

The development of public and private construction procurement systems in the Malaysian construction industry

Mastura Jaafar¹ and Azlan Raofuddin Nuruddin

Quantity Surveying Department, School of Housing and Planning, Universiti Sains Malaysia, Penang Malaysia

¹masturaj@usm.my

As demand on building construction projects rises, various procurement methods have been adapted to suit with unique project requirements. However, poor industry performance and rapid developments within it indicate the need for a research on the procurement systems in the industry. In order to explore the development of procurement systems in Malaysia, a discussion on different economic phases which influence the routes of procurement systems and its evolution in Malaysia's construction industry is initiated. Subsequently, based on a questionnaire survey collected from 73 public and 68 private parties, the significant and dominant role of traditional procurement system used by both the public and private sectors in Malaysia can be confirmed. Further, compared to the public sector, the private sector is observed to be more aggressive in adapting alternative systems such as design and build (D&B) and Turnkey. Further elaboration on the research findings is covered in the discussion section.

Keywords: *construction project, procurement system*

1. INTRODUCTION

1.1 Historical Scenario

The client sector in the construction industry can be classified into two; the public and the private. The public sector client, primarily the government, is observed to be the initiator of major developments on social amenity projects. The contribution of the public sector to the growth of the construction industry has been dominant since the country's independence. Along with the launching of Vision 2020 in the Sixth Malaysia Plan (6MP) in 1991, there was a need to increase or maintain the country's gross domestic product (GDP) at certain levels of achievement. The high public demand on the industry provided a maximum growth impact of 17.3% in 1995, and continuously recorded significant contributions of 6.6% to the country's GDP for the two consecutive years i.e., 1996 and 1997.

The global economic crisis in 1997/1998 saw a sharp drop of construction growth for two consecutive years, -24% in 1998 and -4.4% in 1999. The completion and suspension of many mega projects, over-supply of houses and shop lots, high interest rate and the bearish share market reduced demand for the industry. To stimulate the industry's growth, the government injected RM7.3 billion fiscal stimulus

package, resuscitating projects and implementing construction of various infrastructure, social and transportation initiatives. Consequently, the construction sector recorded positive growth of 1% in the year 2000 until 2003 before recording a negative growth of -1.9% in 2004.

In the Ninth Malaysia Plan (9MP) which covered the period from 2006 to 2010, the government again injected RM2.4 billion worth of projects to maintain the growth of the construction industry. In order to ensure the multiplier impact to the various parties, large projects are parceled into smaller packages. In November 2008, an economic stimulus package of RM7 billion was allocated to maintain economic growth, reinforce the Malaysian economy and strengthen elasticity against global economic recession, precipitated by the sub-prime crisis in the United States. The completion of a number of construction projects awarded in the earlier phases of the 9MP and high demand from residential and non-residential sectors are said to be significant contributing factors to the strong growth of the construction sector for the year 2009. The construction industry recorded a growth of 5.7%

compared to only 2.1% in 2008 (CIDB Annual Report, 2009). The 9MP saw larger contributions of the private sector to the construction industry. The government started to get private sector involvement aggressively in implementing public projects through Private Finance Initiatives (PFI) modalities. This move was congruent with the New Economic Model (NEM) which focused on enabling the private sector to lead project developments. Following the launch of the 9MP, the Government also announced the implementation of three Regional Economic Corridors, namely the South Johor Economic Corridor (SJER), the Northern Corridor Economic Region (NCER), and the Eastern Corridor Economic Region (ECER). All comprised significant elements of PFIs as a funding mechanism for many of the projects. For example, the total investment for ECER is RM112 billion, of which 47% of the total cost will be financed by the private sector, including 27% via PFI.

The NEM has been introduced to underpin the strategy to support the achievement of developed country status in 2020 with the private sector being the main engine of growth. Statistics from CIDB (2009) indicated that the private sector has been a significant contributor in creating demand to the industry with total project numbers of 3,906 (57%), worth RM40.4 billion in 2009. As for 2010, the percentage ratio of public and private project is 28:72 from the total number of 6344 projects valued at about RM75.6 billion. Under the Tenth Malaysia Plan (10MP) covering 2011-2015, CIDB is expecting 3.7% growth per annum over the said period. Besides the continuous implementation of high value fiscal stimulus package projects, the demand for high end residential properties helps to further boost the performance of the industry.

