



CAUSES OF TIME DELAY IN CONSTRUCTION SARAWAK, MALAYSIA.

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ABSTRACT

The aim of this study was to determine the factor that causes project delays in construction industries around Sarawak, Malaysia. By determining this factor, the project delays can be overcome by the related group. Through literature review, 90 factors which lead to the time delay in construction were identified from previous studies which were then clustered into three categories; contractor-related, consultant-related, owner-related. As a result, 14 factors were selected for contractor-related, 11 factors were selected for consultant-related and 14 factors were selected for owner-related. A questionnaire was then developed and distributed to the 12 construction companies in Sarawak. Prior to questionnaire distribution, interviews had also been conducted to understand in depth the causes of project delays. Using Mean Square and Standard deviation analysis method, the questionnaires were then analysed and each factor was ranked. From the data analysis, Inadequate owner finance and payment of completed work were top ranked for the contractor-related with a score of 4.07. For the consultant-related, slow inspection of completed work with a score 3.84 was ranked as the highest factor which contributed to project delays in construction field. Meanwhile, slow payment of completed work with a score 4.32 was the most highest factor which had contributed to delay in construction for owner-related group.

Keywords: Construction, Delays, Causes of Delays,

ABSTRAK

Tujuan kajian ini adalah untuk menentukan faktor yang menyebabkan kelewatan projek dalam industri pembinaan di seluruh Sarawak, Malaysia. Dengan menentukan faktor ini, projek yang tertangguh atau lambat siap daripada jadual sepatutnya boleh diatasi dengan faktor yang berkaitan. Melalui kajian sebelum ini, 90 faktor yang menjadi punca kepada kelewatan dalam pembinaan telah dikenal pasti dan kemudiannya dikelompokkan ke dalam kategori kontraktor berkaitan, perunding berkaitan, serta pemilik yang berkaitan. Hasilnya, 14 faktor telah dipilih untuk kontraktor yang berkaitan, 11 faktor untuk perunding yang berkaitan dan juga 14 faktor dipilih untuk pemilik yang berkaitan. Soal selidik telah dibangunkan kemudian dan diedarkan kepada 12 syarikat pembinaan di Sarawak. Sebelum soal selidik pengedaran, temu bual juga telah dijalankan untuk memahami secara mendalam punca-punca kelewatan. Menggunakan kaedah analisis Min Square dan Standard Deviation, soal selidik telah dianalisis dan setiap faktor disusun mengikut kedudukan yang menjadi punca pada kelewatan dalam pembinaan. Daripada analisis data, kewangan pemilik yang tidak mencukupi dan pembayaran kerja yang telah siap menduduki tangga tertinggi untuk kontraktor berkaitan dengan skor 4.07. Manakala untuk perunding yang berkaitan, kelewatan untuk menjalankan pemeriksaan hasil kerja yang siap telah menghasilkan skor 3.84 dan menjadikannya sebagai faktor yang paling tinggi menyumbang kepada kelewatan dalam bidang pembinaan. Sementara itu, pembayaran lambat untuk pembinaan yang telah siap dengan skor 4.32 merupakan faktor yang paling tertinggi menyumbang kepada kelewatan dalam pembinaan untuk kumpulan pemilik yang berkaitan.

Keywords: Pembinaan, Kelewatan, Punca Kelewatan.

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CHAPTER 1

INTRODUCTION

1.0 INTRODUCTION

The purpose of this study is to determine the factor which had lead to time delay in Sarawak construction industry. In construction, owner, consultants and contractors were the groups that usually related in this field work. To ensure the project were not delayed, every group-related should be responsible. Previous studies had identified 3 major causes of delays which involved owner-related, consultant-related and contractor-related causes. Theses causes are responsible to ensure the smooth progress of projects. Since Malaysia is considered as a developing country, it is very important to study the factors which had caused a delays in construction progress in order to complete the project within time limit and reduce risk of cost overrun. Construction delayed which lead to the major problems were, costly, complex and risky problems that usually encountered in every construction project (Alaghbari et al., 2005).

