

**IMPLIMENTATIONS OF MODERN TOOLS TO IMPROVE PROJECT  
MANAGEMENT AT THE PUBLIC WORKS DEPARTMENT  
(JKR)**

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**Draft Final Report  
Projek Sarjana Muda II**

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**JUNE 2017**

## SUPERVISOR'S DECLARATION

I have checked this report and the report can now be submitted to JK-PSM to be delivered back to supervisor and to the second examiner.

Signature :.....

Name of Supervisor :.....

Date :.....

## APPROVAL

I hereby declare that I have read this project report and in my opinion this report is sufficient in terms of scope and quality for the award of the degree of Bachelor of Mechanical Engineering (Design&Innovation).

Signature : .....

Name of Supervisor : .....

Date : .....

## **DEDICATION**

To my beloved mother and father

To my family and friends

## ABSTRACT

Public Works Department (JKR) is well known in Malaysia to conduct the entire government project. However, there is some issue regarding the longer period to finish a construction. The factor that contributes in this problem is being studied. Thus, a research is conducted to help to reduce the problem facing by JKR Melaka. This project explained the process of recommendation Project Management and Technical Software to Public Works Department (JKR) at Melaka Tengah. The process involved in understanding of project flow and project communication. After the all the flow has been understood, the process of survey the best software and engineering method is used to identify the best software. The process to select the best software involves the engineering method such as data collection form the distribution of questionnaire which involve 10 respondents for each part. Then, the engineering method such as House of Quality (HOQ) and Weighted Rating Method is used to select the best software. . The selected software will be suggested to the engineer of JKR Melaka and their acceptance is the main result for this research. At the end of the project, a formal report is written to discuss the outcome of the project.

## ABSTRAK

Jabatan Kerja Raya (JKR) terkenal di Malaysia bagi menjalankan keseluruhan projek kerajaan. Walau bagaimanapun, terdapat beberapa isu mengenai tempoh yang lebih lama untuk menyelesaikan sesuatu projek. Faktor yang menyumbang dalam masalah ini sedang dikaji. Oleh itu, satu penyelidikan telah dijalankan untuk membantu mengurangkan masalah yang dihadapi oleh JKR Melaka. Projek ini menjelaskan proses cadangan Pengurusan Projek dan perisian teknikal kepada Jabatan Kerja Raya (JKR) di Melaka Tengah. Proses yang terlibat dalam memahami aliran projek dan komunikasi projek. Setelah aliran yang telah difahami, proses kajian tinjauan dan teknik kejuruteraan yang terbaik digunakan untuk mengenal pasti perisian yang terbaik. Proses untuk memilih perisian yang terbaik melibatkan kaedah kejuruteraan seperti pengumpulan data membentuk pengedaran soal selidik yang melibatkan 10 responden untuk setiap bahagian. Kemudian, kaedah kejuruteraan seperti House of Quality (HOQ) dan *Weighted Rating Method* digunakan untuk memilih perisian yang terbaik. Perisian yang dipilih telah dicadangkan kepada jurutera JKR Melaka dan penerimaan mereka adalah hasil utama dalam kajian ini. Pada akhir projek ini, satu laporan rasmi ditulis untuk membincangkan hasil projek.

## ACKNOWLEDGEMENT

I feel grateful because had given a chance to work with the greatest minds in the field of Project Planning and Public Works Department (JKR) Melaka. Firstly, special thanks to my supervisor Dr. Shamsul Anuar Bin Shamsudin. Honestly, Dr Shamsul is like a father to me because he very understands from the early of project until I was able to finish the project. His guidance and advice is very useful to me. At first, I wasn't able to interview the JKR representative due to they won't able to giving time because of many project that must be handle. However, Dr Shamsul has giving an idea to interview the sub-contractor of JKR. This made me feel not to give up and try to deal with them for the second time. Thus, the second deal is successful. I would like to thank JKR representative, Puan Zuraikha bt Samsuddin because giving some time for me to interview her. Lastly, thank you to my family and friends for their motivation and support until I was able to finish writing the report.

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## LIST OF ABBEREVATIONS

PMS	Project Management Software
JKR	Jabatan Kerja Raya
PWD	Public Work Department
DFA	Design for Assemble
FEA	Finite Element Analysis
FEM	Finite Element Modeling
FE	Finite Element
HOQ	House of Quality
SRS	Software Requirement Software
ME	Middle East
US	United States

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## **CHAPTER 1**

### **INTRODUCTION**

This chapter will explained the introduction of the project such as the background of Public Works Department (JKR), background of the study, researcher experience, problem statement, objective and scope of the project.

#### **1.1 Background**

The background will explained on the history of Public Works Department (PWD) from the beginning until now. Besides, the background of the study will be written on after the history of PWD. Moreover, the researcher experience that related to the topic will be explained later. The experience is important since it will help the researcher while doing this project.

