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**BORANG PENGESAHAN STATUS TESIS<sup>υ</sup>****JUDUL : DEVELOPMENT OF CIVIL AND STRUCTURAL  
CONSULTANT'S PERFORMANCE EVALUATION**SESI PENGAJIAN: 2005 / 2006

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DEVELOPMENT OF CIVIL AND STRUCTURAL CONSULTANT'S  
PERFORMANCE EVALUATION

JAYASELVI D/O R.PERIASAMY

A Project Report Submitted as a Partial Fulfillment of The  
Requirement For The Award of The Degree of Master of  
Science (Construction Management)

Faculty of Civil Engineering  
Universiti Teknologi Malaysia

MAY 2006

I declare that this project entitled “Development of Civil and Structural Consultant’s Performance Evaluation” is the result of my own research except as cited in references. The report has not been accepted for any degree and is not concurrently submitted in candidature of any degree.

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Dedicated to my late father, beloved mother, my brother, Ravi Selvan and my sister, Malarselvi who inspired and encouraged me to complete this study. A special thanks to my mother who endured every hardship to raise me up for who I am today.

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## ABSTRACT

Engineering and design activities constitute a critical link in a project's life cycle. The consultants play a very important role for carrying out the activities. Thus an efficient project control system requires an instrument to measure and assess engineering performance among different projects. Since most of the projects in Malaysia are fast tracked, the need to evaluate the performance of consultants before a project starts is often denied. The current performances of civil and structural consultants are deteriorating especially when a lot of projects are arising and time factor is critical. Therefore, the construction works are being a failure and the integrity of the project being questioned especially when frequent unwanted incidents occur during construction and post-construction. Since 80% of the construction cost is determined by the sketch design formulated, the consultants should be very efficient and have a good performance. The aim of the study is to determine on how to evaluate the performance of consultants. The data was collected through the literature study, questionnaire survey and also interviews from clients and contractors. 50 respondents responded on the survey conducted. The questionnaire consisted of 9 factors and 33 indicators on the identification of level of performance of consultants' service. From the analysis, 97% of the level of the performance evaluation for consultants was rated average and only 3% was rated good. Based on the analysis, a consultant performance evaluation model was established with 9 descriptions. An overall grading of the consultant's performance was also included in the model. It was then compared with an existing model and was validated by having experts' opinions. As a conclusion, the 3 objectives were achieved and recommendations for future study were suggested.

## ABSTRAK

Secara amnya kejuruteraan dan rekabentuk merupakan satu hubungan yang kritikal dalam kitaran sesuatu projek. Pihak perunding memainkan peranan yang penting bagi melaksanakan dan mengawal kualiti sesebuah projek. Untuk mencapai satu sistem pengawalan projek yang efisien, satu alat bagi menilai dan mengukur tahap prestasi perunding bagi setiap projek diperlukan. Memandangkan projek-projek di Malaysia ketika ini berkonsepkan projek cepat siap, keupayaan pihak perunding tidak diambil kira. Oleh kerana bilangan projek semakin meningkat dan masa merupakan satu faktor yang kritikal, tahap pencapaian dan kualiti perunding masakini semakin merosot. Justeru itu, kebanyakan kerja pembinaan gagal dan integriti pembinaan dipersoalkan apabila banyak kes kemalangan yang tidak diingini berlaku semasa dan selepas pembinaan. Perlantikan perunding yang cekap dan mempunyai tahap prestasi yang memuaskan perlu ditekankan kerana 80% daripada kos pembinaan ditentukan oleh lakaran yang dipertengahan. Tujuan utama kajian ini adalah untuk menentukan cara untuk menilai prestasi perunding di Lembah Kelang dari fasa rekabentuk, semasa dan selepas pembinaan. Data untuk kajian ini diperolehi melalui karya tentang perunding, tinjauan soal-selidik dan juga temuramah dengan pemilik dan kontraktor. Soal-selidik yang disediakan mengandungi 9 faktor dan 33 kriteria untuk mengenalpasti tahap pencapaian perunding. Daripada analisis, didapati 97% tahap prestasi perunding adalah tahap biasa dan manakala hanya 3% menunjukkan tahap baik. Daripada keputusan analisis, satu model untuk menilai pencapaian perunding dengan 9 kriteria telah dihasilkan. Selain itu, pencapaian keseluruhan perunding juga dicadangkan dalam model tersebut. Model yang dicadangkan ini dibandingkan dengan model sedia ada dan disahkan melalui pendapat pakar bidang. Sebagai kesimpulan, 3 objektif kajian ini dapat dicapai dan beberapa cadangan untuk kajian lanjutan telah dibentangkan.



