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THE POTENTIAL OF OBJECTIVE-SUBJECTIVE AS PROJECT
PROUREMENT APPROACH

WONG TECK ING

A project report submitted in partial fulfillment of the
requirements for the award of the degree of
Master of Science (Construction Management)

Faculty of Civil Engineering
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NOVEMBER 2009

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Specially dedicated to my family for their love and support
“With love and appreciation”

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ABSTRACT

The successful execution of construction projects and keeping them within estimated cost and prescribed schedules depend on a methodology that requires sound engineering judgment. Thus, which procurement route that is most suitable in a building and construction project depends on the goals and requirements set for functionality, cost, time, and quality. Seen from a practical point of view, as well as from a theoretical one, it is important to improve methods for selection of procurement routes. This project is to review the procurement system in Malaysia's construction industry. It seeks to analyze the impact of different procurement methods on project performance. Then the project extends to formulate an objective-subjective procurement selection method. Questionnaires were conducted and distributed to the respondents in the Building Work Department, PWD and 15 projects were selected to validate the objective-subjective procurement method selection. The results show that the sequential traditional method is the most practiced, followed by design & build and accelerated traditional approaches. Findings also indicated that the sequential traditional and accelerated traditional methods had a negative impact on the performance of time, where they tend to delay a project. However, design & build and turnkey packages contribute a positive impact in terms of time performance but they cause a higher cost and poor quality control on a project. The findings also show that the construction community in Malaysia is entrenched in the traditional approach and is reluctant to try new options where there are five non-matching comparisons between the proposed procurement strategy and actual procurement strategy. Therefore, it can be concluded that the decision on appropriate procurement strategies for projects and the multiplicity of criteria makes selection difficult, where it will affect the performance of the project. Thus, an objective-subjective procurement selection method is proposed as a guide for a decision maker to make a better choice.

ABSTRAK

Kejayaan untuk melaksanakan suatu projek pembinaan dan memastikan ia menepati anggaran kos dan siap mengikut jadual adalah bergantung kepada keupayaan seseorang dalam membuat keputusan yang wajar. Oleh yang demikian, pemilihan jenis perolehan yang bersesuaian adalah bergantung kepada sasaran dan penentuan fungsi, kos, masa serta kualiti suatu projek pembinaan. Apabila dilihat dari segi sudut praktikal dan teorinya, didapati ia adalah amat penting dalam mempertingkatkan pemilihan jenis kaedah perolehan. Kajian ini akan melihat kaedah perolehan dalam industri pembinaan Malaysia. Ini diikuti pula dengan menganalisis kesan kaedah perolehan yang berlainan terhadap prestasi projek. Kemudiannya, kaedah pemilihan jenis perolehan secara objektif-subjektif dicadangkan. Borang soal selidik diagihkan kepada responden di Cawangan Kerja Bangunan Am, JKR dan 15 projek dipilih sebagai uji kaji kaedah pemilihan jenis perolehan secara objektif-subjektif yang telah direka. Keputusan kajian menunjukkan kaedah *sequential traditional* dan *accelerated traditional* meninggalkan kesan negatif terhadap prestasi masa dimana ia menyebabkan kelewatan dalam suatu projek. Sebaliknya, kaedah reka & bina dan pakej turnkey memberikan kesan positif terhadap prestasi masa tetapi ia akan menaikkan kos dan tiada pengawalan kualiti yang baik. Kajian turut menunjukkan komuniti pembinaan di Malaysia lebih terikat dengan kaedah traditional dan tidak mempunyai keinginan mencuba kaedah baru meskipun lima perbezaan perbandingan diantara kaedah perolehan yang dicadangkan dengan kaedah perolehan yang dilaksanakan diutarakan. Dengan ini dapat dirumuskan bahawa pemilihan kaedah perolehan yang sesuai dan kepelbagaian kriteria menyebabkan pemilihan kaedah sukar dan ia memberikan kesan terhadap prestasi suatu projek. Dengan ini diharapkan kaedah perolehan objektif-subjektif yang dicadangkan dapat dijadikan sebagai panduan kepada pembuat keputusan dalam membuat keputusan yang wajar.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Construction project procurement systems practiced in the industry have been subjected to changes resulting in many newly developed procurement systems that could be used to meet contemporary requirements of the clients. In dealing on which procurement system to apply, there is a need to take into consideration various factors before any practical decisions can be made as the wrong selection of construction procurement approach usually leads to project failure or general client's dissatisfaction. Therefore, a systematic approach for the selection of the most appropriate system is essential to aid the clients to achieve their ultimate project goals, thus to ensure best value for their money.