An exceeded time of completion from the scheduled time limit are deemed as a delay and the loss of profit. These are due to the extra use of materials, labor payment and changes of design, which result cost overrun. Project completion delays are caused by contractor-related, consultant-related and owner related causes. Cost overrun occured when there are change in the price of the materials, design, and underestimated project cost.

Contractors who bid for the lowest price of the project also lead to delays in project completion. The ability to avoid time delays and cost overrun had become a major problem around the world of construction industries. (Ahmed et al., 2002). Hence, this study will focus more about contractor-related factors, consultant-related factors and owner-related factors in order to overcome the factors that cause a delays in construction project industries.

1.1 BACKGROUND OF STUDY

Construction projects play a vital role in the country development. This is due to the fact that the construction should be completed within time given to ensure the development progress continued. E Jacqui Chan mentioned that, although the total number of projects had been declined from 7500 in 2011 to 7142 in 2012, the value of the project increased from RM90billion to RM117 billion in 2012 (The Edge 2012). As Malaysia is still considered as a developing country, thus any construction progress needs a very proper time and cost management. Any delay of the project could cause an additional cost of the project. According to Mohit Joshi “up to 80 per cent of projects developed by the government were facing problem with scheduled completion dates, giving rise to concerns of inefficiency in construction works in Malaysia” (TopNewsIn, 2009).

Therefore, all construction progress must be completed in time to avoid any problems of new tendering or construction progress in the future. It is compulsory for the contractors to state the number of completed projects, projects on hands, projects in tender and projects in progress. It aims to evaluate whether the contractors are capable of applying a new tender for new projects as the new regulation will help all the contractors in Malaysia to overcome the project delay and cost overrun (Master Builders Association Malaysia (MBAM)). An effective development of construction without any time delays and cost overruns, will help to boost out the economic sector in Malaysia. By studying the factors

that cause delayed project completion in Sarawak, it will help the construction industries to overcome the problem which usually affecting the state economy and development sector.

The factor of delay was analyzed accordingly and ranked based on a major factor which had a higher potential of occurrence in causing project delay. Contractors must understand that hiring experienced workers will help to reduce mistakes in the workplace. Workers were known as a strong pillar for a project to complete on time, as they can avoid making a wrong interpretation of the design works which could cause an overrun cost. This had been one of the problem faced by Malaysian contractors in order to complete a project on time.

The government should play their role in helping to produce a good quality workers, especially in terms of technical works. Besides that, the government should seek for a better experienced technical workers from another countries such as Bangladesh, India, and the Philipines. To overcome the problems, the government had implemented a proposal suggested by MBAM and other construction groups by providing a workforce from these foreign countries. As such, the government had signed a new memorandum of understanding (MoU) with Dhaka, which will set out new terms for a Bangladeshi workers to be one of the workforce of construction industry in Malaysia beginning of December, (Asia, 2013).

The contractor's commitment on working progress were usually affected by the trust of the owner for the future construction progress. The reputation of the company will affect the contractors possibilities to have a new tender from the same company. Owners of the company might thinkt about the new contractor selection that were capable to completed the construction work on time. Besides that, owners also play a vital responsibility in choosing the winner for the tender of the project. The owner should not be selecting the contractor based on the lowest bid of the tender, but they should well monitor on the quality and experience of the contractor on the selected project. The consultants also might face problem in organizing the project due to project delays which were affected by the changes of design in order to overcome an overdue project. Consultants should be aware that they play an important role in order to ensure the project were well designed and organized so

that the contractor's progress of work were not affected by any changes in design and use of material. Contractors must have a very experienced workers who are capable to interpret design correctly, a project manager who is an expert in organizing work and a responsible supervisor who is capable in monitoring work progress.

