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A PROCEDURE FOR EFFECTIVE CONTRACTOR EVALUATION  
METHOD FOR GAMUDA PROJECTS USING  
EVIDENTIAL REASONING APPROACH

SRI VIKNESH A/L PERMALU

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

Faculty of Civil Engineering  
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MAY 2011

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*To my beloved parents*

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## **ABSTRACT**

As a leading team player in Malaysian construction industry, Gamuda has established and completed few major construction projects in Malaysia and managing ongoing projects locally and also internationally. These projects involve mega projects which are acknowledged internationally such as SMART Tunnel, New Doha International Airport, Kaohsiung MRT tunnel and few others more. The concept of tendering is the common method implemented for appointing contractors in Gamuda projects. Generally the projects involved are highly complex transaction, involving products and services integrated through a work to deliver facility or an enhanced organizational capability. As such, the need for a contractor's evaluation procedure that deals with that market and Gamuda's projects has also increased. This study aims to develop a procedure of comprehensive evaluation method for Gamuda projects which caters for both quantitative and qualitative criteria and evaluate the importance of these evaluation criteria. A procedure of the evaluation method in terms of Evaluation Form and Work Procedure Document is developed for the company's consideration. This new procedure is developed using the Evidential Reasoning Approach.

## ABSTRAK

Gamuda sebagai salah satu daripada syarikat gergasi dalam industri pembinaan di Malaysia, telah melaksanakan beberapa project mega di Malaysia dan juga sedang menguruskan beberapa projek di peringkat tempatan dan juga antarabangsa. Projek – projek ini diiktiraf oleh pelbagai pihak dan antaranya termasuklah *SMART Tunnel*, *New Doha International Airport*, *Kaohsiung MRT tunnel* dan beberapa lagi. Konsep tender merupakan amalan yang biasa dilaksanakan untuk melantik kontraktor dalam projek – projek Gamuda. Umumnya, projek-projek ini melibatkan transaksi yang amat kompleks yang melibatkan produk-produk dan perkhidmatan yang diintergrasikan melalui kaedah penyampaian yang berkesan dan keupayaan organisasi yang tinggi. Oleh yang demikian, Gamuda kini memerlukan satu prosedur penilaian kontraktor yang boleh meghadapi pasaran kini. Thesis ini bertujuan untuk membangunkan satu prosedur penilaian kontraktor untuk projek-projek Gamuda yang berasaskan kepada kriteria penilaian kualitatif dan kuantitatif dan menyelidik kepentingan kriteria penilaian tersebut. Prosedur penilaian ini akan disertakan bersama thesis ini untuk pertimbangan Gamuda. Prosedur ini dibangunkan bersasaskan kepada konsep *Evidential Reasoning Approach*.

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## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 Background**

As a leading team player in Malaysian construction industry, Gamuda has established and completed few major construction projects in Malaysia and managing ongoing projects in Malaysia and also internationally. The projects involved does range upto to mega projects which is acknowledged internationally such as SMART Tunnel, New Doha International Airport, Kaoshin MRT tunnel and few others more. Tendering is the approach largely associated with award of project contracts in Gamuda. The projects involved are

highly complex transaction, involving products and services integrated through a work to deliver facility or an enhanced organizational capability. Selecting the contractor is a very important criterion of the main owner of the project. Gamuda as a main contractor always faces the process of selecting sub-contractors for commencing the works progressively and in a distributed system or package especially in highly competitive markets as their purpose is to enable a customer to obtain certain business benefits within the constraint of time, cost and quality in order to justify the investment. The main criteria of selection which also reflects the reputation and image of Gamuda as the main contractor are the performance evaluation of the contractors involved in Gamuda projects.

Contractor's performance can be defined by the level and quality of projects delivers to the owner. It has been a common practice however to select the least cost bidder among competing contractors to perform the job. Conversely this may not ensure quality which is an important justifiable measure in project accomplishment. Predicting the performance of the contractor is highly important for both the contractor and the owner. During the last ten years, Gamuda witnessed a huge construction boom that has attracted to the construction market a large number of competing sub-contractors. Predicting the performance of construction firms in such a situation is indispensable in order to ensure quality and guarantee international standards. With the onslaught of contractors working in the construction industry the need for a contractor's evaluation model that deals with that market and Gamuda's projects has also increased.

