



International Review of Management and Marketing

ISSN: 2146-4405

available at <http://www.econjournals.com>

International Review of Management and Marketing, 2016, 6(S8) 286-293.

Special Issue for "International Conference on Applied Science and Technology (ICAST) 2016, Malaysia"



Implementation of Performance Based Contracting in Malaysia

Muhamad Firdaus Anwar¹, Nur Diyana Md. Shariff², Teoh Chia Chia³, Lim Xin Jie⁴,
Salman Riazi Mehdi Riazi^{5*}, Mohd Nasrun Mohd Nawi⁶

¹School of Housing, Building and Planning, Universiti Sains Malaysia, 11800 USM, Pulau Pinang, Malaysia, ²School of Housing, Building and Planning, Universiti Sains Malaysia, 11800 USM, Pulau Pinang, Malaysia, ³School of Housing, Building and Planning, Universiti Sains Malaysia, 11800 USM, Pulau Pinang, Malaysia, ⁴School of Housing, Building and Planning, Universiti Sains Malaysia, 11800 USM, Pulau Pinang, Malaysia, ⁵School of Housing, Building and Planning, Universiti Sains Malaysia, 11800 USM, Pulau Pinang, Malaysia, ⁶School of Technology Management and Logistics, Universiti Utara Malaysia, 06010 Sintok, Kedah, Malaysia. *Email: salman.riazi@usm.my

ABSTRACT

Performance based contracting (PBC) has been used for several years in other countries. This procurement approach however can be considered new in Malaysia. In the past, this type of procurement was popular in lines such as production, maintenance, military, supply and service businesses. This paper studies about the challenges, benefits, tools, strategies and aspects of PBC that can be adopted from other countries and relates it for the purpose of improving Malaysian construction industry. Using outcomes from a series of open-ended interviews as well as from theoretical literature review, this paper also explores both success and failure factors of PBC and suggests a way in which it can be used in Malaysian construction industry. Finding from interviews indicates that Malaysian status of PBC implementation is not as expected. People are aware of PBC but the implementation is not well enough and it relates to the challenges from external and internal causes. However, tools like financial management and services improvement from PBC as well as encouragement and spread of awareness can be used to improve Malaysian construction industry.

Keywords: Implementation, Benefit, Performance Based Contracting, Challenges, Improvement, Malaysia

JEL Classifications: L24, M15

1. INTRODUCTION

Performance based contracting (PBC) management, reporting system and budgeting have been embraced in countries such as Ghana, Bolivia, China, Kenya, Morocco, Korea, Senegal and India (Ghosh, 1997; Mallon, 1994; Shirley and Xu, 2001). This system becomes ostensibly efficient and effective to be practiced. In Kenya, PBC was introduced by political transformation. Basically, PBC is collection of all acquisition aspect and structured for a purpose of work to be started or specifically to be performed. This also includes the objective of getting a well performed contractor. PBC ensures the freedom of contractor to get legal way how to achieve Government performance objectives, quality and payment service (Lee, 1998).

It is also said by previous researcher, the purpose of PBC is to improve aspect of performance, its value, and cost saving.

It requires contractor specification and procedure of output/ outcome to achieve most effective, innovative and efficient way to perform work. It also leads to capable and competent contractor to be selected for the project (CIPS, 2012). Thus, evaluation and partnering are essential elements needed to be considered when choosing the contractor. According to Jiang et al. (2012) PBC is referred as "performance based logistic" in defense sector and is also known as "payment by results" in health industry. To access the service outcome in equipment industry, PBC is envisioned to lower the cost of ship owner while assuring the performance of reliability system.

Key performance measures in PBC are operational availability, logistic response time and parts fill rate (Tongdan et al., 2014). These are to access the services outcome from the contractor. Difference between PBC with material based contract is supplier

under PBC is compensated for system outcome and is not direct to the labor and material. U.S military reported PBC improves their aircraft operational availability by 15-20% (Berkowitz et al., 2004). Other researcher (Jin, 2012; Kim et al., 2007; Mirzahosseini and Piplani, 2011; Nowicki et al., 2008; Selcuk and Agrali, 2013) agreed performance drivers, spares inventory, repair capacity, system usage, namely reliability and fleet size should be concentrate for effective PBC.