The contractor should be well-informed of the current price of the material in the market nowadays to avoid cost overrun. The contractors also need to ensure their materials supplier get delivery on time to avoid time delays. Besides that, the contractors must certify the reputation of the materials supplier, to guarantee a good quality and availability of the materials before the construction works begin. Moreover, the contractors need to make sure that their subcontractor is a trusted contractor so that the quality of works is well determined to avoid any reconstructed and changes in progress which might cause a time delay and project cost overrun later on. The contractor, consultant and owner need to understand what, how, and why their project were delayed and be ready to solve the constraints before it happened. Therefore, to avoid making the same mistakes in the future, it is important to study and analyze the rank of factor which will cause the project delay involving contractor-related, consultant-related and owner-related.

1.2 PROBLEM STATEMENT

Time delay had been a big issue in Malaysia construction industry. An incur in additional cost was due to the projects which were delayed, either extended or accelerated (C. Ramanathan, 2012). . Stephen O Ogulana and Krit Promkuntong (1996) mentioned that the blame the project delays were laid mostly on the contractor. Sambasivan and Soon (2012) had identified ten most important factor contractor-related which cause a time delay, they such as contractor's problem in planning, inefficient site management, company finances and payment for the work's completion, subcontractor problem, insufficient materials, lack of labor, equipment problems, lack of parties, and mistake during construction progress.

The study focused on delayed projects, which were categorized as a contractor-related problem in construction. Construction project needs to be completed within the time limit of the contract period beside providing the best quality in order to ensure the satisfaction of the client. Thus, it was very important for the contractor to understand these condition so that they would not exceed the time provided and give the best quality of work as this would ensure their place in dominating the new tender by giving the best impression towards their client throughout the year. First, the factors which had contributed to time delays in construction will be identified. After that, these factors will be ranked based on their mean score value accordingly. The factors which usually occur during site progress will be determined. Then, the effects of delay which was based on the severity of the delay will be identified by referring to the frequency of selected factor which had contributed towards delay in construction site. By performing all of these steps, the main cause that had lead to time delay for most of the contractors, consultants and owners in Sarawak, Malaysia will be figured out.

1.3 RESEARCH OBJECTIVES

The purpose of the study is to analyze and study the factor and the effects of time delays in the construction industry, by focusing on the contractors, consultants and owners category in Sarawak, Malaysia. Specifically, these was contingent to fulfilling the three objectives, namely:

1. To study the factors which had caused time delays in construction.
2. To analyze and ranks the factors based on the mean score and standard deviation.
3. To study the severity effects of time delays based on causes which are related.

As mentioned in the above objectives, this study will identify the factors which had cause delayed and analyze the factor based on the mean score and standard deviation. After that, the severity effect of the time delay based on a frequency will be known. The

findings of this study will help to guide the contractors, consultants and owners in order to overcome the problems in construction delay.

1.4 SCOPE OF STUDY

The research aims to study the causes of time delay based on contractor-related, consultant-related, owner-related categories in Sarawak, Malaysia. The scope of the study will be all the main factors which had leads to time delay in construction. Based on the frequency of occurrence, the data collection will be analyzed by using the mean score and standard deviation method. After that, all the severe effects that contributed to time delays will be studied based on the frequency of the cause that occurred. The three main causes for time delay were identified as contractor-related, owner-related and consultant-related.

Besides that, the study will be focused on project manager whom monitor the progress of work, the consultants, a quantity surveyor (QS), quality assurance/control (QA/QC), project engineer and manager of the company that had been chosen and requested to respond towards several factors which were related to time delays in construction at that time to achieve the main objectives. In order to maintain the privacy and confidentiality of the company in these case study, the name of the company will not be mentioned and will only be represented by using an alphabet. The contractors, consultants and owners which will be chosen were more either on progress or completed their construction.

1.5 RESEARCH SIGNIFICANCE

The research will be giving the contractors, consultants and owner a great overview regarding the factors which had caused their project to be delayed. They will have an advantage by identifying the problem that might cause their project to run exceed the

contract period in the future. By using this case study, possible factors of time delay could be avoided before the construction starts. For instance, if a company faced a shortage of labor or materials before the starting of construction, the company problem will be solved first before it cause a time delay in the project. Moreover, through these studies, the construction budget can be controlled . These will help the contractor to overcome any cost overrun due to the delay of the project.