## 1.2 Problem Statement

Reliance on bid prices alone as the discriminating factor between bidders is however, somewhat risky and short-sighted. The lowest bidder may not be the most economic choice in the long term as the client runs the risk of poor performance by that contractor during the project life. What is required is a broader evaluation technique that takes into account these risks when contractors are selected through an examination of other, qualitative data concerning the individual contractors involved. Some of the major problems arise due to the non-efficient selection of contractors are listed as below:-

- i. Less control over the sub-contractors.
- ii. Employees of sub-contractors will come and go.
- iii. Main contractor may be liable for any injuries a sub-contractor suffers on the job due to lack of sub-contractors importance of QSHE.
- iv. Main contractor may not own the copyright in works created by the sub-contractor.
- v. Main contractor to face the risk of government audit.
- vi. Extensive delays in planned schedules.
- vii. Cost overruns.
- viii. Increased number of claims and Extension of Time (EOT)
- ix. Concentration solely on the bid price likely to encourage sub-contractors to enter unrealistic low bids and compensate through claims or cutting costs.

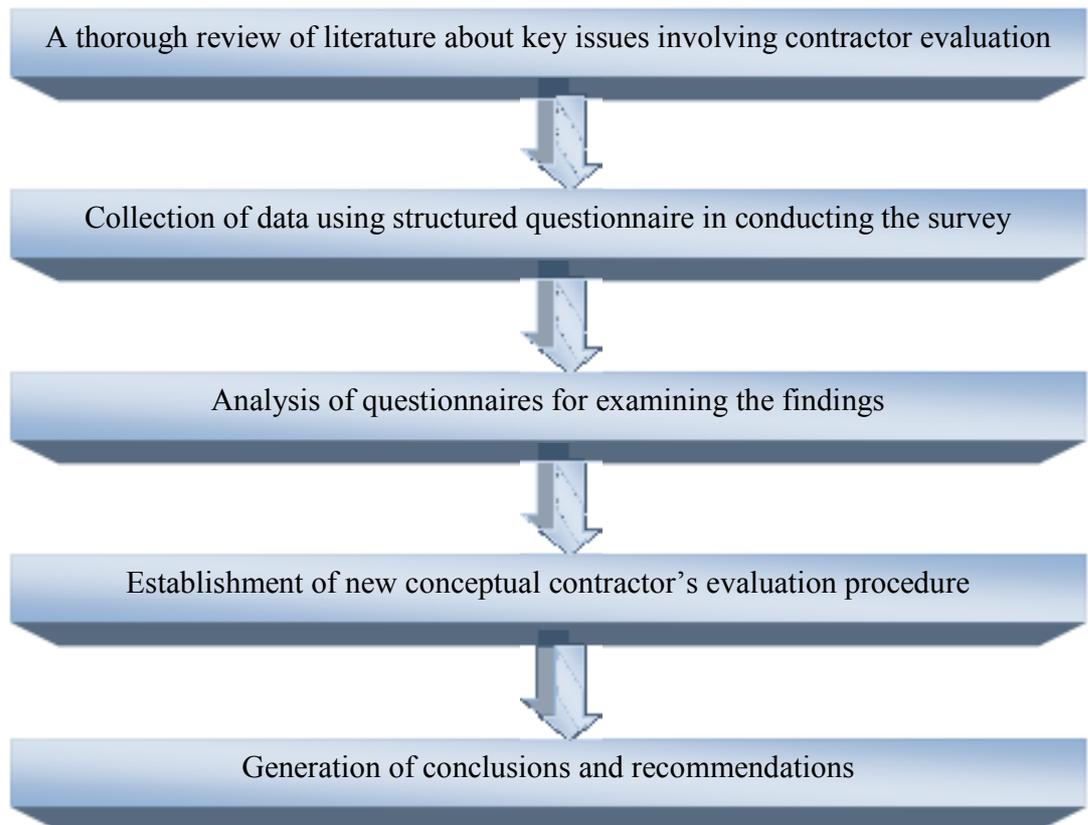
### 1.3 Aims and Objectives

The objective of this study is as listed below:-

- i. To study the current sub-contractor evaluation method being applied in Gamuda.
- ii. To develop a procedure of a comprehensive evaluation method which caters for both qualitative and quantitative criteria using Evidential Reasoning Approach and evaluate the importance of these criteria.
- iii. To generate Work Procedure and Evaluation Form for sub-contractor selections for Gamuda's consideration.
- iv. To measure manager's readiness in implementing the established procedure.

### 1.4 Scope of Study

The scope of this study is to propose a procedure for effective contractor's evaluation method to be adopted in Gamuda's on-going and future projects. Among the areas of works which is included in Gamuda's projects includes construction of bridges, tracks, drainage, building, stations, utilities, M&E, Systems and landscaping. The high-level description of the scope of study is as shown in *Figure 1* below:-



**Figure 1.1:** High Level Summary - Scope of Study