In Malaysia, the demand of housing and infrastructure is increasing annually (CIMP, 2007). Despite of increasing demand in Malaysia, it still cannot be fulfilled probably due to the problem of procurement that slow down the development. Performance based procurement is proven to have benefits to be implied. Even buying product service package can be solved with PBC (Smeltzer and Ogden, 2002). Individual components are no longer specified by the buyers. PBC adapts an integrated solution that extends capability of company provider. It is also said that direct link between customer and suppliers is no longer needed as they have a system called "information hub" (Kleemann and Essig, 2013). PBC is proven to be popular around the world as the integrated acquisition and logistic process delivering for industrial sector (Qianli et al., 2014). The framework of PBC is also being adopted by health services, energy generation, public transport and commercial shipping.

As many countries apply PBC, Malaysia as developing country also needs to adopt the framework of PBC. The purpose of this study is to look how other countries adopt PBC by overcoming the challenges as well as identifying the benefits and aspects of this procurement, and then relate them with Malaysian challenges and status of PBC implementation. PBC is said to have their own tools and framework that can adopt to improve maintenance, spares and services capacity (Tongdan et al., 2014). Why are them not been applied in the construction industry? The aim of this study is to suggest the kind of improvement that can be taken by Malaysian construction industry and to look at the barrier and status of current Malaysian PBC implementation. There are many tools that can be adopted by reviewing other countries' application of PBC to improve Malaysian construction industry. There are some elements in PBC that need to be considered. As according to Tongdan et al. (2014) again, the implementation of PBC is to maximize the service profit and levelled system cost reduction besides attaining availability and reliability goal.

2. PBC

2.1. PBC Aspect

In recent years, application of PBC is becoming popular among the products and services business development across different sectors. There are plenty of definitions that describe PBC for examples "performance contracting," "outcome-based contracting," "performance based logistics," "pay for performance" and other definitions (CIPS, 2014; Michael et al., 2016). Among all these definitions, Johanna et al. (2016) claimed that the best meaning for PBC is defined in the chartered institute of supply and procurement's (CIPS) and Principles And Practices of Public Procurement (2012) by The institute for public procurement's (NGIP). Referring to the document, PBC is "an emphasized

oriented method outcome on quality and output that could causes influences on the extensions of contract and payment until the attainment of specified, quantitative performance standards." Ng et al. (2009) stated that there are three important aspects of PBC which is a focus on the consequences of contractual performance, a value based model which is different with the simple fixed lump sum basis and an emphasis on incentivizing method based on the performance (CIPS, 2014). It is a type of contracts in which it emphasizes on the outcomes rather than inputs in delivering a project. In short, it is a long term construction contract that pays incentives and disincentives to contractors in terms of both monetary and non-monetary methods subjected to the performance of contractor based on agreed performance benchmarks.

In measuring and assessing the performance, Neely (2008) stated that measuring the performance from both effectiveness and efficiency aspect is one way of measuring. Effectiveness is commonly measured in four aspects which are cost, speed, quality and availability by Hambleton et al. (2005) while efficiency is often refers to value for money (Arrowsmith et al., 2010). Assessment on performance can be carried out at different levels for examples at supplier level or end user level to evaluate the actual performance like financial performance and the impacts of services. In PBC, contractor is free to choose any methods or materials in performing the contracts as long as the country's standards are fulfilled (Natalya et al., 2005). The contractor is not limited in decision making on "what to do," "when to do" and "how to do" but he has the right in choosing any construction methods or innovating new technologies in order to achieve cost saving, considering the requirements specified in contracts are met. Therefore, it can ensure better and desired final outcomes which maximizes the resources. Due to the contractor holds greater responsibility, he is responsible to the risk if there is any failure under his management.

Generally, the selection of contractor in PBC is same with traditional contract which is based on competitive tender. However in PBC, the best value proposal will be selected which means that the lowest bid proposal does not guarantee win the competition. It is different from the traditional based contract due to the nature of PBC. In PBC, risk and responsibilities falls on contractor therefore it is very important for the client to choose a qualified contractor with clear understanding about the operation and capable in handling any possible risks. A capable contractor and the proposal with the best value approach that provides high quality outcomes at the low cost will be selected. Upon completion, payment will be issued to contractor based on fixed lump sum basis and uniform instalment will be released at regular intervals subject to achieving certain performance targets. If the contractor performs better than agreed performance standards, he will be given incentives and disincentives for those fail in performing. For the duration, PBC requires longer period of time compared to the traditional contracts. This is due to contractor has higher risk and responsibility including the responsibility for maintenance in every few years.

