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**EFFICIENCY IN CONSTRUCTION PROCESS**

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# EFFICIENCY IN CONSTRUCTION PROCESS

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A project report submitted in partial fulfillment of the  
requirements for the award of the degree of  
Master of Science (Construction Management)

Faculty of Civil Engineering  
Universiti Teknologi Malaysia

APRIL 2010

I declare that this project report entitled "*Efficiency in Construction Process*" is the result of my own research except as cited in the references.  
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Dedicated specially

To my beloved family and friends  
Thanks for the never ending love and support

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## **ABSTRACT**

Construction industry currently is facing with a lot of problems mainly associated to its inefficient work process. This phenomenon has been manifested by frequent news and critics about project delay and inferior quality. Therefore there is an urgent need for construction industry to improve this situation. Many efforts have been done to improve the performance of the construction industry reputation such as using alternative procurement system, adoption of tools and management philosophy from other industry and using to new technological advancement such as the used of modular construction in Malaysia. In view to these problems face by the industry, this study has been undertaken with the aim to determine the strategies to improve the efficiency in construction process. The methodologies adopted for this study are the interview with expert panels and the distribution of questionnaires survey. The findings from this study confirmed that the construction industry particularly in Malaysia need to be improved with regards to its efficiency. There are also a lot of problems associated to construction such as poor site management, redundancy of activities, project delay and lack of focus to customer/end users' requirement. The study also determined that the main strategies currently promoted to achieve the improvement are by using Industrialized Building System (IBS). Many organizations also integrate the quality management system such as ISO 9001 and Total Quality Management System (TQM) in their business process. The used of management tools and philosophies from other industry is not a popular strategy.



## **ABSTRAK**

Industri pembinaan kini menghadapi pelbagai masalah yang berhubung kait dengan proses kerja yang tidak efisien. Fenomena yang seringkali dikhabarkan di dalam berita ialah mengenai kritikan kelewatan projek dan masalah kualiti. Sehubungan dengan itu, terdapat keperluan untuk memperbaiki perkara tersebut. Pelbagai usaha telah dijalankan bagi meningkatkan tahap prestasi dan reputasi di dalam industri pembinaan. Ini adalah termasuk mengenalkan sistem pemerolehan baru, kaedah dan filosofi daripada industri lain seperti perkilangan dan juga pemakaian teknologi baru seperti sistem modular di Malaysia. Oleh yang demikian, kertas kerja ini disediakan bertujuan untuk mengenalpasti strategi yang dapat meningkatkan tahap efisien di dalam pengurusan pembinaan. Dua kaedah yang telah digunakan di dalam kertas kerja ini ialah temubual dengan panel pakar dan borang soal selidik. Hasil daripada kajian ini didapati industri pembinaan di Malaysia perlu ditingkatkan lagi tahap efisiennya. Terdapat juga pelbagai masalah yang berkaitan dengan pembinaan seperti masalah pengurusan tapak, aktiviti yang berlebihan, kelewatan projek dan kurang menitikberatkan kepuasan pelanggan. Kertas kerja ini juga telah mengenalpasti strategi yang telah digunakan untuk meningkatkan tahap efisien di dalam proses kerja oleh industri pembinaan di Malaysia adalah penggunaan sistem perindustrian pembinaan (IBS) serta pengurusan kualiti seperti ISO 9001 dan Total Quality Management System (TQM). Hasil kajian juga mendapati penggunaan sistem pengurusan baru yang telah digunakan oleh industri lain kurang popular untuk diadaptasikan di dalam industri pembinaan.

