

IMPROVING TIME ESTIMATION IN JKR PROJECT

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To my beloved wife **Zubaidah Adnan**,
who has given me the ultimate support physically and morally
and prayed to Allah for my success to pursue my goals in treasury education.
I would like to wish her my sincere love for the support and
the sacrifice that she has given to me all these years.

And for my daughters **Nur Nafeesya and Nur Nadeeya**
and my only son **Muhamad Khaliss**,
I wish them the success in their lives and
follow what you father had done to fulfilled his target to
hold Master Degree at his golden age .

My love and prayers to Allah will always be with them.
To my mother, brothers, brothers in-law, sister and sisters in law,
I would like to wish them all the best in their lives.

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ABSTRACT

Accurate time estimation is very critical to ensure smooth operation and timely completion of any construction project delivery. In determining the time of the project completion the only known methodology currently used by JKR is based on prediction from the experience of completing past project. However evidently the project delay issues are very common for JKR projects. Many reasons contributed to this phenomenon. One of such reasons is that the time estimation process done by JKR might not be accurate. To understand further of such issue this study has been carried out with the aim to determine the cause of the delay that leads with the slippage time from the original estimate. This study has benefited from thousands of data available from JKR SKALA's database. Other methodologies adopted include the use of questionnaire survey distributed to JKR personnel and contractors. The findings of this study have determined the major factors that contributed to the delay. Comparisons were made for the findings from different sources. Factors that can contribute to improving JKR project time estimating process have also been identified. Various comparisons have been made on the trend of the delay with regard to time factor, project size and location. The information generated from this study can provide a very useful guide for JKR in planning the more reliable project duration in future.

ABSTRAK

Ketepatan penentuan masa adalah kritikal dalam kelancaran operasi dan masa penyiapan sesuatu projek pembinaan. Kaedah penentuan masa penyiapan projek yang dilaksanakan oleh JKR sekarang ini adalah berdasarkan kepada pengalaman dan sejarah yang lalu. Walaubagaimana pun isu projek lewat adalah satu perkara yang sering berlaku dalam projek JKR. Banyak sebab yang mengakibatkan kelewatan ini. Salah satu sebab adalah proses anggaran tempoh yang dilaksanakan adalah tidak tepat. Untuk memahami lebih mendalam berkaitan isu ini satu kajian telah dilakukan untuk menentukan penyebab kepada berlakunya kelewatan yang menyebabkan menyimpang dari anggaran asal. Data daripada Sistem SKALA JKR telah memberi maklumat berguna dalam kajian ini. Selain daripada itu, pengagihan soal selidik kepada kakitangan JKR yang terbabit dengan projek dan juga kontraktor menjadi cara lain untuk mendapatkan data. Penemuan faktor utama yang menyebabkan kelewatan telah diperolehi daripada kajian ini. Perbandingan penemuan telah dilakukan dengan sumber lain. Faktor yang boleh menyumbang kepada menambah baik anggaran masa bagi projek JKR juga telah dikenalpasti. Beberapa perbandingan telah dilakukan terhadap kecenderungan kelewatan terhadap faktor masa, saiz projek dan lokasi. Maklumat yang diperolehi daripada kajian ini boleh memberi panduan sangat berguna kepada JKR dalam merancang tempoh projek dengan lebih tepat dimasa hadapan.

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LIST OF A ABBREVIATIONS

CPM	-	Critical Path Method
JKR	-	Jabatan Kerja Raya
INTAN	-	Institut Tadbiran Awam Negara
GIS	-	Geographical Information System
EOT	-	Extension of time
HOPT	-	Head of Project Team
HODT	-	Head of Design Team
LOA	-	Letter of Acceptance
SKALA	-	Sistem Kawal, Selia dan Lapor
SPK	-	Sistem Pengurusan Kualiti
SPSS	-	Statistical Package for Social Science
RII	-	Relative Importance Index
ICT	-	Information and Communication Technology
WBS	-	Work breakdown structure

CHAPTER 1

INTRODUCTION

1.1 Introduction

In project management delivering the project within the stipulated time in the contract is the upmost important factor to be focussed not only by the contractor but also by other responsible stakeholder such as project manager and developer. For major government agency like JKR, project delay will have negative implication to their reputation. Therefore accurate time estimation is critical to all JKR project.