Another advantages of the study is its flexibility, when the project manager noticed any delay in the work progress at the construction site, the project manager will find a solution based on the study. In addition, the contractors will eventually ranked the factor that had contributed to the delay as the main issue and will try to overcome the problem that were not noticed before. For the quantity surveyors, any delay in materials supplied that had caused the project delay will be easily determined. Thus to overcome these, the quantity surveyor will try to used other material suppliers so that the project progress according to the construction planning.

In terms of that, previous studies had shown that the study about the factor of time delay will help the practitioners to be more understanding in ways to reduce the causes of delays (M. Sambasivan & Y.W Soon, 2006). So, it is clear that these study will help the contractors, the consultants, and the owners to overcome any factor that could lead towards delayed in the future construction industry.

1.6 SUMMARY

This chapter generally explained about how this study will be conducted. The purpose of this study is to study the factors of construction delay and the effects towards the construction company in Sarawak, Malaysia. The objectives of this study will be the basis of the whole study.

CHAPTER 2

LITERATURE REVIEW

2.0 INTRODUCTION

In this chapter, a review of related articles and the past literatures that were related to the study were summarized below. The literature review will be used to study the factors which had caused project delay which then will then be analyzed according to the ranking and the severity effects that were identified. It will help to determine the factors that cause delay in Sarawak construction industry which were the main objective of this study.

2.1 DEFINITION OF TIME DELAYS

In every construction around the world, there will always be a contract duration in order to make sure the project is completed with a certain period and the client will be able to use it after its completion. Construction duration was defined as the elapsed period from the commencement of foundation works on-site to the practical completion and handover of the building to the client (Albert and Chan, 1996). However, in Malaysia, most the contractors face a problem to complete their project on time. This was an act of delay due to several causes which contributed to time delays. Sanders and Eagles defined delays as “an event that causes an extended of time for completion of the entire project or part of the

project". Meanwhile, SM Ahmed concluded that, "time delays actually had become a construction phenomenon and these created an effect towards the owner, consultants, and contractor based on their relationships, distrust, litigation, arbitration, cash-flow problems, and their impression based on work progress".

2.2 STUDIES ON CAUSES OF TIME DELAYS

The studies of time delays has been done by previous researchers. A study was conducted in order to overcome a worldwide problem regarding the causes of time delay in construction. According to C. Ramanathan (2007), he concluded that a total of 18 categories of cases were identified from the various related studies reported in the literature. These 18 categories or groups were identified as Finance-related, Project-related, Project Attributes, Owner/Client, Contractor, Consultant, Design-related, Coordination, Materials, Plant/Equipment, Labor/Manpower, Environment, Contract-related, Contractual relationships, External, Changes, Scheduling & Controlling and Governmental relationship.

According to A. Albogamy, D. Scott, N. Dawood (2012), the researcher attempted to rank all 63 delay factors without classifying them in any category and the researcher found that the top 10 factors which had contributed to time delay were: Government tendering system which usually selects the lowest bidder as the winner of the tender, subcontractor work which that delays, lack in qualification for the project, non-efficient working progress by the staff, unprepared and improper planning and scheduling by the contractor before any construction begin, problem with late payment by the owner after completion of certain part of work progress, unqualified engineers for the projects, delay in drawing preparation, cash flow problem faced by the contractors, inadequate early planning of the project, and the involvement non-utilization of professional construction contractual management. The researcher suggested that, in the future, the implementation of a framework based on risk management would help to overcome the delays in project that was usually associated with construction industries in the Kingdom of Saudi Arabia.