2.2. Benefit of PBC

Using PBC can lead to cost reduction through the well-organised plans, capable staffs, application of innovative technologies by the contractor and others. Freedom in decision making on

design, construction methods along the project, innovation of new technologies and management can enhance efficiency of the project and reduce cost. Besides, specific performance standards that are stated clearly in the contract can lower direct cost as unnecessarily waste can be prevented (Natalya et al., 2005). In other literatures also mention about value for money in applying PBC. This type of procurement ensures value for money solution mostly for participating government that applies PBC. PBC is practiced for tendering to get the best and cheapest price possible as determined by relevant agency or government department cost (Kavanagh, 2016). It is the best benefit for the whole society.

In 1990, people saw the increasing competitive tendering in services such as supply of previous government to drive the reduction of cost impact to the service provision (Hensher and Stanley, 2003). Indirect cost such as administrative and overhead expenses could be reduced, due to the nature of PBC where the quantity of contracts is reduced (Natalya et al., 2005). Fewer staffs are required to supervise and administer contracts hence staff and administration costs can be reduced. Before 2003, Hensher and Stanley argued that negotiable tendering such as KPIs and incentive regime serve better value for money. However, after application of PBC in Australia, it is proven that PBC is contra to negotiable contract as it creates value through an auction and performance based and the main aspect is not to achieve mutual solution but to compare between the best (Hensher and Stanley, 2007).

Greater cost certainty can be achieved by using PBC. Variation orders can be reduced and contractor is paid on fixed lump sum basis where uniform instalment will be released at regular intervals throughout the contract period (Natalya et al., 2005). On the other hand, client has less responsibility in handling unpredictable costs as the risk of cost overrun falls on contractor. PBC can assure the end user's satisfaction as the specifications and requirements of the project are based on the user's needs. The needs of end users are the primary concern in the contract and the contractor must perform according to the requirements. Payment will only be issued to contractor if he successfully achieves minimum performance standards which are stated in the contract (Natalya et al., 2005). Therefore, outcomes can be guaranteed and satisfaction of end users can be maximised.

The involvement of supply manager in PBC can establish more mutual trust between supplier and sub supplier. This can be achieved by creating the joint communication with customer to maintain precious information link. Profit over longer term could be achieved by demonstrating the willingness to involve in PBC for potential benefit (Kleemann and Essig, 2013). If a project is based on PBC, client has minimum control over the execution of project. External control by the owner who is lack of experience in certain approach is inefficient and this may cause unnecessarily risk to the project. Therefore, the transfer of power to the contractor who is experienced in the particular field is more effective in order to achieve other objectives such as cost savings (Natalya et al., 2005).

2.3. Challenges in Implementation

While there are many types of procurement available in the construction industry, the most appropriate approach needs to be

selected by considering and valuing all the pros and cons in order to obtain the expected outcomes. In previous part, the benefits of PBC have been discussed, and now the challenges of implementation of PBC will be looked into detailed so that parties concerned can take initiatives in improving its application. The introduction of PBC has brought many new terminologies and a new contracting approach to all the parties which they are not familiar with, and thus need to strive hard in their first try (Berkowitz et al., 2004). Although there are trainings and programmes, they need to pay to learn. This situation is worse when most of the selling vendors do not have experience in PBC (Donna et al., 2004). Also, people are not guided by policy when there is no government support.

Previous researcher, Ssengooba et al. (2012) explained complex adaptive system and expectancy as the theory of failure in Uganda's PBC. They explain these two theories related to the main domain in PBC. Complexity theory is known as prediction of non-linear route in programming and it gives highlight and impact to the context of evolution and adaptation (Leykum et al., 2007; Plsek and Wilson, 2001). In their research, Leykum et al. (2007) and Plsek and Wilson (2001) determined that non-linear implementation is related with actors or agents adaptability in experiences, learning, context, external factor and inter-dependencies. Expectancy theory explains underlying mechanism between link of external incentive and pre-specific task. Expectancy theory suggests, in making a promise of bonus in spur performance improvement, an agent must hold four beliefs at least to make it work (Lawler 1971; 1989).