The above discussion shows the increasingly competitive nature of the construction industry with new challenges to fulfill the development needs of the various industry segments. The chronological changes affecting the procurement development in the Malaysia construction industry can be summarized into these three important stages:-

- 1) Before the 1990s, where the industry enjoyed normal construction growth. The public sector dominated the demands to the industry in constructing new buildings and infrastructure facilities such as quarters, schools and roads. The project implementation was heavily dependent on traditional procurement systems inherited from the British.

- 2) In the 1990's until the recession period of 1997/1998, when construction industry growth was the highest, and when the public sector through its technical department, the Public Work Department (PWD) could not cope with the high number of public projects. New procurement systems, such as Project Management Consultancy (PMC), Built, Operate and Transfer (BOT) and Design and Build (D&B), were introduced. The move was also in line with the privatization programme. However, these initiatives are justified and appear to have a relation with the moves in other countries such as UK (Davis, 1995) and the US (Tulacz, 2002; Marwa, 2006; and Hale, et. al., 2009) with a target of achieving good project outcomes.

- 3) After 1997/1998 recession and up to and including the current stage, where the government is aggressively pursuing the developed nation status. Following the 9MP, the Construction Industry Master Plan (CIMP) was launched by CIDB in 2006 as an industry strategic plan with seven strategic thrusts to transform the industry to be a global player, innovative and knowledgeable solution provider.

1.2 Project Implementation

Both the public and private sectors of the construction industry have to adapt to various changes in the industry (Jaafar and Aziz, 2009). Changes in the industry have influenced the role played by the client sector. According to Gould, (1997), public organisations exist for the ultimate benefit of the citizen, which is the public. Public owners have an obligation to spend the public's money properly and wisely, following a set of rules and regulations. It follows therefore, that the awarding of projects is usually based on the lowest responsible and responsive bidder. On the other hand, the private sector client, as owner of the project, is not burdened by any procurement rules as long as the process is legal and ethical, and has much more autonomy when proceeding with a project award. Mahmood and Mansor (1996) described private sector clients, in the context of the construction industry in Malaysia, as being divided into two groups, i.e. companies carrying out the projects to fulfill their own requirements, and those carrying out the projects to be let or to be sold, usually known as developers. The 'Private' owners are not encumbered by any procurement rules as long as it is legal and ethical (CIDB News, 2007). Compared with the public sector, the private sector has much more freedom when proceeding with a project (Gould, 1997).

Many procurement issues arise focusing on the public sector project failures compared to the private sector. This is because the public sector uses public money that can be questioned in terms of accountability; (Hashim, et. al., 2006) whereas private sector money will only involve their stakeholders. The trend of procurement studies in other countries also tended to focus on the public sector rather than the private sector, based on works by people such as Alhazmi and McCaffer., (2000); Songer and Molenaar., (1997); Thai, K. V. (2001); Laedre, et. al., (2006); Marwa, et. al., (2006). In contrast, very few studies have been conducted on the comparison between the public and private sectors (Smith, et. al., 2004 and Hashim, et. al., 2006).

Walker (2002) pointed out that clients vary in many ways, and what is particularly important is their level of satisfaction in achieving their objectives. Cho et al. (2010) contended that the rationale behind the public sector's intention to use fast-track delivery systems is to achieve milestone completions that cannot be attained through the traditional method. On the other hand, the private sector looks for additional profits due to shortened project duration. These differences are particularly marked between public and private clients. Hewitt (1985) and Masterman (2002) argued that client behaviour is different when procuring building projects. It is apparent that this basic difference exists between the public and private sectors.

Procurement systems still remain a major concern of the construction industry if the output of the industry is the main consideration. Perceived as a key to project success, a study on procurement still received attention from the industry (The CIOB, 2010). Procurement systems has been defined as something to do with the type of contract, obligation, rights and liabilities of the parties involved that is between clients, consultants and contractors (Ashworth, 1991). Thus, it is important to carefully consider all factors when selecting the procurement type used at the very beginning of the project (Rashid, et. al., 2006) because different procurement systems will have different effects on cost, time and quality of the project. The various changes within and demands of the industry will impact the productivity and efficiency of the whole industry supply chain and need to be tailored with careful selection of the procurement routes to ensure proper project performance.

The above discussion highlights the significant changes that have happened on different economic phases which influence the routes of procurement systems and its evolution in Malaysia's construction

industry. Following that, this paper will reveal data on the procurement usage for both the public and private sectors.