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## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 Introduction**

The term traditional work process can be literally understood as the common practice inherited from the long established custom of delivering the construction project based on fragmented work process. In general this practiced has dominated the industry with the separation of design and construction function. There are a lot of definitions about efficiency in construction. In general, efficiency in construction process can be defined as the project constructed within time scheduled and cost budgeted. It is also were defined as process that produced less or no construction waste with a good quality project, no redundancy activities, good construction management and good monitoring and controlling construction process. Traditional construction process always been related with inefficiencies because it produced a lot of problems. Traditional construction process is always indicated as poor in management such as site management (resources and materials), quality management, communication

management, waste management and personnel management. Traditional construction process always been connected with the inefficiencies in terms of project time. Traditional construction method generally adopted by past experience or project. Furthermore there is no standard measurement in enhancing traditional construction process such as monitoring and controlling method for construction progress. Contractor used their past experience in predicting the project time. In reality, they faced a lot of problem in engaging the project and project time will be behind the schedule. It is very important to improve the efficiencies of construction process. Generally by enhancing the efficiencies in construction process, project time will be reduced, improved construction quality, eliminated waste and saved cost.

## **1.2 Problem statement**

Many issues were raised in traditional construction process due to its inefficiencies. People do aware about issues and problems in traditional construction process but do not try to find the right solutions. Traditional work process usually is associated with problems and limitations. A lot of implications that been outline in this study such as project delay, redundant works and activities, poor management, and communication breakdown. They also are related to abandoned projects. Current construction industry also was sometimes not achieved the expectation of end user and customer. Problem of delay and low quality project seem to be happened in construction project. A serious actions need to be taken but there is no indicator can be measured towards the efficiencies of construction projects. Many new strategies and methodologies were introduced to the industry but the practicality of the strategies still cannot be assured.

### **1.3 Research aim and objectives**

The main aim of this study is to determine strategies to improve construction process.

Below are the objectives of this study:

- To review the rationale and the need to improve the efficiency of the current construction process
- To evaluate the methodology used currently by the industry to improve the construction process
- To propose strategies to improve construction process.

### **1.4 Scope and limitation**

The scope of this study was focused on the process of construction project in Klang Valley. It is limited on the construction stage/phase and time factor. Data analyzed were from the project manager, project management consultant (PMC), engineer and other construction players involve directly in construction process.