PBC requires a new business model that exposes client to the risk of contractor's under-performance or insolvency during project execution even though it is considered into pricing except there is a very secure insurance backed guarantee (Berkowitz et al., 2004). Client also bears the responsibility for performance failure caused by circumstances other than contractor's default. Contractor is said to have greater responsibility and risk in PBC for non-performance because he cannot simply compensate his faulty by utilizing gain from other over performance, and this leads to disincentive and even non-payment (Bin and Jack, 2009). Other than that, this service based contracting that requires an organizational change and new capabilities causes the diversion or drawn away of financial and managerial resources from direct delivery of service. PBC encourages innovation by allowing contractor the freedom to apply any methods or techniques as long as he is able to meet the expected performance outcomes. This innovation includes optimizing the use of resources and the contractor will be rewarded as a return for the risk taken (Donna et al., 2004). Since PBC is a result oriented approach instead of emphasizing on the process of implementation, there is doubt on contractor's ability to work in this new manner and he also has to be more competitive. This is related much to the culture of work change.

It is difficult and challenging to identify measureable and at the same time meaningful performance baselines as they may be different for every project and client. It is also hard to get every party's agreement on the baselines. Besides that, the difference between activity and outcome needs to be well clarified because only outcome will be assessed for contractor's performance. However, it is sometimes said to be impossible to have exact

outcome. For instance in New York, government has to provide reasonable goals with a mixture of process and outcome due to political issues (Dennis and William, 2003). Measurement performance of contractors may be different for every project too. In term of cost efficiency, value for money is measured by having the ratio of level of service and cost saving, but it is not only limited to these two indicators (Berkowitz et al., 2004). This is not an easy task as the level of service of big project with more activities is indicated by more performance criteria, while determining cost is an issue when there are different types of cost (direct and indirect costs). In PBC, it is hard to develop the payment structure. The challenge is to create a fiscal penalty system due to poor performance, a payment structure directly linked to performance outcome, in which the incentive and disincentive should be determined and set reasonably high in order to make contractor comply with, and are agreed by all parties (Donna et al., 2004).

3. METHODOLOGY

This paper involves formal qualitative interviews with employees, covering different departments to see how it works relatively to their work scope. Firstly, it was to understand the aspects of PBC in this said industry. Then, good theoretical view was carried out to construct questions that fit the purposive research and to add rigor (Sekaran, 1984). The ways it is carried out in reality and the way it is organized to make it work are discussed. Other than that, this study is to see whether there are benefits by using PBC method and the challenges that these organization faced when performing this method. This paper methodology is adopted from Kleemann and Essig (2013) journal for provider perspective on supplier. The other researchers are reviewed like from (Kim et al., 2007; Randall et al., 2010) on PBC supply management team research to gain ideas of research question. A discourse analysis approach was utilized to identify the benefits, challenges as well as other aspects of PBC that only can be seen after its practice. Through the qualitative method we gained several data regarding the PBC.

The outcomes from open-ended interviews were then analyzed using content analysis method. This interview focused on the experience and what the interviewee's opinion or understanding regarding the PBC in Malaysia. Observation made on the interviewees were used as research data to understand more knowledge of people involving in PBC in the construction industry, besides the decision in processes and the rationale for the interviewees responses. Two interviewees were a contract manager and an assistant project manager respectively. One interviewee was a project director of their company while another held a managerial position in his/her company. All the interviewees have at least 8 years experience, with two recording more than 20 years experience.

4. RESULT AND DISCUSSION

In overall, a total of 7 questions were asked during open-ended interview sessions conducted on selected construction industry practitioners. The followings analyses outcomes from those interviews.

4.1. Awareness of Benefit and Aspect of PBC

In Table 1, we could see that all interviewees were aware and recognized the PBC method. Since they all distinguished this method, they each listed down two aspects of PBC that they think are important when carrying out this method in the project. Majority gave an absolute same opinion that creates a good and responsible team as the main aspect in PBC. As mentioned by Kleemann and Essig (2013) in his case study of military weapon, PBC involves supply team management in its framework.

