

THE IMPACT OF WEATHER CONDITION
TO CONSTRUCTION PROJECT IN
MALAYSIA

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I hereby declare that the work in this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Malaysia Pahang or any other institutions.

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**THE IMPACT OF WEATHER CONDITION TO CONSTRUCTION PROJECT IN
MALAYSIA**

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Specially Dedicated To

My beloved parents:

Mr. Abu Hassan Asaari B. Yasak

Mrs. Noryati Bt. Samsudin

&

My supported friends

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ABSTRAK

Keadaan cuaca di Malaysia merupakan punca berlakunya masalah kelewatan di tapak projek dan memberi kesan kepada pihak yang terlibat dengan masalah tempoh dan kos pembinaan. Hal ini, disebabkan cuaca yang tidak menentu dan keadaan cuaca yang teruk memberi kesan terhadap segala aktiviti pembinaan menjadi terhad iaitu dengan kerugian yang dapat dikaitkan dengan produktiviti buruh yang berkurang disebabkan gangguan untuk menjalani sesuatu aktiviti. Keadaan cuaca yang memberi kesan terhadap pembinaan adalah seperti cuaca hujan, panas dan angin yang kencang, ini disebabkan Malaysia dikenali sebagai negara yang panas dan lembab sepanjang tahun. Kelewatan projek pembinaan yang disebabkan oleh cuaca boleh diminimalkan dengan mengetahui kesan dan cara mengatasi masalah semasa pembinaan. Objektif kajian ini adalah untuk mengenal pasti kesan utama cuaca yang memberi kesan kepada berlakunya masalah kelewatan di projek pembinaan dan cara yang digunakan untuk menyelesaikan masalah tersebut. Kajian ini dijalankan berdasarkan kajian literatur dan pengumpulan maklumat melalui borang kaji selidik. Dari kaji selidik yang dijalankan, kajian ini membentangkan keputusan kajian yang dijalankan untuk menentukan dan menilai kesan utama punca kelewatan yang berlaku disebabkan oleh cuaca dan cara mereka mengendalikannya. Kaji selidik diedarkan kepada kontraktor, perunding, pemilik yang dipilih secara rawak. Indeks kepentingan relatif digunakan untuk menukuhkan skor purata dan kedudukan untuk analisis dan kesimpulan. Kesan langsung dan tidak langsung dari peristiwa cuaca pada logistik, kawasan, proses atau produktiviti, pekerja dan kewangan dibincangkan secara terperinci. Kesan langsung dan tidak langsung dari cuaca dan perubahan iklim memberi kerosakan terhadap alatan dan kawasan pembinaan yang disebabkan oleh peningkatan suhu dan peningkatan kadar hujan. Olehnya demikian, ia telah menyebabkan kelewatan kepada proses pembinaan dan seterusnya memberi peningkatan kos kepada projek.

ABSTRACT

Weather conditions in Malaysia are the cause of delay in construction project and affect parties involved with period and cost problems. Due to uncertain weather and severe impact on all construction activities that will be limited by losses that may be attributable to reduced labor productivity due to interruption of an activity. Weather conditions that can be linked are rain, heat and extreme winds condition as Malaysia is known as a hot and humid throughout all year. Delayed by weather can be mitigated when impacts and means of overcoming during construction are identified. The objective of this study is to identify the main effects of the weather affecting the delay in the construction project and the way it is used to solve the problem. This study is based on literature review and information collection through surveys. From the survey, this study presents the results of the study to determine and assess the major effects of the cause of the delay caused by the weather and the way they handle it. This survey is distributed to contractors, consultants, owners who are randomly assigned. Relative importance index (RII) is used to create average scores and ranking for analysis and conclusions. The direct and indirect effects of weather events on logistics, areas, processes or productivity, employees and finances are discussed in detail. Direct and indirect effects of weather and climate change include damage to equipment and areas due to higher temperatures and increased rainfall, with delayed costs and increased cost to the project.