Specifically, this paper carries the following objectives:-

1. To identify the usage of public and private sector procurement systems in the construction industry
2. To analyse the usage of procurement systems according to value of projects and types of building projects.

Accordingly, the next stage is to delve into the various procurement types used by different client sectors in the industry.

2. PROCUREMENT SYSTEMS IN MALAYSIA

The existing procurement systems in many developing countries were inherited from their former colonial administrators, (Ofori, 2007; CIDB, 2009). For example, Malaysia inherited the procurement system from the British (Jaafar and Aziz, 2006; CIDB, 2009). In the earlier days, traditional procurement system was practiced by both the public and private sectors to develop their projects. Beginning from 1990s, Malaysia adopted a new procurement system to cope with the increasing number of project implementation, complexity of building requirement and mega infrastructure projects to support the country's growth (Rashid, et. al., 2006), who added that the introduction of different 'fast-tracking' project procurement systems is an effort by the industry to offer better deals to its clients or customers, as they start realizing the importance of 'value for money' for their projects in terms of cost, time, and quality. The new procurement practices which were said to be of 'fast tracking' mode are D&B, BOT and PMC. However, the PMCs, which supervised and managed a majority of government projects, failed to control costs, design and scope of those projects, resulting in higher costs (Ibrahim, et.al. (2010). According to Nitithamyong and Tan, (2007), in 2003, the Ministry of Works revealed that some public projects handled by a few PMC's were unable to be completed within the time scheduled and the worst effect of this system was the poor workmanship (Kerk, 2003; Mohamad, 2004). The failures of these projects have led to a nationwide misconception of the benefits of PMCs to the construction industry; this research therefore, has excluded the PMC system to be among the procurement systems under scrutiny.

In general, there are three types of procurement systems adopted within the Malaysian construction

industry which includes the Traditional/Conventional, Design and Build and the Management systems (Hasyim, et. al., 2006; Rashid, et. al., 2006; Seng and Yusof, 2006; Ismail, et. al., 2006; Adnan, 2008; The CIOB report, 2010), although a fourth, namely Relational (alternatively called 'Modern') system, covering contemporary methods such as Alliancing and Private Finance Initiatives (Love at et., 1998) appear to be the 'current flavour' especially for mega-sized and sophisticated projects like hospitals and institutions of higher learning. Hashim, et al, (2006) found that both client sectors in Malaysia are currently using the traditional procurement system compared to other procurement types. Statistics from CIDB (2011) reveal that traditional method still dominates the industry with 96.6% and 97.3% usages in years 2009 and 2010 respectively based on total number of projects. The other procurement systems used in the industry are D&B, Turnkey and BOT.

Like in other countries, the Malaysian construction industry continues to face countless problems that threaten its development and hinder its sustainability if not addressed and managed effectively. The construction sector continues to play an important role in the national economy, through the strengthening and enabling of other sectors, while meeting the needs of basic infrastructure requirements and at the same time supporting social development. There are a few influential factors, in particular productivity and quality-related, time-related and cost-related ones that have created significant challenges to the development of the construction industry in Malaysia (Hamzah, 2003; Imtiaz and Ibrahim, 2005; Pratt, 2000; Rashid, et.al, 2006). For example Hamzah (2003), Imtiaz and Ibrahim, (2005) and Pratt (2000) noted that some of the projects are not 'cost', 'time' and 'quality' effective. The then Director General of Public Works Department Malaysia, Zaini, (2000) argued that the Malaysian construction industry has not changed much since the 1960s in terms of technology of construction despite the spectacular growth rates presented in the economic reports. CIDB (2009) supported the above findings by quoting that the Malaysian construction industry has low profitability and does not invest enough capital in training, research and development.

3. METHODOLOGY

3.1 Questionnaire development

This work is part of a larger study on procurement systems in the Malaysian construction industry. In relation to the given objective, this article will reveal data on the procurement usage for both the public and private sectors. For quantitative data technique, a questionnaire survey that was edited after the pilot test was conducted and distributed to the industry players; this phase involves postal surveys via ordinary mail. Before the questionnaire surveys were sent out, telephone calls were made to the various respondents seeking their permission to participate in our questionnaires.

