

The project duration practices in jkr construction essay



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In project management delivering the project as stipulated time in the contract is the most important factor to be focussed by the contractor and the implementer. Time is one of the three factors in project management should be given priority beside cost and quality. These three factors are related to each other and will give effect if one of these factors neglected. Time estimation has been identified as one of the key performance to be addressed in providing best value to construction client. To predict the construction duration of project based variables which are construction duration, building type, procurement route, contractor selection method, type of client, contract value, building function and complexity of the building.

Construction management decisions are made based on schedules that are developed during the early planning stage of projects, many possible scenarios also should be considered during construction. Construction programmes are of 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 when the project work that remains to be completed can 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 the same component of each project. By using the previous experience it may not shows the correct duration for the project. From this estimation of project duration JKR use the history of project duration based on the cost of the project, the size of the project,

location and complexity of the project. This method is used since the existence of JKR. No specific method for estimate the duration of the project.

It is important that the project implementation schedule is planned so that it functions according to determine other than completion on schedule without delays 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 in determine the project duration will shows 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) beside other reason such as the contractor selected cannot give full commitment to the project. Base on the JKR's record most of the project will have at least one EOT.

From the data provided by JKR Project Monitoring Unit shows that more than 50% of the projects in Ninth Malaysia Plan supervised by JKR are completed behind time. This shows that time estimation for those projects are not accurate. This study will create a standard model to be used to estimate project duration.

Aim of the study

The main aim of this study is to develop appropriate mathematical model and strategies that can be used by the practitioners to improve current method of time estimation for JKR's projects.

Objectives of the study

To achieve this aim, the following objectives have been delineated

To identify the factors that influence the completion time of the JKR projects.

To study the relationship between JKR's estimated times with the actual completion based on 5 years historical data

To develop mathematical model improving time estimating for school project by JKR.

Scope of the study

This study will use school building project by JKR only. Historical data for this study will rely on project that had been completed within past five (5) years. Mathematical model that will be used is multiple regression technique. Other more advance technique will be employed as the research progress and if found suitable.

Research Methodology

The methodology is divided into three stages.

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.

Data Collecting Stage

At this stage the methodology used in conducting this study is through literature search, data collection and structured interviews with the professionals or expert panel who are involved in time estimating of the project and questionnaires survey to JKR's staff who directly involved in determining the time of the project.

Data collection will be gathered from the project as stated in the scope of study. From the results, the questionnaires survey will be conducted among JKR staff within the category of the study to assess their opinions of the findings towards the objectives of the study. Besides the questionnaires survey some interviews has also been conducted with the professionals as

the expert panel, project manager, engineer and quantity surveyor to assess their opinions towards the findings based on data that have gathered. The interviews are divided into face to face questions and answers session and answering the structured questionnaires. The qualitative data generated from the questionnaires have been analyzed using statistical method and finally inferences were made to support the study findings.

Reporting and Validating Stage

At this stage a report will be produced based on the analysis done in second stage. The new process created from the finding will be tested and validated by the expert and selected JKR staff who involve in the process.

The overall sequence of study process undertaken is shown in figure 3. 1

PLANNING STAGE

DATA COLLECTION STAGE

REPORTING AND VALIDATING STAGE

Study Topic

Literature Review

Objective (i)

To identify the factors that influence the completion time of the JKR projects.

Questionnaire Survey

- to evaluate current practice

- to determine factors that influence project time completion

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Validation of the model

Develop mathematical model to express the relationship

Interview with Expert Panel

- to determine current practice
- to determine the current process

Objective (ii)

To study the relationship between JKR's estimated times with the actual completion based on 5 years historical data

Defining Study Aim, Objective and Scope

Document search about current practice

Objective (iii)

To develop mathematical model improving time estimating for school project by JKR.