The procurement of construction project is "vast in scope" because it involves the gathering and organizing of myriads of separate individuals, firms and companies to design manage and build construction products such as houses, office buildings, shopping complex, roads, bridges etc. for specific clients or customers". Procurement comes the word procure which literally means "to obtain by care or effort"; "to bring

about” and “to acquire”. System is about “organized method, approach, technique, process or procedure”.

However Rosli (2006) described project procurement as an organized method or process and procedure for clients to obtain or acquire construction products. Many new procurement systems evolved during the 1980s and 1990s, giving greater choice and flexibility (Ivor H. Seeley, 1984) and it is vital that clients make the correct choice of building procurement method in an increasingly complex situation, with a wide range of objective criteria and procurement system.

The Aqua Group (1999) described procurement as the process of obtaining or acquiring goods and services from another for some consideration. However, Masterman (1996) described project procurement as the organizational structure needed to design and build construction projects for a specific client. From the definition by Masterman and The Aqua Group, it can be concluded that the procurement is a process of obtaining a building by fulfilling client’s requirement which involves a group of people who are team up together and organized systematically in term of their role, responsibilities and interrelation between them.

The most common form of public sector project procurement is called design-bid-build (Miller et al. 2000). Under this delivery method, projects follow a traditional model in which an owner hires a designer to develop a design and prepare the documents needed to build the project. Under a separate bid contract, the owner hires an independent general contractor to construct the project. The designer is paid a fee proportional to the services delivered, whereas the contractor’s compensation is typically built into the cost of construction. For some agencies with large, ongoing volumes of project work, design and bid phase services may be provided by in-house public sector design professionals rather than consultant designers. These “in-house designers” often

serve as project managers and construction managers as a project moves through its life cycle. Because of the frequency of its use, this design-bid-build technique often serves as a reference point for all other methods (Tenah 2001).

In an effort to improve project procurement performance, public sector owners have increasingly begun to utilize alternative project delivery systems other than traditional design-bid-build. Under one such alternative method, some large public and private sector organizations have begun design and build in addition to improve the project performance. By using design and build for construction projects, these agencies now have another choice other than a traditional low bid contracts. Not every project, however, can be done by design and build. Factors such as availability of resources, the size, location and complexity of the project or a contract volume threshold set by a governing board could each dictate that the project not be constructed by design and build. Some types of work, however, are well suited for the use of design and build procurement method.

Therefore the different procurement system contribute to different project performances in term of allocation of responsibilities, activities sequence process and procedure and organizational approach in project delivery. Therefore a suitable procurement method have to be made in order to fulfill clients need regard to certainty of price, cost limits, time requirements, complexity of design and many other factors.

1.2 Statement of Problems

A review of current practices in the Malaysia shows different approaches to the procurement of building projects. The classifications of these approaches are extremely complex because there are no clear and universally accepted definitions of what a particular procurement method is. This raises a major issue in that if there is no accepted definition of what comprises a particular procurement route, the possibility of establishing criteria to achieve specific objectives is problematic, if not remote.

McCanlis (1967) pointed out the problems with the traditional descriptors of contractual arrangements but notwithstanding the acknowledged problems, ELSIE (1990) computer system and Masterman (1992) have defined the various procurement routes. However, there are no systems that can identify the characteristic of a procurement route and the impact of these characteristics upon performance can be measured so that the selection of a specific procurement path can serve a purpose.

The different types of procurement system have different method and process of design and construction. These different systems also describe a different organization structure in term of the role, responsibility and the authority of each team members. So how far do these different types of procurement system which have different method, process and organization structure can affect the performance of a construction project in term of cost, time and quality?