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LIST OF ABBREVIATIONS

RII Relative Importance Index

CHAPTER 1

INTRODUCTION

1.1 Background

In globalization world, Malaysia construction industry became as an important and integral role for economic and social development of the country. Malaysia construction also becoming faster growing in the world in 2016-2020, expected to expand by close 7% a year by according to a report by Timetric's Construction Intelligence (CIC) (Malaysia's construction industry will among the fastest growing in the world in the next five years Jan 2017). The construction industry is expected to be supported by the government's plan in order to improve the country's transport network, tourism infrastructure and increase the volume of renewable project.

The construction industry is always facing with delay or overtime in order to complete a project. The one of the factor delay in construction project is the weather condition in Malaysia, which have significant impacts on project schedules and financial (cost). Malaysia is located in the Equator with known as tropical climate with has temperatures at an average of 27 Celsius and humidity rates are between 70-90 percent making Malaysia hot and humid throughout the year (Climate of the World n.d.). Therefore, Malaysia has faced several weather conditions which are rainfall, wind, extreme temperature, flood and natural disaster. However, since several years ago the weather conditions in Malaysia not are predicted and always change of weather pattern every year and give impact toward to all construction operation on site. (Nik Nazli Nik Ahmad, Dewan Mahboob Hossain 2014) state that climate change and global warming, in many ways, have adverse effects environment and human. Thus, weather condition will affect the stability, design and all performance of construction. Then, the construction industry or construction companies need to consider about the weather

condition may be face during conduct or operate a project to avoid any problems at construction sites and construction delay.

1.2 Problem Statement

In Malaysia, the delay in construction is not the new problem happen to the construction industry. Usually, when the projects are delayed, they are either extended or accelerated and therefore, incur additional cost. Many of factors may contribute to delay occur and give the negative impact to a construction project. The most common factor may lead to delay occur for a project is weather condition in Malaysia.



Figure 1.1 : Utusan Online article

Unpredictable weather changes in Malaysia, especially in the area of East Coast, have caused the project not completed within the time given by the client. The weather heavy rain, wind, storm and natural disaster is bad weather happen and unpredictable weather changes in Malaysia. In study case of Construction project of second bridge of Sultan Yahya Petra, at Pasir Mas Kelantan was delayed due to weather change factor. Director of the federal development department Kelantan (JPPK), Datuk Makhtar Mustapa told that the change of weather causing the change structure of the earth and make it difficult to plant the pile of bridges. Therefore, the study is aimed at identifying the impact of bad weather on the construction of the project and what is the fitting or way taken by the piers involved during the construction of the construction site.

1.3 Objective of Study

This research was aimed to identifying the side impact weather condition to the construction project in Malaysia. To achieve this aim, the following objectives have been identified:

- i. to identify the most of type of weather condition impact to construction project
- ii. to identify the weather condition effect of construction project in Malaysia.
- iii. to evaluate how construction companies manage their project during weather condition.

1.4 Scope of Study

The study is focused on identifying the impact of weather condition to the construction project. The scope of research is mainly focus on literature review and questionnaire survey. Therefore, the questionnaire survey would be designed based on the how weather affect the construction project and the action from all parties to curb the problem. The limitations of this study include that the data sampling was done in Malaysia only. The respondents for this research involve client, consultants, contractor and government (Jabatan Kerja Raya Malaysia-JKR).

1.5 Significant of Study

The study is expected to identify the result of either weather condition give the impact to construction project in Malaysia. Thus, by identify the impact to construction project, this study of result to looks at how contractor, consultant and owner will manage or conduct this problem since the weather in Malaysia cannot be predict and continuously change every year. Therefore, by identify the best solution was taken by the consultant and contractor from the beginning to complete of project construction.

Besides, it can be as a guideline for those who are involved in construction project such as developer, architect, engineer, contractor, quantity surveyor and others that will face with problem of weather condition on construction project.

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