CONSTRUCTION DURATION FOR VARIOUS HEALTHCARE FACILITY PROJECTS FOR PUBLIC WORKS DEPARTMENT

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CONSTRUCTION DURATION FOR VARIOUS HEALTHCARE FACILITY PROJECTS FOR PUBLIC WORKS DEPARTMENT

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A capstone project report submitted in partial fulfilment of the requirements for the award of the degree of Master of Project Management

Faculty of Civil Engineering
Universiti Teknologi Malaysia

DECEMBER 2010
I declare that this capstone project report entitled "Construction Duration For Various Healthcare Facility Projects For Public Works Department" is the result of my own research except as cited in the references. The report has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

Signature

Name : Siti Nuruhuda bt Amirrudin
Date : 10 December 2010
To my beloved family, especially to my husband Ariffin Micky,
my children Azif and Ariz and my lovely mother.
Thanks for your never ending love and support.
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ABSTRACT

The construction industry in many countries have increasingly recognized the need for more efficient and timely completion of projects. One of the main issues pertaining to delivery of projects in the Public Works Department (PWD) is the period of the construction duration which is often not realistic. Suitable norms or standard construction duration is currently unavailable in the PWD. The main objective of this study is to establish the construction duration for various healthcare facility projects. In order to achieve the objective, a research methodology was formulated. The research methodology involved literature review, data collection and analysis. In the literature review, extensive information with regards to the factors that affecting the construction duration were identified. While gathering of data is obtained through questionnaire and the data were analysed by using frequency analysis, average index and the Mann-Whitney U Test. In conclusion of the study, the construction duration of various healthcare facility projects were established. From the finding, the ranges of construction duration for the healthcare facility are in between 8 to 17 months for rural health clinic, 14 to 23 months for health clinic type 3 and 20 to 29 months for health clinic type 3 with quarters depending on the project’s location and influential factors.
ABSTRAK

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CHAPTER 1

INTRODUCTION

1.1 Introduction

The increase in expenditure for development based on the Ninth Malaysia Plan for the various sectors has reflected that more opportunities are available for all sectors in Malaysia, including the construction sector. This is in tandem with the government’s mission to improve the standards and quality of life for the people through the provision of better amenities and infrastructures such as improved road and transportation systems, residential and commercial buildings and healthcare facilities.

However, to ensure that the projects are completed and utilized by the owner, the projects must comply with the agreed duration, budget and the quality according to the requirements and specifications. Prior to that, time factor for the completion of a particular project is very crucial.

The importance of the construction duration has been recognized as an important factor within the construction industry as highlighted by Bromilow (1969)
in his study carried out in Australia including other researchers such as Ireland (1985) Kaka and Price (1991), Chan and Kumawaraswamy (1995) and Chan (2001).

1.2 Background of the study

Chan (2001) had conducted a study on construction duration for public sector’s projects in Malaysia. The study has confirmed that the Bromilow’s model (1969), where the contract time and cost has a relationship in the form of \( T = KC^B \), where \( T \) is the actual construction time in working days, \( C \) is the final cost of contract in millions, \( K \) is a constant characteristic of building time performance, and \( B \) is a constant indicative of the sensitivity of time performance to cost level. The predictor of average construction time in Malaysia is \( T = 269C^{0.32} \).

The study has concluded that the Malaysian public sector takes 269 days to complete a project with a contract sum of RM 1 million. The time-cost relationship identified serves as a convenient and useful tool for project managers and clients to predict the reasonable time required for the delivery of construction projects in Malaysia. However, this concept has not yet been practiced as a standard in determining construction duration in Public Works Department’s (PWD) projects.

In implementing the Ninth Malaysia Plan, PWD as the main technical agency has been entrusted for the implementation of most of Malaysia’s government projects. One of the main issues pertaining to the delivery of projects in the PWD is the period of the construction duration which is often not realistic. Chan and Kumaraswamy (2002), reported that realistic construction duration is important because it indicates an essential level for assessing the performance of a project and the efficiency of the project organization.
1.3 Problem statement

Suitable norms or standard construction durations is currently unavailable in the PWD. A preliminary interview with the head of the project monitoring division has revealed that the PWD has yet to establish a norm or standard for the construction duration. The norm is not even available for standard and typical projects such as schools, health clinics, staff quarters, etc.

The current practice being implemented by the PWD in determining the construction duration is based on the project records. Record from the past and planner’s own previous experience of similar projects has formed the basis to estimate the duration.

Most of the projects which are undertaken by the PWD, including the Ministry of Health’s (MOH) projects are awarded on a competitive basis using the standard form of contract PWD 203. A major issue with regards to MOH projects is that the projects are very often not delivered on time and cost overruns are likely to occur.

1.4 Aim and Objectives of Study

The aim of this study is to establish the standard of construction durations for various healthcare facility projects undertaken by the Public Works Department. In order to achieve the aim, the objectives of this study are outlined as follows;
i) To identify the factors that influence the construction duration for healthcare facility projects.

ii) To identify the critical factors that influence the construction duration for healthcare facility projects.

iii) To establish the construction duration for healthcare facility projects.

1.5 Scope of the Study

The scope of the study is confined to standard building projects; such as Rural Health Clinic (Klinik Desa / KD2G Pudina), Health Clinic Type 3 (Klinik Kesihatan 3 / KK3 Cermai 2) and Health Clinic Type 3 with Quarters (Klinik Kesihatan 3 Cermai 2 dan Kuarters / KK3 & 2D,8F,16G) undertaken by the Health Facilities Branch of the Public Works Department. The health clinics are located in Peninsular Malaysia and divided into four zone; 1) Northern Zone consists of Perlis, Kedah, Pulau Pinang and Perak, 2) Middle Zone consists of Kuala Lumpur and Selangor, 3) Southern Zone consists of Negeri Sembilan, Melaka and Johor and 4) Eastern Zone consists of Pahang, Kelantan and Terengganu. The method of construction for these facilities are based on conventional construction.

1.6 Research Methodology

The research methodology was divided into three (3) phases; consisting of preliminary study, collection of data and lastly on the conclusion and recommendation. Figure 1.1 shows the outline of the research methodology used for this study.
Phase 1 comprises of the preliminary study which consists of literature review and preliminary interview with head of the project monitoring division, Head of Project Team (HOPT) and Superintending Officer (SO) in the PWD which are directly involved in the development of healthcare facility projects.
Phase 2 had involved collection of secondary and primary data. Lastly, Phase 3 consists of recommendations and the proposed construction durations for healthcare projects.

1.7 Summary

This study had been divided into five (5) chapters. The first chapter, Chapter One explains the introduction of the study, background of the study, problem statement, aim and objectives, scope of the study and a brief research methodology that being implemented throughout the study.

The second chapter, Chapter Two elaborates on the overview of the Ministry of Health’s (MOH) projects, the definition of the construction duration, the importance of construction duration, various statistical models on predicting construction duration, factors affecting the construction duration, productivity and its impact to the construction duration and standardization of projects and construction duration.

Chapter Three explains in detail the methodology used in implementing the study. Generally, it consists of three (3) distinct phases, which are Phase 1; preliminary study, Phase 2; collection of data and Phase 3; recommendation and conclusion.

Chapter Four describes the details on the analysis of factors that influence the construction duration, critical factors that influence the construction duration and the proposed construction durations for healthcare clinics. The data were analysed by using SPSS Version 17.
Finally, Chapter Five concludes the overall study and suggest recommendations for future work.