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## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 Introduction**

Construction is a very huge and wide industry which involves a lot of companies and organizations. Thus managing the construction industry is a very challenging as well as complex. There are six main project life cycle in construction which consists of feasibility studies, preliminary and detailed engineering, procurement, construction, testing and commissioning and maintenance. Engineering which involves design activities is one of the critical link in the project phase. Engineers or consultants play an important role in carrying out the design activities. Thus an efficient project control system an instrument to measure and assess engineering performance among different projects. They provide the means to transform owner's objectives and requirements into engineered documents that are utilized by other project participants to deliver the facility. As projects differ in their execution strategies and conditions, the engineering performance is susceptible to change from one project to another (Maged, 2005). A good selection of consultant leads to a good and successful performance of the construction itself.



In Malaysia, the number of construction projects is very high but unfortunately the quality and performance of civil and structural consultants are becoming poorer. With extensive and complex projects going on, the services of engineering consultants are much needed in the team. Consulting engineering services is becoming a very lucrative business instead of giving a good service to the lot. In fact, a lot of engineering consulting businesses are vast mushrooming in our country. Although high competition among the consultants exist, but nothing much can be said about the standard of performance and quality of consultants nowadays.

On account of the sophisticated, dynamic and uncertain nature of civil and structural engineering projects, many vital decisions have to be reached by the clients based on the recommendations of the consultants that they approach. However, based on the client's experience and workforce, they could make the judgment whether the consultant that they have hired is good or poor on the account whether the cost, time, quality and client's satisfaction have been achieved or not. Therefore there is a need to select a good and reliable consultant to perform well in a project.

One of the first steps in building construction project is the selection of professional service team. The optimal selection of a firm's professional composition should take place before a project has begun and this will enhance the probability of the team's success (Kichuk and Wiesner, 1997). An organization selected ignoring all of the factors that play a role in optimizing performance invite chaos and ultimate project failure (Kezsbom, 1992).

Since the performance of the civil and structural consultants is deteriorating, steps to improve on their performance have to be imposed to control the quality of the services provided. Prior to engaging a prospective consultant, an evaluation of potential performance should be carried out. The evaluation is necessary in order to achieve a high level of quality performance on the design works. This study is just

an initial step to improve on the quality and performance of the civil and consultants in Malaysia, particularly in Klang Valley, as most of the consultants are based there.

## **1.2 Problem Statement**

The current performance of consultants in Malaysia especially in civil and structural category is not as good as it was used to be. Those days, there were a few consultants which were capable of producing a good and quality work. Unfortunately, with many projects rising and time factor is critical, emerged new consultancy firms which are small in capacity and unable to produce a quality service to the public. In fact not many clients practice to evaluate the consultant's competency, although they realize the consultant's performance is poor. Somehow due to this overlook, some of our construction works are being a failure and the integrity of the project being questioned.

Clients complained on the services provided by the consultants and were not satisfied with the quality produced by them. As professionals, the consultants must be able to perform well and above par to distinguish themselves from other consultants. Lately, this quality was missing in the construction industry. Due to the incompetent in service and performance, a lot of design problems occur during construction and post-construction, which results into unwanted incidents. A very good example of the consultant's incompetent was the cracks which appeared on the 31 number of piers on Kepong Bridge, at the Middle Ring Road II, Kuala Lumpur early last year. The design should withstand for a long life cycle, with maintenance conducted yearly but due to consultant's insufficient design works, cracks appeared and caused part of the highway to be closed for repair works. In fact, the consultant involved in design works was a well established consultant in Klang Valley. Therefore, a need to evaluate the performance of civil and structural consultants before awarding a project to them arises.