3.2 Sampling frame

Quantitative approach using questionnaire surveys has been used to collect data. Questionnaires were distributed to 800 samples, i.e. 300 clients consisting of the public and private sectors, 200 contractors, 100 architects, 100 engineers and 100 quantity surveyors. The sample was selected on a random basis. Respondents were selected from the Malaysian Association of Architects (PAM) website, the Engineers from the Institution of Engineers' Malaysia (IEM) website, the Quantity Surveyors from Board of Quantity Surveyors' Malaysia (BQSM) website and from the Construction Industry Development Board (CIDB) website. For clients' organizations, the list was obtained from Real Estate Housing Developers Association (REHDA) and Ministry of Housing and Local Government (MHLG) websites from the internet. The involvement of respondents from both sectors are reasonably balanced between public 73 (48.3%) and private sector clients 68 (45%).

4. ANALYSIS

4.1 Background of respondent

The main targets of this study are industry players with experience dealing with procurement systems in the Malaysian construction industry. Most of the respondents (56%) have degrees. 38% of respondents have qualifications below degree level (i.e., secondary-school level of education) and only 6.0% stated that they have a higher degree level. For their specialisations or their fields of expertise, most of the respondents are in Quantity Surveying (25%), Contracting (23%) and Civil Engineering (19%). Almost half of the respondents are in current positions as project manager (28%) and quantity surveyor (23%) while the others are in current positions as civil engineer, site manager and architect. A small number of respondents i.e. 9.9% have experience of more than 20 years while others

Table 1: Procurement methods used by public and private clients sector

Procurement systems		Public sector	Ranking	Private sector	Ranking	Total percentage
Traditional system	LSDS	50.7%	1	42.6%	1	93.3%
	LSBQ	34.2%	2	25.0%	5	59.2%
	LSABQ	20.5%	4	38.2%	2	58.7%
	Cost Plus	1.4%	9	2.9%	10	4.3%
Design and Build	Package Deals	2.7%	8	7.4%	8	10.1%
	Turnkey	23.3%	3	26.5%	4	49.8%
	D&B	16.4%	5	35.3%	3	51.7%
Management	Management Contracting	6.8%	7	19.1%	7	25.9%
	Construction Management	8.2%	6	22.1%	6	30.2%
Relational system	Private Finance Initiative (PFI)	1.4%	9	2.9%	10	4.3%
	Public-private partnerships (PPPs)	2.7%	8	4.4%	9	7.1%
	BOT (Built, Operate and Transfer)	2.7%	8	1.5%	11	4.2%
	Cost Plus	1.4%	9	2.9%	10	4.3%

have below 20 years of experience in the Malaysian construction industry.

Respondents of this study were solicited from 3 categories i.e., client's firm, consultant's firm and contractor's firm. Questionnaires were analysed according to the client's sector, whether they were involved with public or the private sector. Most of the respondents were from Contractor firms (38%) and Consultant firms (36%) which include Architects, Quantity Surveyors and Civil Engineers. Private client firms/developers and Public client firms, each consists of 14% of the total respondent.

Procurement systems used in the Malaysian Construction Industry according to sectors

Table 1 presents 10 types of procurement systems used in the Malaysian construction industry. The results from the table indicate that the Lump Sum-Drawing and specification (LSDS) have been chosen by both sectors to be the most 'used' procurement system with a total percentage of 93.3% usage with public sector client (50.7%) and private sector client (42.6%), and both sectors ranked this procurement at 1st place. The Lump Sum-Firm Bills of Quantities (LSBQ) system scored the second highest usage by both sectors with 59.2% total usage in which the public ranked this procurement at 2nd (34.2%) place

while private sector client ranked this at 5th (25%). Third highest scorer on the procurement type usage is the Lump Sum-Approximate BQ's (LSABQ) system with total usage from both sectors amounting to 58.7%, in which the public sector client ranked this system at 4th (20.5%) while the private ranked it at 2nd place (38.2%). Next, the Design and Build (D&B) system was scored by both sectors as the 4th highest scorer of usage with 51.7% as the public sector ranked this system at 5th ranking (16.4%) while private sector ranked the system at 3rd (35.3%). Finally, the lowest scorer on the top 5 'used' procurement systems by both sectors is the Turnkey system with a total score of 49.8%, where the public sector ranked this system at 3rd (23.3%) while private sector ranked this at 4th place (26.5%) among ten types of procurement systems.

