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Ideal Construction Procurement System based on Transaction Cost Approach

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Abstract

Procurement system provides an avenue for bringing together various service providers in a construction project, and for identifying and fulfilling the priority needs of the client for procuring the building or facility. Thus, it is critical that by making the right choice of a procurement system at the onset would indirectly ensure successful project delivery with satisfaction by all parties involved. There have been many attempts made to develop various model to assist in the decision making and selection of appropriate procurement system and most of the models are developed based on clients' objectives and preferences and influenced by the project constraints. However, none of the previously established models give detail consideration on the cost aspects especially the hidden cost apart from the production cost. Therefore, the Transaction Cost Theory is appropriate to be applied in every phase of construction project and most importantly the application of this theory can become the basis of the clients in selecting the most ideal procurement system to be adopted for their construction projects. Unfortunately, Transaction Cost Theory is unknown and the awareness on application of Transaction Cost Theory in construction project among the industry players is very minimal. In fact, in Malaysian context, so far there is limited study done to relate the Transaction Cost Theory to any aspect of construction fields. The purpose of this research is to identify the common transaction cost incurred in different types of procurement system i.e. Traditional and Design and Build; to develop a framework in selecting the ideal procurement system based on the Transaction Cost Theory approach. Investigations would be limited to the views expressed by professional consultants in Malaysia. Structured questionnaires and expert interview will be conducted as data collection methods. Content analysis, multi-attribute analysis and rank correlation test will be used in the analysis of the data.

Keywords: Construction project, Procurement system, Transaction Cost Theory.

Introduction

The performance of construction project remains a prominent issue in delivering construction projects all over the world. This is because construction projects involve defined objectives and goals that must be achieved and large resources which need to be utilised optimally and efficiently. However, there are many critiques on the performance of construction project not only in Malaysia but everywhere. Although many efforts and works have been done to improve the performance of construction projects, but still they have been beset by cost overrun (Odeck, 2004 and Cantarelli et al., 2012) , schedule delays (Lo et al., 2006 and Doan and Menyah, 2013), shoddy workmanship, conflict and disputes and many more. This shows that despite of many efforts and studies done to improve the performance, this issues remain to be solved.

Theoretically, there are many aspects that can be looked up by the industry and the players in order to solve this problem. One of the aspects to be put more concern is that the adoption of the correct or appropriate procurement system for the project. This idea is not new and has been raised up by the researchers as well as practitioners in decades ago for instance (Alhazmi and McCaffer, 2000; Ambrose and Tucker, 1999; Rajeh et al., 2015). All of them argue that the adoption of the appropriate procurement system is the most important drivers that leads to the better construction project performance and has the higher possibility in eliminating the prevalent problems. Thus, it is critical that by making the right choice of a procurement system at the onset would indirectly ensure successful project delivery (Stanford and Molenaar, 2016; Rajeh et al., 2011; Chang and Ive, 2011), a satisfied client, a successful service provider, and a reputable construction industry.

In the construction industry, there have been many attempts made to develop various models to assist in the decision making and selection of appropriate procurement system. Most of the developed models were developed based on clients' objectives and preferences and influenced by the project constraints (Rajeh *et al.*, 2011) for instance Weighted Sum , Fuzzy Decision Tool, Multi-Attribute Utility Test (MAUT), Analytical Hierarchical Process (AHP) and mixed method which combined two or more the before-mentioned models. Indeed, in the perspective of cost consideration in any construction project, cost involved not only the production cost. However, none of the mentioned established models give detail consideration on the cost aspects in their selection models. Undeniably, in the perspective of cost consideration in any construction project, cost involved not only the production cost. The overall cost to be considered must include the cost of preparing a bidding documents, estimating, drawing up a contract, administering the contract, as well as dealing with any deviations from contract conditions (Rajeh *et al.*, 2016). These cost are referred as Transaction Cost in the study of economic organisation (Coase cited in Li *et al.*, 2013) and primarily linked to cost at the pre-contract and post-contract phases. In addition, according to (Li et al., 2013) transaction costs are not the same with production costs; production costs are the costs of transforming inputs into outputs, whereas transaction costs arise from economic exchange. In other words, transaction costs occur when goods or services are transferred across a technologically separable interface (Williamson, 1987).