Besides, the problem occurring during the construction and post-construction stages, the design that the consultant produced at the feasibility and preliminary stages may bring cost impact to the client. Since the client make the decisions based on the recommendation of consultants they appoint, the consultants should be very efficient and have a good performance. Client's decision making affects as much as 80% of construction cost taken when the sketch design is formulated (Pilcher, 1994). Therefore if any design errors and omissions if neglected or unresolved, it could lead to serious claims and reworks once the construction work begins. While the cost of design errors exceeds that attributable to those generated by construction (9.5% as opposed to 2.5% of the total project cost) (Burati et al. 1992), some clients recruit consultants on a competitive basis without due attention to the suitability and performance of their consultants (Hamilton 2001). Ingram and Peltier (2001) suggested that greater emphasize should be placed on the performance of previous consulting assignments when the design is selected.

However, it is not easy to evaluate the performance of consultant as this would be very subjective as well as sensitive to the individuals. In fact, not much study has been conducted to evaluate the performance of civil and structural consultants in Malaysia, especially in Klang Valley, as a lot of clients and consultants are stationed here. It is therefore important that an evaluation on the consultant's performance is carried out to improve their professionalism and services, ultimately giving the best practice and satisfaction to all parties, especially the clients and end-users. This actually would help to have an efficient project control system.

### **1.3 Aim and Objectives of Study**

The aim of this study was to determine on how to evaluate the performance of consultants, especially the civil and structural consultants. Since their

performance was deteriorating, some steps were needed to execute in order to achieve a higher quality of consultants' performance. The three objectives to support the aim were as below:

- (i) To identify the existing trend of performance evaluation conducted by both government and private sectors.
- (ii) To identify the level of performance of consultancy services
- (iii) To propose a paper-based model as a tool to measure the performance of consultants.

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

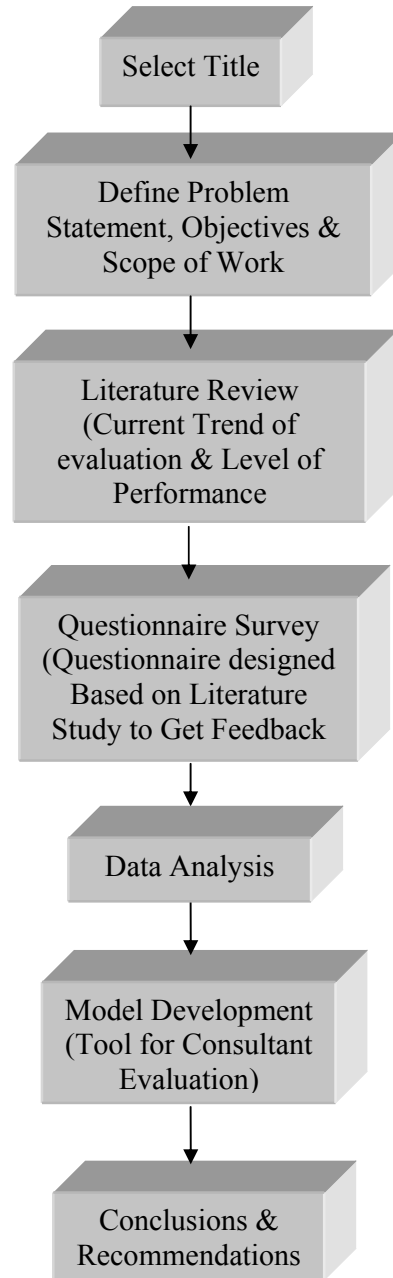
This study was confined to the following scopes:

- (i) This study was focused on evaluating the performance of civil and structural consultants
- (ii) The consultants' performance evaluation during the design, construction and post-construction stages
- (iii) This evaluation was conducted for consultants in Klang Valley only
- (iv) This evaluation was concentrated more to private clients

#### **1.5 Brief Research Methodology**

This study was carried out by literature study and informal interviews from private clients on the existing trend of performance evaluation conducted by both government and private sectors, literature study and questionnaire to identify the

level of performance of consultancy services and after the questionnaire was analysed, a paper-based model was produced as a tool to evaluate the performance of consultants. The following flow chart represents the overall method of study.



**Figure 1.1:** Flow diagram of study

The literature study for this project was reviewed in the following chapter.