

A STUDY ON THE CAUSES OF DESIGN CHANGES EFFECTING
THE CONSTRUCTION PROJECT PERFORMANCE

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(AA12204)

A report submitted in partial fulfillment of the requirement for award of the
degree of B. ENG. (HONS) CIVIL ENGINEERING

Faculty of Civil Engineering & Earth Resources

UNIVERSITI MALAYSIA PAHANG

JUN 2016

SUPERRVISOR'S DECLARATION

“I hereby declare that I have check this thesis “ A study on the causes of design changes effecting construction performance” and in my opinion, this thesis is adequate in term of scope and quality of award of the degree of B. ENG (HONS) CIVIL ENGINEERING”

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“I hereby declare that the work in this thesis “ A study on the causes of design changes effecting construction performance” is my own except for quotation and summaries which have ben duly acknowledgement. This thesis has not been accpeted for any degree or is not currently submitted for award of other language.

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ABSTRACT

Although many project time delays, cost overruns and quality defects particularly in the construction sector are attributed to design changes, the associated issues have not yet been thoroughly investigated. This relatively of this study is to study the causes of design changes effecting the performance of the construction project. Besides, it is to obtain the information about the causes of the design changes and then analyzed what are the causes of design changes that effect the performance of the construction project. The scopes of this research will cover the area in Peninsular Malaysia. It is focusing on the causes of design change in the engineering practitioners. The questionnaires were prepared and hand out to the person involved in construction project. Data gathering carried out by doing literature review, applying a questionnaire survey and making related interviews through contractor, owner and consultants company's experts. According to the study thirty eight main of causes have been identified. These factors were then ranked on their relative importance, based on data from a questionnaire survey distributed to a wide range of professions in the industry. An analysis of the results found that the most influential factors contributing to design changes are design complexibility, non-compliances design with owner, and owner's financial problem respectively.

ABSTRAK

Walaupun kelewatan masa projek, kos yang berlebihan dan kecacatan kualiti terutamanya dalam sektor pembinaan memberi kepada perubahan yang banyak, isu-isu yang berkaitan belum lagi disiasat dengan teliti. Kajian ini berkaitan untuk mengkaji punca-punca perubahan reka bentuk yang memberi kesan kepada prestasi projek pembinaan. Selain itu, ia adalah untuk mendapatkan maklumat tentang punca-punca perubahan reka bentuk dan kemudian dianalisis apakah punca-punca perubahan reka bentuk yang memberi kesan kepada prestasi projek pembinaan. Skop kajian ini akan meliputi kawasan di Semenanjung Malaysia. Ia memberi tumpuan kepada punca-punca perubahan reka bentuk di pengamal kejuruteraan. Soal selidik telah disediakan dan dierahkan kepada orang yang terlibat dalam projek pembinaan. Menurut kajian itu tiga puluh lapan utama punca telah dikenal pasti. Faktor-faktor ini kemudiannya kedudukan mengenai kepentingan relatif mereka, berdasarkan data daripada kajian soal selidik diedarkan kepada pelbagai profesion dalam industri. Analisis keputusan mendapati bahawa faktor-faktor yang paling berpengaruh menyumbang untuk mereka bentuk perubahan adalah reka bentuk yang susah, ketidakpatuhan reka bentuk dengan pemilik, dan masalah kewangan pemilik masing-masing.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Construction project is a complicated and complex process, which required good cooperation and high commitment among stakeholders. These processes have many and different stages that become more complicated to manage. There is five stages of the construction processes which is pre-construction, foundation, framing, interior and exterior work, and from near completion to hand-over (Canadian Home Builders Association). These processes must be managed wisely following the scope and schedule as deal by the owner, consultant, and contractor.

As pointed out by others researchers, design is the important thing in improving the development of the construction project. The best design will enhance value of generation, reduce illegal and dispute, and smoothing the work process. As the designing work is undertaken, there are possibilities of the design having a change. The more changes made the more project process will be affected. The changes may occur due to the need specified by owner to reduce project cost or to rectify the mistake (Wang and Soh, 2000).the design changes may cause contractual disputes, time of completion delay, cost overrun, compromising on quality and frustration. To the parties involved, the changes will need to submit the fresh claim on extra work done that can give difficulties in claim management.

The owner, consultant, and contractors are very concern about the cost and risk on their contract. Risks that are related to design changes are very important things that should give more attention to avoid it. This risk should be taken seriously and must take the best solution to handle it because design changes can cause the performance of the project become worse. Cost of repair project will be higher if the changes after the construction process finished.

Usually the condition of construction is constantly changing. Companies must develop and improve continuously to become succeed. Changes must be based on knowledge of both the environment and one's own work. In this situation possible solution to avoid design changes is necessary and very important. Effective actions can be taken to improve the process with this knowledge (P.-E. Josephson & Y. Hammarlund, 1998).

1.2 Problem Statement

Nowadays, the problems of design changes in a construction are still exist. These changes can give huge impact in construction project performance which is can cause the project completion time delayed and cost overrun. Design changes also can make the quality of the project becomes discrepancies and legal dispute. These design changes usually request by owner and consultant. Mostly, project skate holders cannot manage these changes properly and lead to the construction performance becomes worse.

As stated in New Straits Times 21st Oct 2015 by Minderjeet Kaur, "The project of constructing KLIA2 that began since 2009 had several delay due to the design chnages and extensive earthworks". Malaysia Airports has to date forked out RM76.5 million repair works at KLIA2 since the airport opened last year May. This shows that design changes give more problem once it occured such need to spend money to rectify these poor quality and give bad impression to the customers and the future customers.

1.3 Objectives

There are 3 main objectives obtained from the problem statement above:

- i. To study the causes of design changes effecting the performance of the construction project
- ii. To obtained the information about the causes of the design changes
- iii. To analyzed what are the causes of design changes that effect the performance of the construction project

1.4 Scope of Study

Related to objective obtained, the scopes of this research will cover the area in Peninsular Malaysia. This study is only focusing on engineering consultant perspective only. The suggestion is focusing on the method how to improve the management of design change order in the engineering consultant practitioners. The questionnaires will be prepared and some interview will be conducted with person involved in this project and the person should have 5 years and above working experiences in construction.