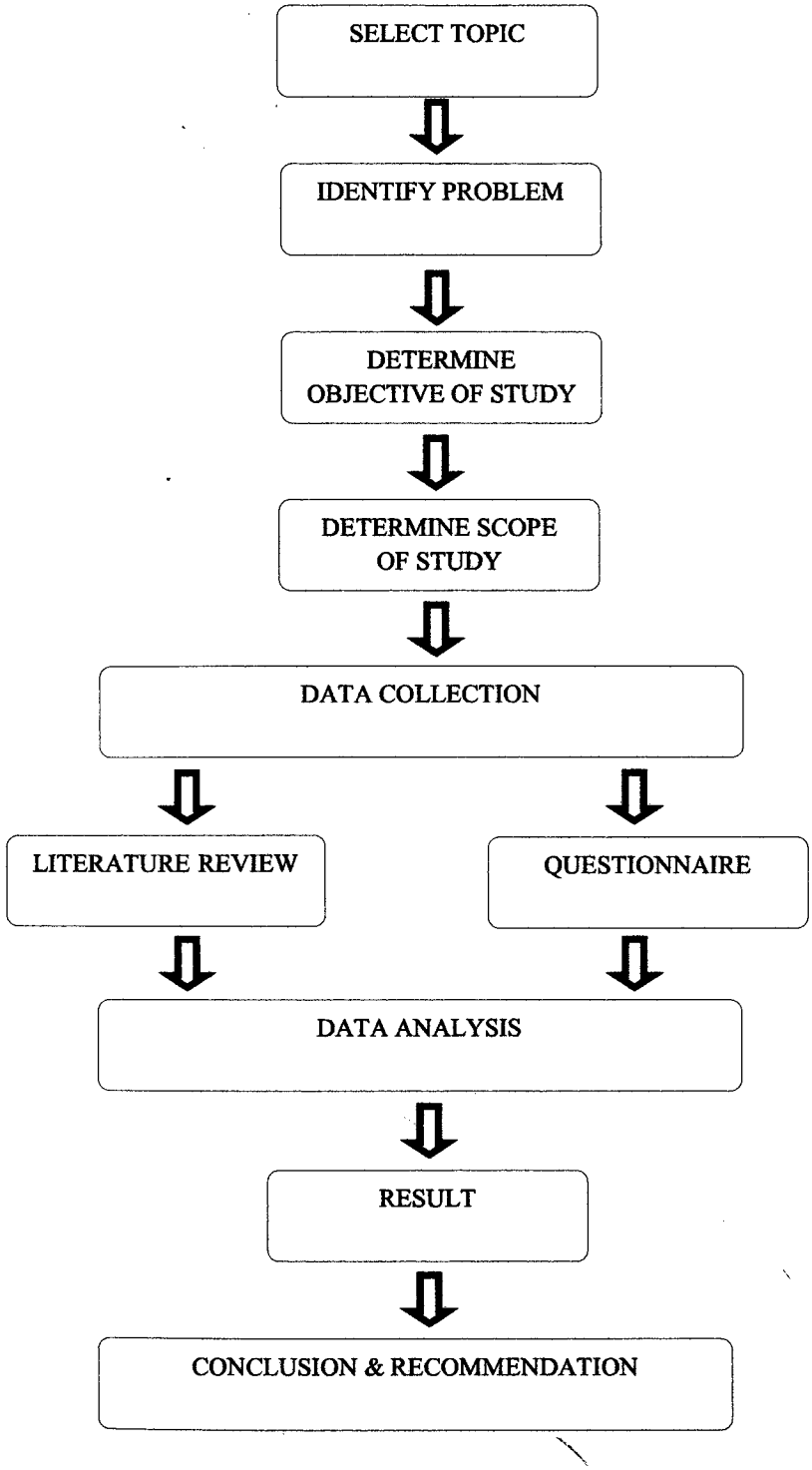

Figure 1.1 : Methodology of Study

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

One of the most important problems in the construction industry is delay. Delays can be occur in every construction project and the size of these delays differently from project to other project. Some projects are only a few days behind the schedule and some are delayed over a year. So it is important and necessary to define the actual causes of delay in order to minimize and avoid the delays in any construction project.

There is a large range of views for the causes of time delays for construction projects. Some are attributable to a single party, others can be state to several quarters and many relate more to systemic faults or scarcity rather than to a group or groups.