The data shows that among our respondents, including public or private sector, the use of LSDS, LSBQ and LSABQ, also known as traditional methods, as the main procurement routes are clearly prominent, followed by Turnkey and D&B, categorized under Design & Build method.

Value of projects versus types of procurements used between both sectors

Table 2 shows the value of projects versus types of procurement systems between both sectors. For

Table 2: Value of projects versus types of procurements between both sectors

Value of projects	Types of procurement																			
	LSDS				LSBQ				LSABQ				Turnkey				D & B			
	Public		Private		Public		Private		Public		Private		Public		Private		Public		Private	
< 0.5 mil	42	29%	25	16%	24	23%	18	17%	13	19%	33	22%	17	17%	18	16%	1	2%	20	14%
0.5 mil - 5 mil	40	27%	55	35%	18	17%	38	37%	13	19%	59	39%	26	26%	29	26%	8	13%	42	29%
> 5 mil	64	44%	77	49%	61	60%	47	46%	43	62%	60	39%	58	57%	63	57%	51	85%	81	57%
Total	146		157		103		103		69		152		101		110		60		143	

Table 3: Types of project versus types of procurement systems between sectors

Types of projects	Types of procurement									
	LSDS		LSBQ		LSABQ		Turnkey		D & B	
	Public	Private	Public	Private	Public	Private	Public	Private	Public	Private
Residential	32	44	15	25	22	37	26	26	6	40
Commercial	43	45	9	27	16	29	26	28	5	36
Recreational	4	6	2	4	3	10	0	6	2	5
Admin	18	5	19	8	10	7	9	9	12	9
Industrial	4	28	2	17	8	22	9	19	1	19
Hospital	4	3	8	1	3	3	1	1	5	1
Educational	21	9	23	11	18	11	13	11	18	12

project value less than 0.5 mil, public sector clients depend more on 3 types of traditional procurement systems with LSDS as the most popular while D&B as the least popular with only 2% of usage. However, private sector clients seem to use all types of procurement systems fairly equally.

The table also shows that for project value between 0.5 mil-5 mil, public sector clients prefer to use traditional methods with LSDS as the most dominant while increasingly apply turnkey and D&B system. Private sector clients choose to use all the procurement systems but place higher usage on those three traditional procurement methods.

For a value of more than 5 million, the table below shows that the public sector uses LSDS less compared to other traditional systems with a distinct preference of D&B procurement system. Private client sector seems to use all the procurement systems equally.

Types of project versus types of procurement 'used' between both sectors

Table 3 shows the types of projects versus types of procurement used between public and private sector clients. Public sector clients are observed to deal more with construction of administration, hospital and educational projects, primarily social projects while private sector clients implement more residential, commercial, recreational and industrial projects compared to public sector clients.

Table 3 also shows that public client sector are using all types of procurement with emphasis on traditional system especially LSDS for residential, commercial and educational project types. The use of Turnkey is getting popular for similar projects while the use of D&B has been chosen by the public client sector for administration and educational type of projects.

Private sector clients, on the other hand employ virtually all types of procurement with emphasis on traditional LSDS especially for residential, commercial and industrial, although the use of Turnkey and D&B are also applicable.

5. DISCUSSION

Growth in the construction industry is closely related to the overall economic performance. The New Economic Model strategizes the need to emphasize on the high income community in achieving Vision 2020, and requires active involvement of the private sector to create demand for the industry. The implementation of PFI projects

is part of the private sector's contribution to accelerate such demand. To cope with these challenges and innovation, the industry sees the need to adopt newer procurement systems. Furthermore, the move to strengthen the procurement system is embedded within the CIMP to ensure better industry performance in terms of productivity and efficiency. Overseeing all these changes, this study is considered timely as it explores the usage of procurement systems applied by both the public and private sectors in Malaysia.

Previous literature reveals that there have been very limited studies on the usage comparison. Many studies only focus on the practice of public sector procurement. The public sector clients in Malaysia have been observed to choose the traditional procurement system more than the private sector clients. The public sector clients are said to be close-minded but they are slowly moving to newer procurement systems while the private sector is adopting both; the traditional as well as more contemporary alternative procurement systems. Private sector clients (normally small organizations) are observed to be more flexible and adaptive to change compared to the public sector. It is normally difficult to impose changes on a large organization like the Public Work Department (PWD) because of their already embedded and highly entrenched work culture. In the country's pursuit towards achieving vision 2020, it is imperative that the public sector move with the times, and embrace faster and more contemporary procurement systems such as D&B, PPP and PFIs. According to Takim, et.al. (2008), currently, there are many government projects required to adopt new procurement routes, such as the UiTM Medical Centre building at Enstek and 9Bio project implemented by The Ministry of Health Malaysia.