Besides that, M. Sambasivan and Y.W .Soon has identified from their previous studies on causes and effects of delays in Malaysia construction industries shows that ten most important causes were: contractor's lack in planning, poor site management, contractor's experience in project, financial problem from the clients and payment for completion project, subcontractors problem, material shortage problem, availability of labour for general work, machineries and equipment functional for the project, lack of cooperation and communication between parties involved, and failure during progress of construction. They believed that, every contractor must practice to overcome this kind of conflict to reduced the cause of time delays in construction. They suggested that, this study should be expanded further since there were more factors which could relate to time delay in which the contractor does not realized the internal and external possibilities that lead to time delay.

A.S. Ali, A. Smith, M. Pitt and C.H Choon (2004) had found that, the three most common factors that occur in construction industries contractor-related shows that labor supply, financial of the contractors and construction failure and defects during site progress. Besides that, the effects of delays after analyzing the frequent potential of delays occurs, identified that cost overrun and extension of time (EOT) were the most common effects of delay in construction projects. From this, the study has identified that EOT is one of the factors that lead to contractor delays. The client is usually given EOT if the project delays based on excusable delays, K. S. Wei (2010) states that excusable delays were the condition that was delayed an unforeseeable and beyond the contractor's or the subcontractor's control.

N. Hamzah, M.A. Khoiry, I. Arshad, W.H.W. Badaruzzaman, and N. M. Tawil (2012), has identified several factors that contributed to construction delays in Malaysia. The researchers had conducted a Rash analysis to obtain the various factors and claimed that 20 factors lead to the time delay in Malaysia construction industries. The causes was labor work productivity, material delivery, the increasing price of material, insufficient financial from the contractor. contractor's lack of experience, poor site monitor, failure and defective during construction, poor supervision, the inability to estimate project duration, failure in providing information to construction site, problem with the owner,

design changes and error, the slow progress in approving shop drawing, incomplete tender document, supervision always late, inadequate consultant's experience, lack of effective communication among each parties involved, weather condition, disruption of work progress by public and late of approval building permit by the Government. These were the factors that had caused delays in Malaysia construction industry. The researchers believed that in order to overcome the delay factors should not only restricted towards technical factors, but also include factors from the project management perspective, the processes which affected by human factors. Moreover acceptance from the public behavior was also one of the main constraint to overcome project delays in Malaysia.

Abedi, M, Fathi, M. S. & Mohammad, M. F. (2011) had also studied about the effects of construction delays on construction in Malaysia. They had identified six major effects of delay in construction projects included time overrun, cost overrun, dispute, arbitration, total abandonment, and litigation. They suggested, overcoming delays will result in mainly completed the project based on contract dateline, under estimate budget and the quality of the project will be completed according to the specifications which will then fulfill the satisfaction of stakeholders. L. L. Hoai, Y. D. Lee, and J.Y. Lee (2008) used factor analysis technique in order to identify factors which had contributed to delays in construction. From the research studies, 7 factors were extracted, such as the slow and lack of constraints, incompetence among contractors, design changes or error, financial and market of materials, the financial capability of the contractors, cooperation with the Government and general workers. S.A. Assaf, S. Al-Hejji (2006), indicated that owners and consultants realized that the highest factor contributed to delays was awarding the project to the lowest bidder, while contractors main problems with delays are due to the owner of the project. The researchers also stated that, delay in progress payments, ineffective planning and scheduling by contractor, poor site management and supervision by contractor, shortage of labors and difficulties in financing by contractor are the main factors that were related to contractor delays in progress. The researchers also identified that both owners and consultants agreed on labor supply and production of contractor related causes were the main important sources of delay, while, the contractors stated that the owners and consultants are the main sources of delay in construction projects. Based on several factors

that contributed to delays in construction, the researchers recommended that, every owner must ensure that all the payment progress of the contractor were paid on time so that the contractor would have an enough financial for the work progress. The reserchers also believed that, the interruption of the owner during construction also could lead to delays in projects such as changes in design. The researchers suggested to the owner to avoid delay in reviewing and approving of the design which could cause a late start of the project. The owners also should check the resource or financings of the contractor before awarding the tender based on the lowest bid. Based on contractor related, the researchers suggested the contractor try to get an enough supply of labor and make sure they are well motivated for every progress of work to ensure their productivity and enthusiasm of producing an impressive quality of work. The owners also should manage their finances for utilization of payment progress. Based on planning and scheduling, the owners should ensure their work progress continuously so that there were no cost overrun and time delays. Administration and technical staff should be appointed to their site construction as soon as the project received. These were to ensure that there was no delay in starting and overcome a project delays which probably occur in their working progress.