Construction management decisions are made based on schedules that are developed during the early planning stage of projects, many possible scenarios should also be considered during construction. Construction programmes are the utmost importance for a successful timely delivery of buildings or infrastructure projects. A well developed project schedule model is a dynamic tool that can be used to predict the remaining project work that need to be completed and reasonably be expected to be accomplished.

There is no specific tool in determining the accurate time for project duration practices in JKR. Most of the project duration was based on previous durations of the project which were not of the same component for each project. By using the previous experiences it may not illustrate the correct duration for the project. This method has been used since the existence of JKR. So far, there has not been any specific method or guidelines produced to estimate the duration of the project.

It is important that the project implementation schedule is planned well so that there is no delay that could affect the other activities expected by the end-user. Good schedule will ensure the implementation of realistic given enough time for activities such design approval procurement, construction, tests the line and so on.

Scheduling that fails to take into account the important matters will result in projects having extension of time, or termination. This will affect the end user involve additional expenses, including financial liability, employee relocation and storage of equipment and problems inventory. Delays in the completion of an entire project due to poor scheduling can also create havoc for owners who are eager to start using the constructed facilities (Gomar *et al.*, 2002).

1.2 Problem Statement

Delivering the project on time as stated in the contract to the client is important to JKR as an implementer. The main problem in JKR's current practice is estimating accurate time in JKR project. Failing to deliver the project on time to the client will show the performance of JKR. One of JKR's objectives is to deliver the entire project in time as agreed with the client. Inaccurate time estimation will lead to late completion of the project. Inaccurate time estimation will cause the client additional operational cost.

Incorrect determination of the project duration will reflect on the capability of JKR as a technical department in government. This is one of the reasons for project to be given extension of time (EOT) besides other reason such as the contractor selected unable to provide full commitment to the project. Based on JKR's record, most of the project will have at least one EOT.

From the data provided by JKR Project Monitoring Unit, it shows that more than 50% of the projects in Ninth Malaysia Plan supervised by JKR are completed behind time. Some of these delays might be contributed by poor project estimation

time by JKR. Many important factors might be neglected and result in risk of project delay. Therefore this study has been undertaken to review such issues.

1.3 Aim and Objectives of the study

The main aim of this study is to determine the cause of the delay in the construction which may reflect weakness in time estimation process in JKR's project. In order to achieve this aim, the following objectives have been delineated

- i. To identify the factors that contribute to delays in JKR projects
- ii. To study the relationship between JKR's estimated times with the actual completion base on 5 years historical data
- iii. To identify factors to improve JKR time estimating.

1.4 Scope of the study

This study was focused on building project by JKR only. Historical data for this study rely on project that had been completed within past six (6) years (2004 to 2010). Data were taken from JKR project database module, SKALA (**S**istem **K**ontrak, **S**elia dan **L**apor). The data extracted from SKALA mainframe was analysed and segregate accordingly. The data were extracted into smaller item base on the nature of work. The data were comprise of all projects that supervised by JKR. From that database only data on building project was extracted and analysed. Besides document search uses data from SKALA, questionnaire distributed to get related data from the person who involved directly with JKR project. Questionnaire was distributed to all JKR District Engineers, Head of Project Team (HOPT), Head of Design Team (HODT) and contractors involved in JKR project. There is no any logical or mathematical process for sampling was employed in this study.

1.5 Brief Research Methodology

The methodology is divided into three stages.

1.5.1 Planning Stage

The planning stage is where the topic of study determines, aim and objective is set. Besides that literature search is done to accommodate literature review.

1.5.2 Data Collecting Stage

At this stage the methodology used in conducting this study is through literature search, data collection from JKR project database and questionnaires survey to JKR's staff who were involve in projects implementation and contractors.

Analysis of data using qualitative method is done through the document study of JKR SKALA's database and data generated from the questionnaire survey.