It is agreed by Malaysian construction industry practitioner that the integration can also be applied in PBC implementation. The integration in PBC is not only limited to contracting but also in buying a product and delivery process (Qianli et al., 2014). Nonetheless, there are others who gave extra ideas like an effective cost budget and competence skilled workers that are also among the aspects in PBC. According to interviewee 4, "Malaysian construction practitioners care more on cost than effectiveness of procurement and that makes it hard for Malaysian people to move on new change."

4.2. Benefits of Practising PBC

Based on Table 2, the interviewees agreed that this method can enhance the quality of work and improvement in workmanship can be obtained when an organization practices PBC method. Besides that, interviewee 2 added that "PBC method can help in solving payment issue and could create a better affiliation between principal of a project and contractor or supplier." Interviewee 4 mentioned that "this method could help in avoiding any discrepancies in work as all requirements and expectation by the client will be stated in the contract."

4.3. Tools and Strategies Adopted from PBC

Based on Table 3, the respondents showed limited knowledge of PBC tools with answers being somewhat very general and focused on outcomes of practicing PBC tools rather than the tools itself (interviewee 2 and 3 in Table 3). Nevertheless, interviewee 1 had a different view of PBC compared to others. He/she associated PBC to supply chain management and identified the use of an agent as a mediator/moderator to be a good tool.

Generally, there are 7 sequential steps to practice PBC: (1) Team establishment, (2) description of problem to be solved, (3) examination of private and public sector solutions, (4) performance work statement (PWS) and statement of objective (SOO) development, (5) method of measuring and managing performance, (6) selection of right contractor, and lastly, (7) management of performance (OFPP, 2001).

They are the emphasize of result rather than process, determination of appropriate standards or baselines, measuring actual contractor's performance, as well as the use of positive and negative incentives (Ronald, 2006). To start off, an integrated solutions team including people from senior management level and multi-disciplinary expertise need to be established to ensure that all areas of the contract requirements are covered. Then, roles and responsibilities are defined together with rules of conduct. It is also important to have motivation by creating a link between

mission and team members. The description of expected outcomes can be developed by using PWS and SOO, concerning on what to be achieved rather than how to perform it. A PWS is provided to prospective contractors who will in turn prepare offers based on that information given which include performance requirements such as the expected outcomes, performance standards, acceptable quality levels and other components (OFPP, 2001). Whilst a SOO provides more concise and brief information such as purpose, scope, mission, objectives constraints and etc. However, every contractor could respond differently to SOO based on how it is viewed as best offer.

At early stage, performance standards are determined based on the 5 criteria; specific, measurable, accountable, result oriented and time bound. Then, actual contractor's performance is measured. Quality surveillance methods are applied to compare and evaluate it against the standards that have been set, for examples inspection, feedback or survey. Throughout the contract life, a quality assurance surveillance plan is used as a guide to monitor performance and document things like accepting services, causes of deficiencies and etc. Similarly, contractor also follows the quality control plan, a part of proposal submitted earlier. Identifying incentive and

disincentive is also a significant element, acting as a motivation or reward for contractor's good quality performance (OFPP, 2001). It may be monetary or non-monetary, depending on the type of contract and desired outcomes; cost efficiency, quality or client's satisfaction. Normally, PBCs are firm fixed price contracts when results can be measured objectively and risks can be well managed.

In other situation when results cannot be measured objectively, fixed price award fee contracts are used, establishing normal profit for contractor's effort and award fee earned in addition. Incentive is advised to be applied to the most important aspects of work instead of every individual task. Selecting right contractor is the key aspect of PBC. Down selection is a method of limiting the numbers of bidders based on their qualifications who are most likely to submit successful solutions.