To establish mathematical model to show relationship between completion time and factors that influence completion date

Report and Finding

Validation of the process

Figure 1. 1 Research Methodology Process

CHAPTER 2

SCHEDULING PRACTICE IN CONSTRUCTION PROJECT

2. 1 Introduction

A skill essential for good project management is accurate time estimation.

There are two important reasons to get time estimates right:

To drive the setting of datelines for planning and delivery of projects

To guide in determine the cost of contract.

It is important to make time estimation as input into other techniques used to organise and structure all projects. People always neglected or underestimate the needed time to implement project. It may reduce large project to a series of smaller project if a good time estimation technique is being used.

An important aspect of Project Management is scheduling time accurately.

This is a critical component of Project planning as this will decide the

deadline for the completion of a project, whether small, medium or mega.

(Suri et al., 2009)

Stage of Time Estimation

Time estimation should be taken into account during planning of the project.

During this stage it is important to set the target date for completion of the project. However, a reliable estimate of the construction time at the early stages of design development will reduce uncertainty, provide a key focus

for the design team, and can prove beneficial to the overall management of the construction process (Nkado 1992).

Forecasting of construction cost and time is very important to contract administration as time prediction and cost forming a basis for planning, monitoring, budgeting and litigation. There are two methods of estimating construction cost and time.

According to available budget by the client and time constraint

through a detailed analysis of work to be done and resources available, using estimates of the time and cost requirements for each specific activity

The detailed estimation of construction activities usually relies on the estimators' experience and judgement to correctly interpret project and site information and make the best possible decisions. (Alfred, 1988)

Current Time Estimation

With the use of computer software, the estimation of construction time can be determined. This is despite the fact that a number of computer-based time forecasting techniques have been developed through research and targeted to construction professionals, including quantity surveyors, for the purpose of forecasting construction time at early design stages (Brandon 1990; Nkado 1992).

In some industries, there are books recording industry standards for use by cost and schedule estimators. In every industry area there will be a body of knowledge that associates the accomplishment of known work efforts with

time duration. Interviewing those who have had experience with similar projects is the best way to determine how long things will really take.

Construction time demands the focus of attention of all the key participants in the construction process and is often a basis for evaluating the success of a project and the efficiency of the project organisation. Alternative procurement approaches (Masterman 1992; Turner 1990) facilitate the overlapping of design and construction times.

Scheduling is a process that anticipates the future and the time taken to complete the project can not be anticipated exactly. There are techniques that can increase the likelihood of being close if planning and estimating is done side by side, the project can be managed to achieve the schedule by accelerating some efforts or modifying approaches to meet required dates.

Project Manager is responsible in developing a project schedule. According to Project Management Institute's Project Management Body of Knowledge defines a project schedule as the planned dates for performing schedule activities and the planned dates for meeting schedule milestones. The practice of schedule development leverages knowledge gained from activity definition, sequencing, and estimating to create a formal sequence of project activities, the project schedule, that outlines when required work should start, when it is expected to be completed, and who will do the work.

Successful project managers “ are those who can plan for the unexpected and are flexible enough to accommodate the unforeseen.” (Needleman, 1993)

CHAPTER 3

SCHEDULING PRACTICE IN JKR PROJECT

Introduction

Time estimation still the main agenda when JKR preparing for any new project. It is very important for public projects to be completed on time, as the clients, users, stakeholders and the general public usually look at project success from the macro view where their first criterion for project success appeared to be the completion time (Lim and Mohamed, 1999). Construction time performance references has identified that time along with cost and quality are the three crucial success in construction project. Literature review on construction projects suggested that the common criteria for project success are generally considered to be cost, time and quality/performance (De Wit, 1988; Wright, 1997; Arditi and Gunaydin, 1997; Frimpong et al., 2003; Williams, 2003; Luu et al., 2003).