## **1.5 Brief Research Methodology**

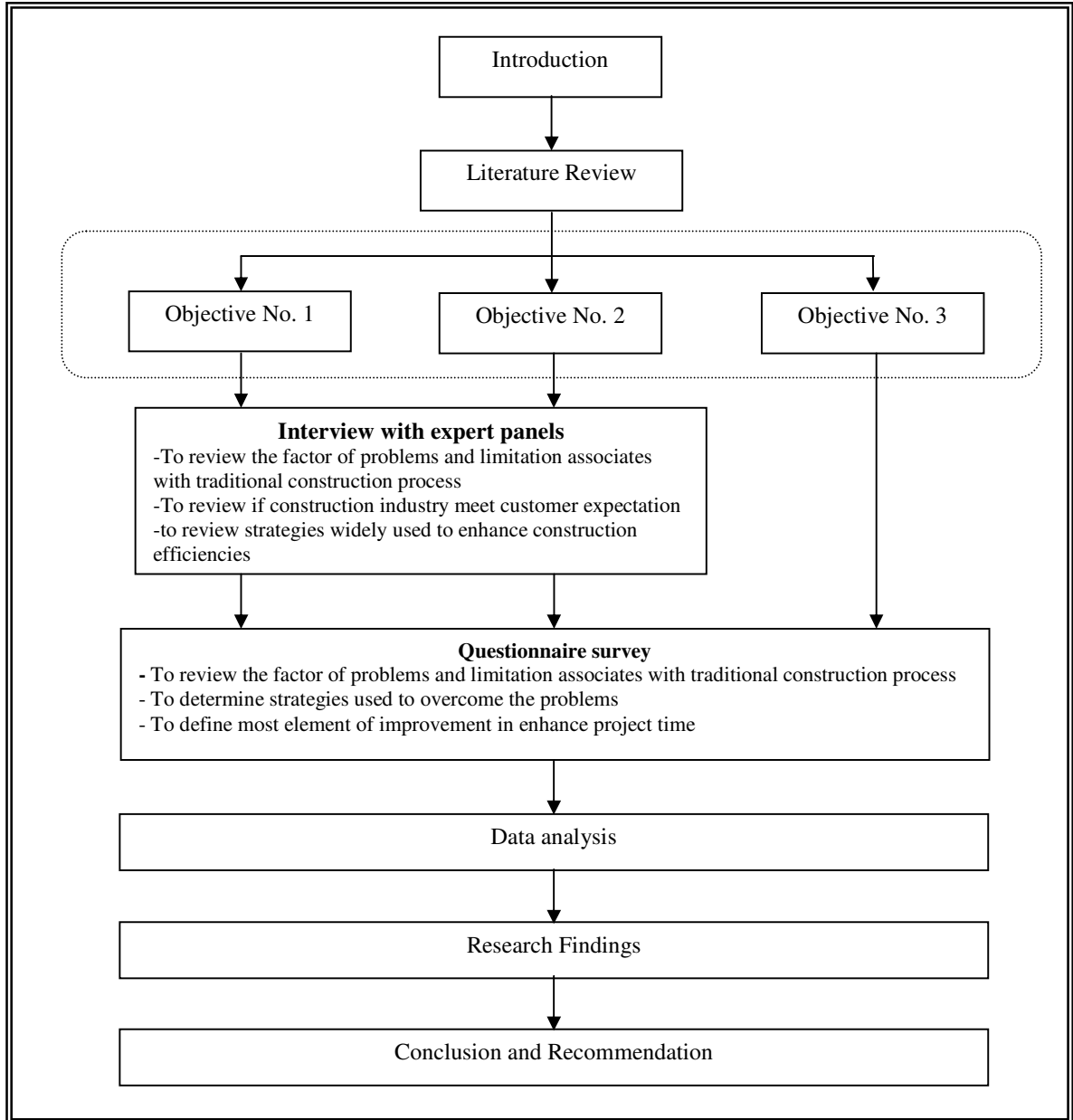
This project conducted through several phases that included literature review, data collection, data analysis, findings, and recommendations. Literature review is to compile and determine the idea, theory and common practices in achieving the efficient construction process. Two methods were used in collecting data. They are through interviews and questionnaire survey.

The panels interviewed are those directly in-charge in construction projects either in private or government sector. They include personnel from private and public agencies such as JKR, consultant firms and contractors. Then, the results from the interviews were used as a guide to develop the questionnaire survey form. Apart from that the findings from the literature review has been used as well to develop the questionnaire.

A questionnaire is a series of questions submitted to a number of people to obtain data for a survey or report. This is a valuable method of collecting a wide range of information from a large number of individuals, often referred to as respondents. Good questionnaire construction is critical to the success of a survey. Inappropriate questions, incorrect ordering of questions, incorrect scaling, or bad questionnaire format can make the survey valueless.

The analyses of the results were applied by using average index analysis. Upon the data provided from the face to face interviews and questionnaire, strategies on improving construction process were determined. Figure 1.1 showed the methodology of this study.

Basically objectives of this study were achieved as the flow shown below:-



**Figure 1.1:** The flow chart of the brief research methodology.

## **1.6 Study Outlined**

The study is presented in seven (7) main chapters.

Chapter One introduces the report outlining aims and objectives and general overview of the paper. This chapter is very crucial because it provides the overall information about the research besides the subsequent process is derived from the research problem.

Chapter Two described the problems faced in current construction process and its limitations.

Chapter Three discussed on the improvement of construction process by using collaborative teamwork concept, integrating design and construction and using tool and philosophy from other industry.

Chapter Four discusses on the type of study methodology and its procedures. The process of data collection and analysis is also explained in this chapter.

Chapter Five presented data collected in this study. They are analyzed and presented in appropriate table.

Chapter Six is on the discussion of results or research findings.

Chapter Seven is the conclusion, which meets the objectives stated earlier and recommendation for future study.