Unfortunately, the awareness on application of Transaction Cost Theory in construction project among researchers and industry players is very minimal (Rajeh et al., 2011 and Li *et al.* 2013). Up

to this date, there have been only few studies done attempting to determine transaction cost in construction projects. In fact, in Malaysian context, so far there is limited study done to relate the Transaction Cost Theory to any aspect of construction fields. This is because most of the studies that available to be referred to are primarily done in Europe, Australia, New Zealand and United State (US). On the other hand, among all the studies that relate the transaction cost with construction projects, there are only few studies have explored the relationship between transaction cost and procurement systems. In United Kingdoms (UK) there was a study to quantify the transaction cost involve in the public/private partnership (PPP) projects. However, the studies by Solino and Gago de Santos (2009) and Dudkin and Valila (2005) reported only the overall transaction cost incurred at the project level only. The studies by Whittington (2014) in United State and Rajeh *et al.* (2015) in New Zealand have given quite significant important for this current study where they captured transaction cost in a case study comparison between a traditional procurement project and design and build procurement project. Design and Build procurement system where design and construction services are packaged together has become an alternative or type of procurement system that adopted widely worldwide to overcome most of the problems rendered by Traditional procurement system (Ismail, 2007; Adnan *et al.*, 2012; Adnan *et al.*, 2008). Unfortunately, this is not always true where Whittington (2006) has revealed that such saving purposely to meet timely delivery for instance the compact funding allocations and concurrent engineering will become at the expense of organized labour and environmental review. Indirectly, this could reflect higher transaction cost compared with traditional system. Since Malaysian construction industry adopts widely the same procurement system for construction projects, therefore, there is the need to research and compare the magnitude of transaction cost on traditional procurement project and design and build procurement project. The expected result in Malaysian context could be of important to contribute and support the findings by Whittington (2008) and Rajeh (2015). Since there is very few study in this aspect, the expected result from this study would determine whether the previous findings can be universally accepted or not and whether the previous findings reflected only on the local condition and situation not conclusively representing the construction industry holistically. Since the relationship between procurement systems and transaction cost is still ambiguous, these two studies have provided the basis for the current study to explore the relationship between transaction costs and project procurement system and to extend the research by determining the impacts of adopted procurement system on the magnitude of transaction cost in construction project based on Malaysian context.

Transaction Cost Theory

The concept of Transaction costs was firstly introduced in 1937 by an economist named Ronald Coase proposing that under certain conditions, the cost of running and conducting economic transaction in a market may exceed the cost of conducting the transaction within a firm. Transaction costs theory expanded whenever Oliver Williamson advocate and operationalise the original Transaction Costs Theory by Coase (1937). Williamson (1975, 1985, 1996) has added several precisions into the original theory by identifying the types of exchange or transaction that are more ideally conducted within firm boundaries rather than conducting in market. Furthermore, as cited in Rindfleisch and Heide (1997) Williamson further propose an analytical framework for empirical research that rest on interaction between two main assumption of

human behavior (i.e. opportunism and bounded rationality) and key dimensions of transactions (i.e. asset specificity, uncertainty and frequency of transaction).

According to Li et al. (2014), Transaction Cost Theory accentuate that the overall total cost incurred by a firm will consist of two primary components namely production costs and transaction costs. Roughly, these two types of costs look like no difference at all, but in fact, they are difference in many aspects. Simply put, production costs are the cost of producing the product or the cost of the main service provided. According to Rajeh et al. (2014) production costs can be defined as the costs incurred from the physical or other primary process to create, manage and distribute the goods or services being produced. Based on this definition, it can be concluded that production costs are concern mainly on the costs of producing goods as well as services. Furthermore, Li et al. (2013) distinguish that transaction costs are not the same with production costs; production costs are the costs of transforming inputs into outputs, whereas transaction costs arise from economic exchange.