There are many articles and studies conducted on causes or factor of delay in construction projects. Assaf et al. studied the causes of delay in large building construction projects in Saudi Arabia. Based on the study, the most important delay factors are approval of shop drawings, delays in payments to contractors and the resulting cash-flow problems during construction, design changes, conflicts in work schedules of subcontractors, slow decision making and executive bureaucracy in the owners' organizations, design errors, labor shortage and inadequate labor skills.

Mezher et al. conducted a survey of the causes of delays in the construction industry in Lebanon from the viewpoint of owners, contractors and architectural or engineering firms. They had concluded that owners had more concerns with regard to financial issues, contractors regarded contractual relationships the most important, while consultants considered project management issues to be the most important causes of delays.

Kumaraswamy et al. also done a survey on finding the causes of construction delays but in Hong Kong. The survey exposed the differences in perceptions of the relative importance of factors between the three groups, that is clients, contractors and consultants indicative of their experiences, possible prejudices and lack of effective communication.

Another study was by A.A. Aibinu et al. which state that delay is a situation when the contractor and the project owner jointly or severally contribute to the non-completion of the project within the agreed contract period. Normally, delays in construction projects are expensive since there are a lot of additional cost involve in a projects because of the project delay. And this cost will increasing if the project continuously delay by the time.

In another research, Odeh and Battaineh carried out a study to determine the most significant causes of construction delays with traditional type of contracts with regard to contractors and consultants. According to the results showed that, the top ten most significant causes of delays are owner interference, inadequate contractor experience, financing and payments, labor productivity, slow decision making, improper planning, and subcontractors.

On the other hand, Alaghbari et. al. (2007) have the slightly different conclusion with regards to factors causing delays in another research specific to building construction projects in Malaysia. The analysis of the factors causing construction delays were based on four main categories. The four main categories are contractor, consultant, owner and external factors. The study found that the top two factors for each category are:

- Contractor's factors – financial problems and shortage of materials on site
- Owner's factors – financial problems and slowness in decision making
- Consultant's factors – poor supervision and delays in issuing instructions
- External factors – materials shortage and poor site condition

2.2 Type of Delay

Delays generally fall into four categories. Delay is considered a major cause of construction claim. The four types of delay namely :

i. excusable delays
ii. non-excusable delays
iii. compensable delays
iv. concurrent delays

2.2.1 Excusable Delays

Excusable delays are those not attributable to the contractor's actions or inactions, and typically include unforeseen events. It's allow the contractor to obtain a time extension to complete the contract without being penalized. However, this type of a delay normally does not entitle the contractor to any damages caused by the delay.

The examples of excusable delays to a contractor's action are differing site conditions, design problems, changes to the work, inclement weather, and strikes. This type of clause sometimes called a "force majeure" clause, lists excusable delays. As this list implies, when unanticipated outside forces delay completion of the contractor's work, the delay is generally considered as excusable.

2.2.2 Non-Excusable Delays

This type of delay presents no entitlement to a time extension or delay damages for the contractor if the delay can be proved to have affected the whole project. The owner however could be the liquidator to the damages. For instance, a non-excusable delay would be when a contractor fails to provide sufficient manpower to complete the job on time. Client can claim their loss if had in the contract agreement. The factor that contribute to the non-excusable delay:

- The usual weather and as expected whether,
- Delay cause by subcontractor,
- The inefficiency of contractor to manage the construction site.
- The financial of contractor.
- The lack of labour.
- Failure to manage their work according to the contract schedule.
- Always make mistake or failure to fulfil of owner specification.

2.2.3 Compensable Delays

Basically, compensable delay is when the contractor will be receives payment due to the additional cost of delay and as well as addition to a time extention for contract performance if there is any change inscope of work, late supply of owner materials or information, impeded site access, differing site conditions and failure to provide timely and review shop drawings. Furthermore, this type of delay is for which the innocent party is entitled to both a time extension and additional compensation for the resulting costs.

2.2.4 Concurrent Delay

Alkass said that, concurrent delays refer to delay situations when two or more delays occur at the same time or overlap to some degree. For example, if an owner denies access to a project site for two weeks, and a severe storm prevents the contractor from working on the project for one of those two weeks as well, there will be a concurrent delay of one week. The contractor will be able to recover for delay damages for one week, as a severe storm is not a cause of delay that is compensable and would have prevented the contractor from performing even if the owner did not deny access to the site.

However, if there two concurrent causes of delay, one of which is a relevant event, and the other is not, then the contractor is entitle to an extension of time for the period of delay caused by the relevant event not with standing the concurrent effect of the other event.