The data in Table 1 shows that both public and private clients still have a preference on Traditional procurement system that includes LSDS, LSBQ and LSABQ. However, there is no significant difference in terms of types of procurement usage between the two. Besides that, among the popular alternative procurement systems are the D&B and turnkey system, the results of which support Hashim, et al, (2006) and CIDB surveys in 2009 and 2010. The dominance of the traditional procurement system is also prevalent in UK (CIOB, 2010) and Singapore (Ling, 2008). Specifically, Love, (2002) revealed that Traditional Lump-Sum method is the most popular form of procurement in Australia as in many other Commonwealth countries such as Malaysia, Hong

Kong (Chan et al, 1999), Singapore (Lam and Chan, 1995) and South Africa (Bowen et al. 1997). Love, (2002) said that Non-traditional methods such as D&B and Construction Management have been encouraged as methods for overcoming some of the problems inherent in the Traditional methods (NEDO, 1988; Masterman, 1996; Turner, 1990); however, the usage of these procurement systems are still minimal in terms of research findings.

The public sector clients normally consist of government or semi government agencies; both tend to repeatedly use the same old or conventional procurement systems. However, the private sector, which is claimed to be more effective as their stakeholder requires faster delivery of their projects, have shown indications which would be compatible with the 'design and build' and 'management' procurement systems (Hashim, et. al., 2006 and Rashid, et. al., 2006). Hence, these two systems, which are also known as 'fast-track' systems, are observed to be more easily adapted to the project needs by the private sector clients. As a result, the D&B system is therefore gaining popularity among the private sector compared to the public sector.

The familiarity of using the conventional procurement system also influenced the selection of the traditional routes as the industry players are not confident to use other procurement methods and appear unprepared to take the financial risk in case of failure of the new method (Hashim, et al, 2006). They are comfortable in using the conventional one rather than trying out new systems which may be precarious for them as they are conversant with the pitfalls and problems as well as know the benefits and characteristics of the conventional system. Even Ibrahim, (2010) agrees that the traditional procurement is still the major approach of construction; however, he suggests that the local construction industry needs to experience a visible advancement from the old construction practices, as the traditional ways of performing and managing construction processes face unpredictable challenges. The industry players acknowledged the benefits and advantages of using the theoretical alternative procurements such as D&B and Turnkey system, but importantly, lack the courage and conviction to change. In addition, they already know the characteristics of the hitherto traditional systems used and thus will be able to handle potential issues if 'real time' problems at construction sites arise.

Hewitt, (1985) found that the clients' choice of procurement system in UK was affected by the

organisation's policies. As for the public sector, choice of the procurement system is decided by the government, for example in 1990s where the system has been modified to respond to faster project completion. Thus, in some organization, changes and alterations on procurement routes have been made to suit the project requirements or to overcome the disadvantages of a particular procurement system such as side and additional agreement, leading to the evolution of hybrid or bespoke procurement systems. The identification of the procurement type used in one project may therefore be blurred and cannot be specified, as modifications will have been made to the procurement system that was initially chosen. For instance, the traditional procurement system that was decided at the early stage of the project may be changed into the design and build system and vice versa. The results of this research, supported by our interviewees, validate this view as it show that both sets of clients in the Malaysian construction industry popularly use both systems, either the traditional or the alternative procurement method.

The situation is different in Saudi Arabia and United States where the use of D&B received much attention (Alhazmi, et. al., 2000 and Marwa, 2006). Tulacz (2002) agreed with these findings as in the United States, both public and private clients consider using the D&B system rather than other procurement approaches due to the numerous advantages it can offer. The D&B approach offers overlapping of activities in design and construction which is supposed to minimize incidents of re-works resulting in cost and time savings (Ling, 2008); Love, (2002) argues and claims that nontraditional methods may in fact be subject to higher rework levels than traditional method especially when errors, omissions, and/ changes occur. The overlap between the design and the construction phase may result in this rework problem thus simultaneously increasing the cost of the finished project. Besides that, Molenaar and Gransberg (2001) suggest that the lack of a price competitiveness factor can discourage public owners from selecting D&B. Ling, (2008) agrees on the unpopularity of D&B system because the clients felt inadequate in terms of knowledge and experience on the system, as well as in situations where they lack manpower, resources, legal advice and assistance.