Selecting a procurement strategy for construction project is also inherently subjective when a construction client or his consultant has to select a procurement method for a project and his previous experience plays an influential role. Therefore how a client or his consultants can make a decision in choosing a right procurement

method and are there any guide lines which can lead them to select a right procurement method where the decision becomes even more complex with the multitude of decision criteria and option available?

It is common that the most suitable procurement method in a building and construction project depends on the goal and requirement set for functionality, cost, time, and quality. This is concerns for both private and public sector. Seen from a practical point of view, as well as from theoretical, it is important to improve methods for selection of procurement routes. Turner and Simister (2001) claim that the theory on project organization and contract type selection are in an embryonic stage and there is still no critical research on it.

In practice it is always seen that project's cost, time and quality overruns are due to weaknesses in the project procurement methods. We have seen that such methods are not used in the manner they are intended to be and even project owners in some cases are lack of knowledge on formal method. However, from a research perspective, it is interesting to develop methods for different types of projects. If we can improve generic methods for selection of procurement method, it will be of useful for project owners and all other parties in the project. It is necessary to understand today's practice regarding procurement method in order to develop better methods. In the case where the owners have such methods but do not use it, it has to be investigated that what would be the determinants of owner's selection.

1.3 Aim and Objectives of the Study

Construction industry is looking to construction management to provide a better way to build and manage the development of a project. Therefore, a suitable procurement method is important to meet basic demands within budgetary and time restraints. The project aims to investigate, evaluate and analyze the most suitable procurement method to be implemented in a construction project. The aim can be achieved with the following objectives:

- a) To review the procurement system in Malaysia construction industry
- b) To analyze the impact of different procurement method in selected project on project performance
- c) To formulate an objective-subjective procurement selection method

1.4 Scope And Limitation

The documentation study implies that public owners continue to select the same procurement route practiced by many. They do not consider what procurement route suits each single project, and therefore they do not select the route according to recommended practice.

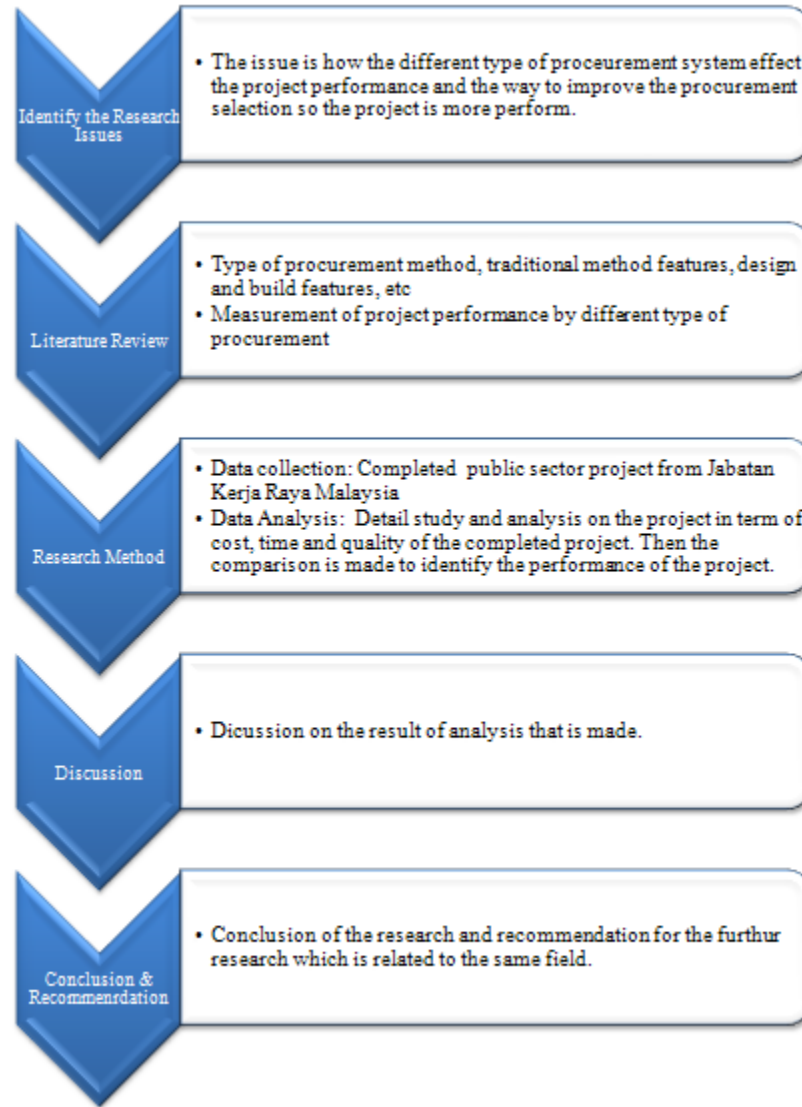
Therefore this project will focus on innovation and development of objective-subjective procurement selection method in construction projects in Malaysia. Next, the study will also put forward the strategies to improve objectivity in procurement selection. Finally it should also be noted that all the issues, facts, ideas as well as proposal that will be presented in this research will only focused on those related to the scenario of construction industry.