2.3 Cause of Construction Delays

There are many factors that contributed to causes of delays in construction projects. These from factors inherent in the technology and its management, to those resulting from the physical, social, and financial environment.

2.3.1 Weak Organisation by Contractors

According to Bramble and Callahan in 1987 contractor's responsibility is related to methods, technics, procedures, stages and coordinations are continuous challenges to management sources. Due to financial constraints, even though contractor managed to get new projects but them could not afford to bear the additional staffs. In this situation will put contractor into condition that contractors

could not implement the projects smoothly and will lead to problem in fixing sufficient staffs into new project site.

Arditi et al in 1985 found that most of contractors quite slow in improving the good practices with relate to change of times and number of projects obtained. Most of contractors also did not interest to take the competent technical and management staffs. This was due to they were not aware of the potential benefits that they would be obtained. Also there are unable to analyse the job requirement, risk management, marketing, financial control, work organization, quality control and preparation of reasonable tender.

Imbert in 1990 studied issues related weak of organizational management found that the problems happened due to weak of plan, instable organization, bueracracy, not relevant regulations, slow in making decision and low productivity. According to Kirmani in 1988 turn over of staffs in company also gave an impact to the effectiveness of organizational management in project completion. This means that construction organization need mangers not only controller but also someone that can manage risks to the minimum.

Poor of Site Management

Dlakwa and Culpin in 1990 found that delay in project completion gave a big effect to construction industry and economy. According to Mansfield et al in 1994 lack of contract and site management can contribute to contractors' work plan, cost control and overall project management. These were due to lack of experiences management staffs and lack of technical staffs, low productivity, lack of short and long term financial funds and lack of experts.

Simms in 1984 found that most of construction staffs did not have sufficient knowledges in term of site management and quality control and also do not expert in modern management practice. Modern management techniques can improves the process and function of sources under his/her control by change the optimum usage of related components which involved in the process.

Lack in Planning Management

Oglesby et al in 1989 found that lack of planning and lack of knowledge in project control and also lack of record keeping contribute to delay of project completion. Most of contractor did not familiar with the modern practice to arrange works, plan, critical path analysis and control technique.Contractors sometimes have resources, but due to lack of planning will cause them fail to achieve scheduled target.

According to Oglesby et al again, construction was making the ideas in drawings and specifications into completed structure by installing their components. To ensure that ideas being implemented effectively and satisfy the required time and quality, so it need a proper planning. Contractor seldom prepare detail plan for their work activities. Furthermore, they always carry out works as their previous works. They oftenly rely on verbal communication and hand over the planning of activities to the foremen who will carry out the works. Although the works can be constructed but very much ineffective compared to if detail planning were being prepared. Most of construction managers ignored planning with reason that they do not have enough time.

Abdelhalim and Duff in 1991 found that normally condition of contract require detail work planning before works can be carried out at site. However, seldom actual works being carried out as per detail work planning. This is due to incompetent contractor's technical and management.

According to Laufer and Tucker in 1987 detail works programme only being prepared after they were delay and sometimes as evidence to obtain additional time to complete projects. Effective project management not only require project objective, but more than that such as planning and effective control to achieve target. In construction time and activity duration always relate to each other. If there were delay in any activity will effect the related activities.

2.3.2 Lack in Construction Materials and Equipment Management

Category of material related to delays was identified as one of causes of delays in construction projects. Okpala and Aniekwu in 1988 found that lack in construction materials in market always became an excuse for delay in project completion. The insufficient construction materials in the market were due to :

- Not enough statistical datas related to construction materials in current market.
- Rise and fall price of construction materials in market.
- Waiting period quite long and uncertain delivery of ordered construction materials.
- Not enough financial sources to pay the order.
- Not enough transportation for construction materials.

According to Fugar et al. (2010), material group delay factors were ranked the second most important factors responsible for construction delay in Ghana. The shortage of material problem was related to the ability of client to honour certificate. This caused of unavailability of materials on site at right time was due to the suppliers were reluctant to supply materials on credit because contractors could only pay them once the contractor had received the payment from the client.

Related to Manavazhia and Adhikarib survey, they found that material and equipment procurement delays in highway projects in Nepal. Delay in the delivery of materials and equipment to construction sites is often become a contributor to the cause of delay and make the cost overruns in construction projects. The main causes of material and equipment procurement delays were found to be organizational weaknesses, suppliers' defaults, governmental regulations and transportation delays.