2.3 DEFINITION OF EFFECTS ON DELAYS

Effects was a change from a result or consequence of an action or other cause, (Oxford Dictionaries). Factor that caused time delays in construction in any place will results an effect towards time delay in construction.

2.4 PREVIOUS STUDIES ON CAUSES OF DELAY

A number of studies had been conducted by previous researchers over a decade in order to solve delays in construction industries. Delays problem has been a serious issue for construction project begun. Pratt (2000) a construction and project management consultant (PMC) in Malaysia since 1962, had mentioned that projects in the last decade has not functioned perfectly in Malaysia. M. Sambasivan, Y.W. Soon (2007) had conducted a questionnaire towards selected individuals who were involved in construction to assess the perceptions of clients, consultants, and contractors on the relative importance of causes and effects of delay in the Malaysian construction industry. They were using 28 common problems in the construction delay factors which had been identified by Odeh and Battaineh(2008) in their previous studies and found out 10 most serious causes that could lead to delays in construction industries. K. A. Mohammed (2012) had identified 43 major factors cause delay in construction at Nigeria. The researchers use a questionnaire and distributed all the questionnaires among 150 respondents in order to gain the perspective and the opinion of the respondents regarding their experienced in factor causes delay in construction.

A.H. Memon et. al (2010) had identified 24 factors affecting construction cost and conducted a pilot questionnaire survey and interviews among three groups of respondents which consists of clients (6 responds), project management consultants (9 responds) and contractor (6responds). W. Alaghbari (2007) from previous studies categorized each factor that causes delay in project into three main groups which were contractor-related, owner-related, consultant-related. For this study, causes of delays will be categorized into three major factors that could lead delay in construction industries in Sarawak that were contractor-related, consultant-related, and owner-related.

2.5 CONTRACTOR-RELATED DELAY CAUSES

The literature reviews were conducted through books, engineering journals, news, articles, previous thesis, the internet, and interview with experts from the construction industry to identify factors that were responsible for delays construction projects around the globe. Previous literature mentioned by L. Muhwezi (2014) that proper project planning, adequate materials supply, availability of equipment and adequate labor were keys towards the successful implementation of building construction projects in avoiding delays project in Uganda.

Aibinu and Odeyinka (2002) had identified that financial difficulties, equipment breakdown and maintenance problems, planning and scheduling problems, material and equipment shortages, slow mobilization and shortage of manpower as main causes of delay in construction. Chan and Kumaraswamy (1997) concluded that shortage of material and poor procurement of material leading as the main contributors in causes of delays in Malaysia. In other studies, the researcher had identified shortage of materials in the market as a factor causing delay, poor quality of materials, escalation of material prices and late delivery of materials as factors causing delay. Meanwhile, Assaf and Al-Hejji (2006) identified that equipment failure, shortage of equipment, inexperienced labor experience, low quality and efficiency of equipment being used, lack of using high-technology mechanical equipment as causes of delay in Saudi Arabia.

H. Memon et. al (2010) identified and ranked cash flow and financial difficulties faced by contractors as being top of the causes in a MARA delay project, which were shown by the contractor's poor site management, inadequate contractor experience, shortage of site workers and incorrect planning and scheduling by contractors. W. Alaghbari (2007) ranked the factors that caused delay based on contractor-related. Financial problems ranked the highest followed by the shortage of materials on site, poor site management, construction mistakes and defective work, delay in delivery of materials to site, coordination problems with others, shortage of site labor, low labor productivity,