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 INDICATOR FOR EFFECTIVE MEASUREMENT TO ENSURE PWD  
 PROJECT SUCCESS  
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**EARNED VALUE MANAGEMENT AS A PERFORMANCE INDICATOR  
FOR EFFECTIVE MEASUREMENT TO ENSURE  
PWD PROJECT SUCCESS**

**MOHD. KHAIRI BIN MOHD. SANUSI**

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

**Faculty of Civil Engineering  
Universiti Teknologi Malaysia**

**MAY 2011**

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To my beloved wife, daughters, parents, siblings, and friends  
Thank for you're never ending love and support

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## ABSTRACT

Application of Earned Value Management (EVM) can be use as a tool for project manager to do monitoring and controlling to ensure project success. The study aim is to propose EVM as a performance indicator for effective measurement to ensure PWD project success. The objectives of this study are to analyse the perception of using EVM, issues relating to the current performance measurement (SKALA System) and the critical success factors to implement EVM. Data will be collected using mixed method approach, i.e document search, semi-structured expert panel interview and questionnaire surveys. All respondents are from PWD Branches either at Headquarter Level or at State Level to study their involvement in implementation of performance measurement in their construction projects. From the analysis of questionnaire survey among the 40 PWD's staff, the top-three perceptions of using EVM are project failure because of no effective controlling and monitoring procedures, implementing EVM will provide effective measurement and EVM can be use as a tool for project manager to control and monitoring project. The respondents also believed that the issues relating to the current project performance measurement (SKALA System) are data tabulated in SKALA system may not be accurate, current payment to contractor by monthly progress and not when achieved project milestone, and current method cannot forecast cost and time of project completion. Beside that, develop training kit related to EVM, project manager clear their roles and responsibilities, and training to enhance skill designed and tailored for PWD to improve in EVM are the top-three critical success factors to implement EVM.

## ABSTRAK

Penerapan Earned Value Management (EVM) boleh digunakan sebagai kaedah kepada pengurus projek untuk melakukan pemantauan dan kawalan bagi memastikan kejayaan projek. Tujuan kajian ini adalah untuk mencadangkan EVM menjadi penunjuk prestasi bagi pengukuran yang berkesan untuk memastikan kejayaan projek JKR. Tujuan kajian ini adalah untuk mengkaji persepsi penggunaan EVM, isu-isu yang berkaitan dengan pengukuran prestasi sedia ada (SKALA System) and faktor-faktor kejayaan yang penting untuk melaksanakan EVM. Data akan dikumpulkan dengan menggunakan kaedah pendekatan campuran, carian dokumen, temuduga semi-berstruktur ahli panel dan borang kaji selidik. Semua responden samada bertugas di JKR ibu pejabat atau JKR Negeri disoal selidik untuk mempelajari penglibatan mereka dalam pelaksanaan pengukuran prestasi dalam pelaksanaan projek. Dari analisis borang kaji selidik antara 40 kakitangan JKR, tiga persepsi menggunakan EVM adalah projek gagal oleh kerana kawalan dan pemantauan prosedur tidak berkesan, pelaksanaan EVM akan memberikan pengukuran yang berkesan dan EVM boleh digunakan sebagai alat untuk pengurus projek untuk kawalan dan pemantauan projek. Responden juga percaya bahawa isu-isu yang berkaitan dengan pengukuran prestasi projek sedia ada (SKALA System) adalah data dinyatakan dalam sistem SKALA mungkin tidak tepat, bayaran untuk kontraktor berdasarkan kemajuan bulanan dan bukan ketika mencapai progres projek seperti dalam jadual, dan kaedah sedia ada tidak dapat meramalkan kos dan tarikh projek akan siap. Selain itu, membangunkan kit latihan yang berkaitan dengan EVM, pengurus projek faham fungsi peranan dan tanggung jawab, dan latihan untuk meningkatkan kemahiran yang dirancang dan disesuaikan untuk JKR untuk meningkatkan di EVM adalah tiga faktor kejayaan kritikal untuk melaksanakan EVM.



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# **CHAPTER 1**

## **INTRODUCTION**

### **1.1 Introduction**

According to Duncan (1996a) the definition of project is a temporary endeavor undertaken to create a unique product or service where it has definite start and end time and also the end product itself is unique and different from others. To succeed in construction industry, any project must be completed in record time as it can gain advantage from the competitors. However, it is not unusual to heard news projects that are failure whether the project are over budget, exceed the schedule time limitation or finish product do not meet client expectation.

Earned Value Management (EVM) is one of the performance measurement tool or technique to measure project performance whether small or big project. The history of EVM usage can be traced back from the basic form used by the industrial engineers on the factory floor in the late 1800 (Flemming & Koppelman, 2003, 2005, Kim et. Al, 2003).

In 1967, US government introduced the EVM as an integral part of the Cost/Schedule Control System Criteria(C/SCSC) to understand the financial aspects of programs and to be used in large acquisition programs in an attempt to establish a consistent methodology based on best practices.

As the result, EVM is one of the effective performance measurement and feedback tool for managing projects. EVM can give answer to project manager whether the project ahead or behind schedule, either the project is under or over budget or what the remaining work is likely to cost.

## **1.2 Problem Statement**

PWD is the assigned government body to implement and execute all related government ministries projects. Thus, in order to carry out these projects successfully, an effective tool or technique to control and monitor project is required.