##### **1.1.1 History of PWD**

The Malaysian Public Works Department abridged JKR, is the government office in Malaysia under Ministry of Works Malaysia (MOW) which is in charge of development and upkeep of open foundation in Malaya and Labuan. In Sabah and Sarawak, isolate element of Public Works Department exists under separate express government's locale. The early history of the creation of a Ministry actually starts to the establishment of small departments in the days of British rule, especially when the British began to intervene in the Malay States after the signing of the Pangkor Treaty on 17th - 20th January 1874. One of the oldest departments of government created by the 'Crown Colony' before the Pangkor



Treaty is' Public Works Department (PWD) or later known as the Public Works Department (PWD), which was established in 1872. Its establishment aims to provide the infrastructure for socio-economic development the British government and the political system in the Straits Settlements, comprising Singapore, Melaka, Perak (Wall), Seberang Perai and Penang. Major J. McNair FA, former Colonial Engineer Straits was the first person appointed to head the Department of Public Works (Jabatan Kerja Raya Perak,2015).

In 1954, the British Government has taken steps to separate the administration of Malaya (Malaya) from the administration, which is based in Singapore. This is the starting point of government departments in Malaya allowed to implement policies and programs respectively. In 1955, the first Federal Election Legislative Council level indicates when the transition of power among the local people of the British administration of Malaya before independence process was conducted. The Alliance, which combines the United Malays National Organisation (UMNO), the Pan-Malayan Chinese Association (MCA) and the Malayan Indian Congress (MIC) has won 51 seats and the Islamic Party of Malaya (PAS) obtained one seat. In 1956, the Chief Minister and several Ministers have been appointed to head the Government of the Federation of Malaya.

In the same year, several ministries were created, including the Ministry of Public Works with the original name of the Ministry of Works, Posts and Telecommunications. Honourable Mr. Sardon bin Haji Spokesman is the first minister who heads the Ministry. The functions and responsibilities of the Department of Public Works has been preserved and placed under the administration of the Ministry. Director of the Public Works Department is responsible to the Minister in relation to matters of policy Ministry. In 1975, the Ministry has been restructured and renamed the Ministry of Works and Transport.

The rapid development and socio-economic development of the country in the 1970s has led to the function and role of the Ministry is increasing. In accordance with the role, in 1978 again changed the name of the Ministry to the Ministry of Works and Public Utilities. However, in parallel with the specialization of responsibility, in the 1980s, the Government has decided to name the Ministry as the Ministry of Works Malaysia and the name has remained until now.

## **1.2 Background of the Study**

A pre-contract Construction Projects in Malaysia, this includes Contractor and Employer. The delicate given to the temporary workers incorporates numerous authoritative archives.

- i. Guideline to Tenderers
- ii. States of agreement
- iii. Reference sections to the states of agreement
- iv. Bills of amount
- v. Prelude to the Bill of amounts
- vi. Strategy for estimation
- vii. Timetable of Particulars
- viii. Rundown of Drawings

The Tenderer should submit to the previously mentioned summation and needs to create a work program, aside from satisfying other formal prerequisites of the delicate. The work program contains data of how the Tenderer would complete his work if at all he were being granted the agreement. The work program likewise reflects, what exactly degree is the Tenderer fit for delivering a successful arrangement, which in application would prompt to the best sought result for the business. Once the agreement is chosen and after

the issuance of the Letter of Award, the temporary worker needs to create a Master work program which depicts in detail, what and how the timetable of functions be finished. Likewise month to month/week by week work programs with upgraded extend advance will be submitted to the customer to look at the real and arranged calendars furthermore to assess the venture status.

Nowadays, the majority of the Tenderers or the contractual workers take after a formal approach in building up their work program which is either in a wrote arrange or a spread sheet or programming program with some time related bars on a graph. These work programs does not give any definite data of how the Tenderer is expecting to deal with. In most of the cases the work program is neglected, as valuing of the Tender is the principle idea even the evaluating is not finished as for the work program. The accompanying are the conceivable disadvantages in this situation.

- i. The customer may not get the correct substance as arranged by the Tenderer from his program of works.
- ii. All the conceivable exercises of the venture may not be fused in the program
- iii. Every one of the exercises is not efficient and related as booked.
- iv. The connection amongst cost and advance is unexplained
- v. The connection amongst advance and venture obliges is not highlighted
- vi. The customer can't pass judgment on basic exercises in the venture
- vii. Any postponement or disappointment of a movement, they boss may not get legitimate proof to arraign neither the contractual worker nor the temporary worker have adequate program to legitimize himself.
- viii. For any progressions that happen in the venture, the program is not amendable
- ix. The program is not clear as crystal

### **1.1.3 Researcher Experience**

Based on the experience gain from two month internship on July until September 2016, the researcher might differentiate successful project and unsuccessful project based on communication in Project Management. Successful project in a company is a project that applied the concurrent engineering that is a strategy for planning and creating items, in which the distinctive stages run at the same time, instead of sequentially. It diminishes item advancement time furthermore an ideal opportunity to market, prompting to enhanced profitability and lessened expenses. In this process, engineer, supervisor, head department and quality control's person will sit together and discussed about the project. Usually, unsuccessful project is because of miscommunication among the members. Thus, by implement the experience and idea to JKR Project Management, the researcher feel that it might help to create better project in the future.