The data concludes that public and private sector clients use all types of procurement for a project value of more than RM5 million. This data contradicts the results from CIOB (2010), in which the traditional procurement was used mainly for projects valued below RM5 million. However, this

outcome concurs with The CIOB report (2010), in which the study reported that ‘the respondents from both sectors are mostly doing the alternative procurement for project value of more than RM5 million’. Project value or size of projects is part of market attribute which lie under the characteristics in the first screening of project procurement system selection model by Alhazmi and McCaffer., (2000). According to them, these variables are major parameters that affect the selection process and the parameters are there to evaluate the performance of each of the procurement types which includes the project value or size of the projects.

The public sector client mostly carry out the developments which are subject to public accountability (Hashim, et.al., 2006) while for private sector client’s, they are not encumbered by any restrictions with profitability being their priority. The results support the study by Hashim, et. al., (2006) whereby the public client sector is observed to use all types of procurement with emphasis on traditional systems especially LSDS for residential, commercial and educational project types. The use of Turnkey for public sector client is getting popular for residential, commercial and educational projects while the use of D&B has been chosen by the public client sector for administrative and educational types of projects. The private client sector, on the other hand, uses all types of procurement systems with emphasis on traditional LSDS especially for residential, commercial and industrial project types. Turnkey and D&B modes are however, gaining popularity and used by the public client sector for residential, commercial and industrial types of projects.

The private sector preferred using turnkey method to accomplish commercial buildings and industrial buildings such as shopping complexes and factories that need to be completely finished including the facilities inside. Turnkey system is used when all the construction work plus facilities inside and outside of the building are being prepared by the contractor and are ready to be occupied by the client. The turnkey method is known as the fastest procurement system compared to the others, as according to our interviewees, profits can be maximized due to the short project duration, especially when it involves the acquisition and operation of a commercial building or facility. Laedre et al. (2006) suggest that from a research perspective, it is important to develop specific methods for different types of projects. It is agreed that the types of projects also influence the types of procurement used.

6. CONCLUSION

The results conclusively indicate that of all the procurement types used in Malaysia, the public sector clients still opt for the traditional system with heavy usage of LSDS, followed by LSBQ and LSABQ. Public sector clients chose Turnkey system as their third popular choice. However, the private sector client is observed to increasingly use the alternative procurement system like the D&B and turnkey systems besides also choosing the traditional procurement system with LSDS and LSABQ as their main choice.

It has also been seen that limited knowledge possessed by the industry players on the procurement system presents a barrier in terms of accurate information provided. The evolution of hybrid procurement systems are not an exception for those capable and willing to modify specific procurement system practices to suit with the respective needs of certain individual, organization and project requirements. These specific objectives imposed on each project (especially large projects) have inevitably changed the original practice as well as procedure of a particular procurement system. The continuous issue arising from public project failures however illustrates the ignorance of the industry about the significant impact of procurement systems on project performance. The internal and external environments of each country represent unique contributing factors towards the need of having specific practice of procurement system to suit with local environment. These unique requirements need to be explored in detail in relation to the procurement systems of each country.

Industry changes are one of the leading factors driving the adoption of alternative procurement systems in Malaysia. As the industry moves to exploit added use of IBS, partnering and alliancing could be some of the more suitable procurement routes as suggested by the CIDB. However, partnering may lead to a few parties monopolising the industry, mainly the IBS manufacturer, installer and contractor. Beset with a large number of small and medium-sized organizations in the industry, CIDB will need to look into their future sustainability as well. As an important and much-used procurement system in the industry, the traditional/conventional system will still continue to benefit the majority of groups and parties within the industry. The decision to choose rests solely on the client who will normally judge based on their familiarity with and suitability to the particular project development. Without being too presumptuous, we can conclude that there is no ‘best

procurement' method that can be recommended to the industry, as the subject on procurement systems is still being continuously researched. Furthermore, it is difficult to ascertain the suitability of a specific procurement system for certain countries as their local needs are different. This paper proposes that more rigorous research be conducted on the procurement systems in Malaysia with the objective that the system can overcome the poor project performance in the construction industry.

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