A number of problems have been identified:

- a) Current method used by PWD to pay contractor is by monthly progress payment and not when the project achieved milestones set in the work program schedule.
- b) Data analysis of project implemented by JKR for year 2009 shows about 80% projects could not be completed within the original contract period.(Time factor element)

- c) Most of government projects having issues in change of work scope which involve a significant amount of additional cost to the original contract.(Cost factor element)

### **1.3 Aim And Objectives**

The aim of this study is to propose EVM as a performance indicator for effective measurement to ensure PWD project success. The objectives of this study presented in this paper are as following:

- i) To study the perception and understanding of EVM by PWD staff
- ii) To study the issues relating the usage of current method of performance measurement in PWD.
- iii) To study the critical success factor to implement EVM process as a performance indicator for effective measurement to ensure PWD project success.

### **1.4 Scope of The Study**

In this study, the current practice in PWD to measure project performance would be identify first through findings and related documents in order to find common problems in project implementation. The feedback from the common problems issue will be set as the benchmark to tabulate critical success factors in order to implement EVM in the PWD for performance measurement.

The questionnaire survey will be distributed randomly among PWD staffs at PWD headquarter and PWD State Level.

## **1.5 Research Methodology**

Research methodology is a framework for the researcher on how a study is carried out, such as process of collecting, analyzing, interpreting observations. Therefore, Figure 1.1 outlined the research methodology of this study. It is divided into three phases: Phase 1 encompasses on literature reviews which requires extensive readings from previous studies and researches that are related to the topic and asking feedback from few PWD's key informers who are expert in project performance measurement in recognizing the current problem faced in the department; Phase 2 the data collected through literature review and feedback from PWD feedback will be formulated into a set of questionnaire survey. The questionnaire will be distributed among random respondents at PWD head quarter and state level. After receiving the feedback from the respondent, the data will be analyzed using Statistical Package of The Social Sciences (SPSS), among the test that will perform to analyzed the data are Cronbach – Alpha for reliability test, Average Index Analysis for ranking purposes and later perform Cross Tabulation test to find any connection or link between the data. Phase 3, the draft to propose EVM process as a performance indicator for effective measurement to ensure PWD project success will be reviewed before being finalized.

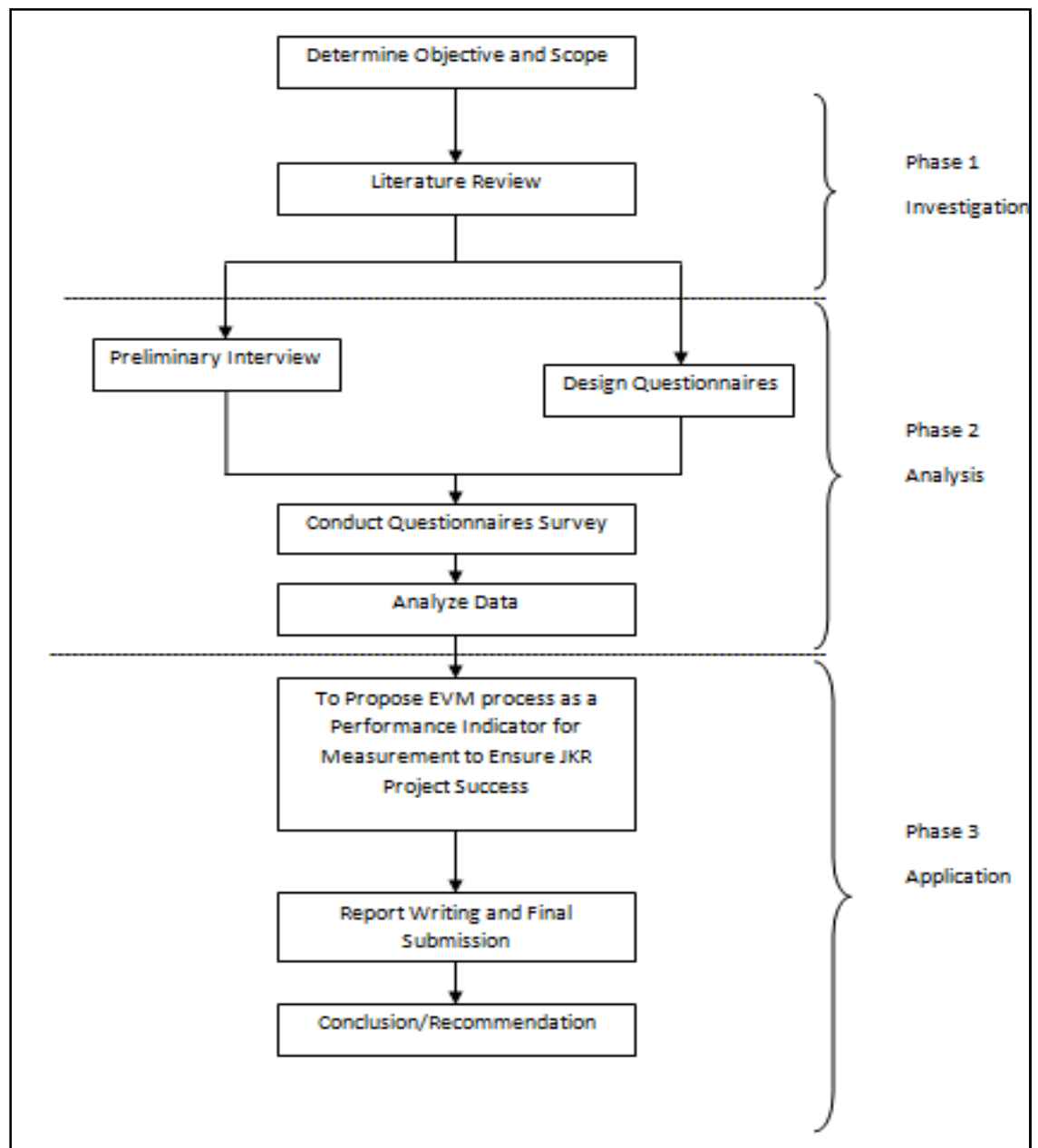


Figure 1.1: Schematic of Research Methodology