Transaction Cost in Construction

In the context of construction project, Li et al. (2013) have highlighted four major determinants of Transaction Costs specifically focus on construction industry. The determinants include the predictability of the owner's behaviour, the predictability of the contractor's behaviour, project management efficiency and uncertainty in the transaction environment. Recently, there are many researches who adopted the application of Transaction Costs in the construction field have been identified in literature. In order to identify the transaction costs in construction industry, many researchers attempted to list out the transaction cost in construction project phases.

Table 1: The summary of transaction costs incurred in every construction phase

Turner and Simister (2001)	The cost of: <ul style="list-style-type: none"> • Specifying the product in the tender documentation • Specifying the work method in the tender documentation • Managing variations to the specification of the product during project delivery • Managing variation in specification of the process during project delivery
Hughes et al. (2006)	Classify the transaction costs by project phase: <ul style="list-style-type: none"> • Pre-tendering stage (specifying the costs for marketing, forming alliances and establishing reputations) • Tendering stage (specifying the costs for estimating, bidding and negotiating) • Post-tendering (specifying the costs for monitoring performance, enforcement of contractual obligations, and dispute resolution)

Whittington (2008)	Considers transaction costs in construction project phase starting from the time when the funds are initially allocated to the project, to the process of publishing and advertisement, accepting bids and making an award, and to the execution of the contract.
Lingard et al. (1998) , Rajeh (2014) and Li et al. (2013)	Classify the transaction costs based on pre-contract stage and post-contract stage.

Based on the transaction cost economics theory, Winch (cited in Li *et al.*, 2013) opines that the transaction cost economic approach could provide a useful framework for analysing the inevitable differences in interest between different contracting parties who are members of the project coalition. Moreover, the same opinion was raised with Heide and John (1990) who suggest that the transaction cost theory capable to provide a useful framework for selecting the most appropriate procurement system for construction project. Therefore, there is a better opportunity to adopt this approach for the selection of procurement system process, and making it would be an alternative model in selecting procurement system which differs from the previously developed models. Moreover, it is anticipated that by applying the transaction cost economic approach in procurement system selection decision may lead to improve project performance.

Research Methodology

The methodology of this research is designed to determine the magnitude of transaction costs for different procurement systems which will be achieved through evaluating the daily spent time by professionals at conducting procurement activities relative to other project activities during the project phases. Mixed method will be used in this study utilised both quantitative and qualitative research techniques which decomposed in three stages as follows:

First stage

Firstly, data would be collected via preliminary questionnaire survey. Structured questionnaire would be sent out to the construction professionals who are currently working in ongoing projects in Klang valley. This step is purposely to validate the terminologies and refine variables used in the study

Second stage

Next, set of data would be collected via the administration of final questionnaire survey to the construction professionals who have direct experience with construction projects.

Third stage

Finally, set of data would be collected through an expert interview survey focusing on four case study, two case study which the project procured in traditional system and the other two case study project procured in design and build systems. The purpose of this survey is to validate the result from final questionnaire by applying the developed model to real case study.

Conclusion

The transaction cost approach provides a useful framework for analysing uncertainties in the transaction environment. It focuses on economic actors' behavioral assumptions (opportunistically and bounded rationality) and transaction characteristics; i.e. asset specificity, uncertainty, frequency, complexity, and contestability. Malaysian construction industry has been replete with many critiques on its performance. Therefore, there is a pressing need to improve its performance and productivity. Since productivity is a function of cost versus revenues, developing and improved understanding of the basis of costs offers significant potential to affect construction productivity. On the other hand, procurement system has been identified as one of contributors to the project performance provided that it is correctly chosen to be adopted for a construction project. Therefore, the relationship between transaction costs incurred in construction project and the types of procurement system is paramount to be explored.

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