The overall sequence of study process undertaken is shown in figure 3.1

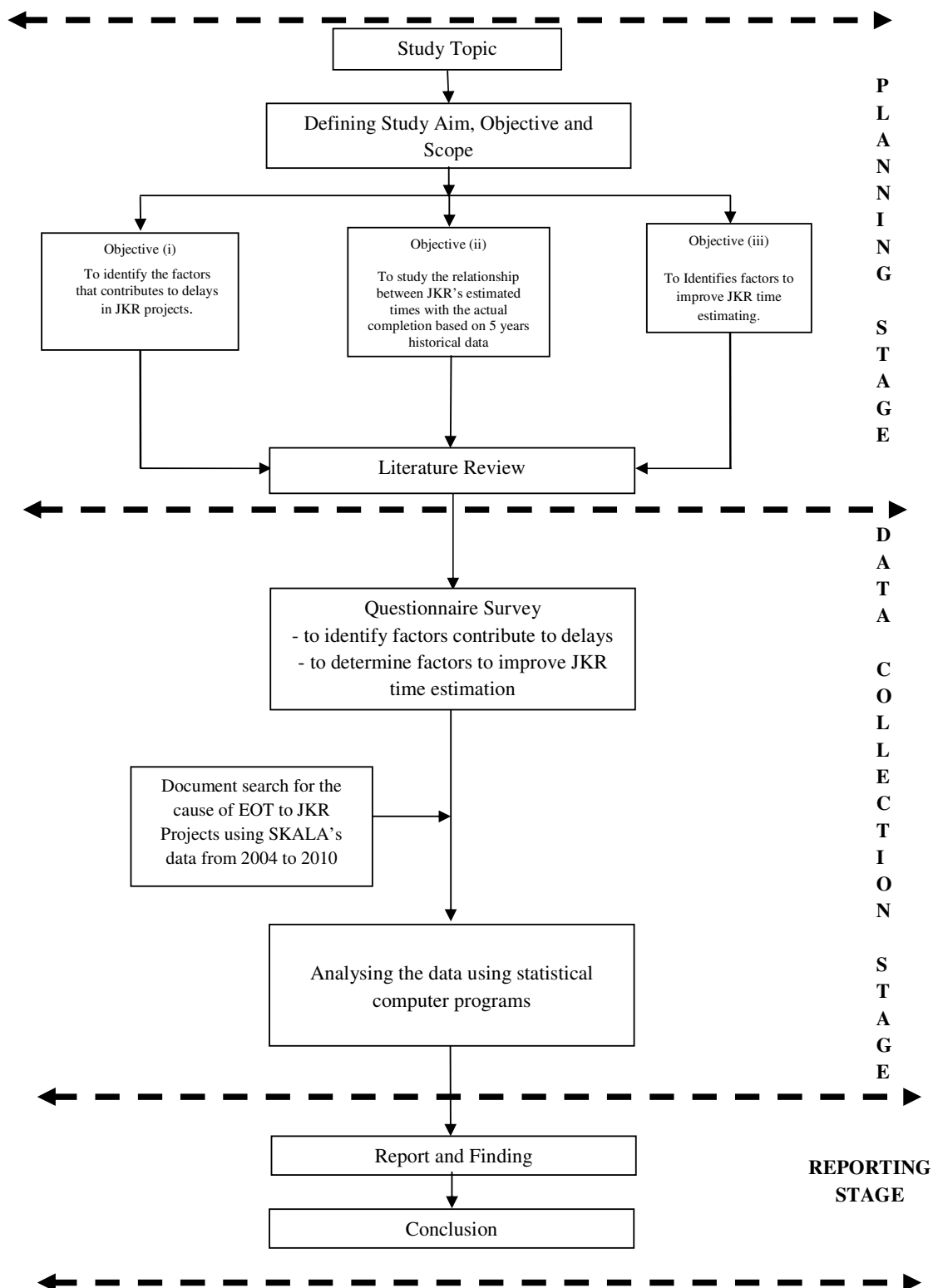


Figure 1.1 Research Methodology Process