1.5 Research Significant

- i. Review the advantages and disadvantages of different procurement method practiced in Malaysia construction industry.
- ii. As a performance indication to a decision maker before choosing the right procurement method.
- iii. Guide the decision maker in selecting the most suitable procurement method.

1.6 Research Methodology

Briefly, the research process is divided in 5 stages:-



Stage 1: Identify the Research Issues

The research issues arise from intensive reading of journals, articles, conference papers, research papers, magazines and electronic resources as well through the World Wide Web and online e-databases from UTM's library website. Discussion here also conducted with the lecturer in this stage. Based on the issue, the objective of the research has been identified.

Stage 2: Literature Review

A collection of various documentation and literature regarding the research field is important in achieving the research objectives. Secondary data is collected from reading materials in printing form like books, journals, research paper, magazines, reports, proceedings, seminar paper as well as information from internet. It is important to identify trends and developments over time in construction industry, as well as the general state of knowledge concerning the subject area of procurement system such as background, definition, type, procedures, relevant events and etc.

Stage 3: Data and Information Collection

After identifying all the background and relevant issues on procurement method through literature reviews, all the data and information will be collecting from the Public Work Department on the selected project only as a case study analysis. The selected project includes the completed building works and completed road works. Besides that, questionnaires will be distributed to the project manager or the people involved in the project regards on improving objectivity in procurement selection.

Stage 4: Research Analysis

In this stage, it is able to determine whether the stated objectives have been achieved. Different types of analysis will be carried out according to the requirements of the objectives. Computer software such as Microsoft Office Excel, Statistical Package of the Social Sciences (SPSS) and Expert Choice 11.5 will be used as analyzing tools. The analysis method is depends on the suitability of the variable. There are several popular method were used such as likert scaling or indexing, statistical analysis, frequencies, descriptive, analytical hierarchy analysis and etc. The result will be presented in graphical form such as graphs, charts, tables and schedules for an easier understanding.

Stage 5: Conclusion and Recommendation

Reviews on the whole process of the study will be made with the intention to identify whether the study objective has been achieved. After presenting the study findings, recommendations and limitations of the study, topics for further research emerge.

1.7 Organization of The Project

This Project is structured into five (5) chapters. Each is described as follows.

Chapter 1 is on introduction. This chapter is the proposal of the study. It contains the background of the study, statement of problems, the objective of the study, scope of the study, significant, methodology and organization of thesis chapter.

Chapter 2 discusses the procurement systems. This chapter presents the criteria of all procurement method that practice in Malaysia and the characteristic of each procurement method. Besides that, the criteria of procurement selection also include here.

Chapter 3 is on project performance. This chapter presents the key to measure the project performance on the point of view of client and the building team as the cost, time and quality as a parameter. The relationship between the type of procurement systems and project performance are discusses within this chapter.

Chapter 4 deals with data analysis. This chapter presents the data and analysis to address the objectives which have been formulated. Here, analysis will determine the influence of different procurement methods on project performance, to formulate objective-subjective method of in procurement selection and to find out if owner select a procurement method according to recommended practice.

Chapter 5 is on conclusion and recommendation. This Chapter presents the conclusion and recommendation for further research in the analysis of procurement system for all the procurement strategy practice.