### **1.2 Problem Statement**

Throughout 9<sup>th</sup> Malaysia Plan since year 2006 until 2010, PWD has been given with 6104 projects to develop. However, the project came out with many problems even though much solution has been implementing by them. Finding shows that the unsuccessful project influences the time taken, overall cost and quality produced by PWD.

- i. Vast majority of the Construction extends the booked work program put together by the contractual worker to the customer are not efficient and are deficient. As a result, disarray and misconstruing happen. Therefore, correspondence disappointment will happen and making an undesirable venture arranging.
- ii. Numerous contractual workers don't take genuine measures while displaying the work program. When the contractual worker gets the venture, he makes his

arrangement demonstrating the extend finish date and important points of reference as required by the customer. The work program does not have the vibe of the venture stream; it is basically accomplished for formal necessities and customer's fulfilment as it were.

- iii. Moreover, for a customer having more than one principle contractual workers for a similar venture, the work program put together by the diverse temporary workers is not comparative in presentation. The customer discovers trouble in synchronizing work program of various temporary workers to acquire his coveted yield.
- iv. There are no point by point details in the agreement reports that confine the temporary worker to take after a procedural organization while showing their calendar of works. In this circumstance the understand ability of the work program to a great extent relies on upon the customer see. Not in all cases the customer will have the capacity to comprehend what precisely the contractual worker has said in the work program of the venture and how effective is the function program, so that the program yield is in the support of the customer.
- v. The insufficiency or vagueness in a Project Plan Presentation may prompt to communicational and legally binding mistakes.

Numerous legally binding issues that ascent in a development extend and additionally prompt to discretion needs to manage starting system put together by the agreement, likewise the variety in the venture cost needs to manage the concurred plan program. For instance the cost of steel and cement may differ every now and then; the agreement permits the expansion or exclusion to the agreement entirety with the variety in the cost of any materials utilized as a part of the extend. The variety figured will be accounted through work program concurred by the customer and the temporary worker.

Thus, the program of works must be done in an exceptionally exact way, with the best data installed in, likewise straightforward and clear in appearance.

The problem faced by PWD is in crucial condition because it might affect the 10<sup>th</sup> Malaysia Plan for development since year 2011. Thus, PWD should plan to ensure that time taken, cost and quality is under controlled. Completing project on time, cost and quality produced is the key for successful project. However, other problem that might happen during construction is must be predicted and prepare for worst by an organization. Debate may ascend for any foul play done, either to the contractual worker or to the customer for an insufficient arrangement presentation as the root. All in all there is a need of correspondence upgrade in the venture administration as far as venture arranging perhaps presentation.

## **1.2 Objectives**

The objective of the research is the head of the project. Besides, it is the main idea of the plan of the project. Moreover, the objective must meet with the problem statement of the project.

- i. To understand Project Planning Processes and Communication System in Project Management

Firstly, it is critical to comprehend the significance of venture arranging in Project Management, the arrangement design and the arranging stages, how to arrange a extend and the different parts of an arrangement. Besides, the research will investigate about comprehend Planning in Construction Management. Understanding the significance of correspondence in a Project administration,

conveying arranges as work projects. Impacts of poor correspondence in extend administration.

- ii. Understand Work Program, Current Plan Presentation Practices and software used for planning

Understanding the project work and presentation systems, utilities, components and, work program designs. In order to enhance the present routine of presentation, and an unmistakable comprehension, an investigation of it is required. This incorporates both venture arranging and application that happens for the duration of the life of a venture. It will be advantageous to look at the current method of plan presentation with the expected method of development venture arrange presentation tool after by organizers. Numerous analysts and experts have supported that venture arranging alone does not suffice in effectively dealing with a complex development extend. Along these lines, it is critical to survey the present mode extend administration accept amid a development extend. A clearer comprehension of current practices will give a superior picture what prerequisites in the presentation will upgrade the correspondence in term of arranging between the different units of venture administration. The examination goal is additionally to concentrate the generally utilized programming as a part of Malaysia for arranging. The research will be cover on the investigation of current Project Management tool used by PWD.

- iii. To analyse the best software for Project Management Software and Software to help in Mechanical Sector

The researcher will find and suggest software that suits with the current planning of JKR by considering the cost and usability of the software. Besides, the research

will investigate the software that helps the project that involve in Mechanical Sector in order to reduce failure in structure and building.

- iv. To recommend the best Mechanical Software and Project Management Software

At the end of the research, a recommendation will be made to PWD in order to help them to create better quality of the project.

#### **1.4 SCOPE OF PROJECT**

This research will covers on the recommendation of modern tools suitable for construction project management PWD. Besides that, the research will cover on PWD Malacca area. Thus, other scope such as installation of suggested modern tools at PWD and recommendation at other area of PWD will not being covered in this research.