3. 2 Time Estimation Practise by JKR

In project management time is the important criterion in accessing the progress of the construction. According to Nkado (1995), construction time has been shown to be the most influential in the overall time performance of projects. Experience is one of important criterion in scheduling process together with experience with general scheduling in the project area. From the past experience of construction projects showed that more time was given during construction. This time was determined either by JKR or by the contractor depending on the type of tender. The fixed duration time was determined by JKR. Their estimated duration mostly is based on their past experience and as a result, these estimations were found to be inaccurate.

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The estimated time was done base on the ' rules of thumb'. As the construction time often has to be compressed in order to fit into the imposed time constraints, there may be insufficient buffer time to overcome unexpected interruptions, or " disturbances", to the planned schedule. (Isaksson, 2005). Practitioners prefer to rely instead on their experience or to refer to historical records of the time performance of past projects (Atkin et al. 1993).

3. 3 Consideration for Estimation

In determining the accurate time for the construction project, a few characteristic has to be considered. According to (Ahmad et al., 2006) data related to project characteristics were:

contract size (in terms of Ringgit Malaysia);

tender type – three types of tender, i. e. open tender, open to bumiputra only (native Malay contractors) or selective tender;

bid ratio (the difference between awarded bid and next lowest bid);

bid spread (the difference between lowest and highest bid);

percentage difference between awarded bid and estimate;

extra project cost;

number of bidders;

size of contractor (class A, class B, class C and class D and E);

project complexity (less complex, moderately complex or highly complex);

type of design and supervision (projects both designed and supervised by appointed consultants, projects designed by consultant and supervised by government engineers, project both designed and supervised by government engineers);

experience of contractors (similar to the work tendered, comparable or other experience); and

project regional location (northern, western, eastern and southern region).

Abd Majid and McCaffer (1998) conducted a literature survey on causes of project delay where they claimed that 50 percent of the delays can be categorized as non-excusable delays for which the contractors were responsible. A study by Kumaraswamy and Chan (1998) indicated that six common significant factors for both building works and civil engineering projects were:

poor site management,

supervision,

low speed of decision making involving all project teams,

client initiated variations,

necessary variations of works

inadequate contractor experience.

In estimating time of project, a consideration on the characteristic and factors of the project must take into account during planning. The factors that JKR consider for the project that estimated are cost, location and complexity. These factors are taken base on the history of construction in JKR. In order to gets more accurate time estimating a few other factors should be consider not only the above.

Reaction by JKR Top Management

Director General of JKR Malaysia (2002) in meeting with Directors of JKR Malaysia has mention about the project duration implemented by JKR.

Quoted from minutes of meeting the by Director General of JKR Malaysia

“(a) Mengambil maklum :

(i) akan keterangan bahawa tempoh pembinaan yang ditetapkan adalah sesuatu yang tidak mustahil untuk dicapai. Pembinaan sekolah dalam tempoh 6 bulan merupakan sesuatu yang praktikal dan telah dibuktikan dengan kejayaan pembinaan Projek Sekolah Kebangsaan Paya Besar Lunas, Kulim yang disiapkan dalam tempoh tersebut.

(ii) akan keterangan bahawa Projek SRJK(C) Tropicana Damansara berjaya disiapkan dalam tempoh 5. 5 bulan sahaja.

(iii) akan keterangan bahawa Pengarah INTAN begitu kagum dengan penyiapan Projek INTAN Kluang sehinggakan beliau meminta JKR melaksanakan semua kampus INTAN yang lain. “

Base on the above quote by Director General of JKR Malaysia it shows how important accurate time estimation in JKR Project to top management. JKR has used fixed duration time for the construction of school and it is successful. Another criteria to be consider in determining the time is method of construction.

Most of the building projects implemented by JKR in the second half on Ninth Malaysian Plan (RMKe 9) are using Industrialised Building System (IBS). Base on the instruction by Ministry of Finance through the Treasury Circular Letters No 7 Year 2008, at least seventy percent (70%) of component must use IBS for government project. This instruction will lead to another criteria that accurately estimate the time in JKR project.