4.4. Challenges of PBC Implementation in Malaysia

Based on Table 4, despite being aware of this method, all interviewees claimed that both of the companies they working with do not practice this method. The reason that they gave is there are many changes that needed to be done if this method is introduced in the organization. It will cause an overhauled of management and

Table 1: Respondent awareness of PBC

| Are you familiar with PBC method? Can you give at least 2 aspects/important factors when carrying out PBC? | | | |
|--|--|---|--|
| Interviewee 1 | Interviewee 2 | Interviewee 3 | Interviewee 4 |
| Yes. The team involved in the project is important when carrying out this method | Yes. The responsible team for this project is an important aspect of a PBC project aside from budget and costing | Yes, the people that are involved in this project is important as well as method used in this project | Yes. Many aspects in PBC but the main one is the cost and finance ability of client and the workmanship of contractors |

PBC: Performance based contracting

Table 2: Respondent view of PBC benefit

| Can you give some benefits of practicing PBC in an organization? | | | |
|--|---|---|---|
| Interviewee 1 | Interviewee 2 | Interviewee 3 | Interviewee 4 |
| Quality work done More teamwork Speed | Less payment issue Work quality satisfaction Better relationship between client and contractor/supplier | Clear instruction on requirements Cost Saving Better work quality | Good workmanship Relationship among each other is better Better understanding on the expectation and requirements |

Table 3: Tools and strategies adopted

| What are the tools and strategies adopted from PBC that you know? | | | |
|--|--|---|--|
| Interviewee 1 | Interviewee 2 | Interviewee 3 | Interviewee 4 |
| Some tools of the procurement are used in supply management like appoint an agent as a medium of deals | PBC has integrated teamwork that can be used to improve conventional type of procurement | Not aware so much, but believe there might be some tools like better in tendering process or etc. | Selection of contractor and managing are part of the tools adopted for Malaysian construction Industry |

PBC: Performance based contracting

Table 4: Implementation and challenges of PBC in current Malaysian Industry

| Do you practice this performance based method (PBC) in your organization? What are the reasons you think that obstruct performing PBC here in Malaysia | | | |
|---|---|---|--|
| Interviewee 1 | Interviewee 2 | Interviewee 3 | Interviewee 4 |
| No. Besides not many people are familiar to it. This method will requires a big change in the culture by contracting organization and contractors which will be tedious | No. Lack of exposure and encouragement on this method | No. Too complex to be applied and used as compared to the common method | No. Not so recognized in the construction industry |

PBC: Performance based contracting

extra documents to be presented. This requires a longer time and tedious work. Three other interviewees believed “this method was not given enough exposure in this industry.” Hence not many people were willing to risk their time to venture further into this method. This problem is actually related to the challenges mentioned by (Berkowitz et al., 2004; Donna et al., 2004; Lawler, 1971; Leykum et al., 2007) and other researchers.

The main cause is actually same as the failure of PBC in Uganda mentioned by Ssengooba et al. (2012) which is related to the theory of complex adaptive system and expectancy theory. People are aware of the problem but there is no move made to change the situation. This is agreed by complexity and capability assessment policy of Victoria State Government that procurement cannot be proceed unless it is determined by organization that it has met certain complexity of procurement activity (VSG, 2016). According to interviewee 2 “Construction workers expect too much from the new procurement they have learned but authority does not encourage them to adapt the change. Less exposure happens because they do not care much about PBC, probably they already comfort with old traditional and conventional method.”

4.5. Inner Problems in Carrying out PBC

Furthermore, inner problem also need to be considered to foresee the root of cause in organization that obstructs the implementation of PBC. Based on Table 5, the most mentioned problem was that the contractor work is not up to par or as expected (Interviewee 1, 3 and 4). Aside from that, clients’ finance stability and unforeseen environmental difficulties are the other challenges that were listed by the interviewees. Finance for sure is one of the important things in construction project. Basic view that can be seen from all the respondents’ point is Malaysian construction industry concerns more in money and it is the key of inner problem that later may lead to the failure of PBC implementation. Actually, PBC is better for financial strength rather than traditional method. Previous research by Stanley et al. (2005) stated that public preference of traditional way in managing government financial creates a failure of procurements.

Table 5: Inner problem related to the challenges

| Do you think there are any inner problems in carrying out PBC method? Why and what are they? | | | |
|---|---|---|--|
| Interviewee 1 | Interviewee 2 | Interviewee 3 | Interviewee 4 |
| Yes surely, one of the challenges in PBC method would be the contractor/supplier fails to meet with requirement in terms of quality and workmanship | Contractor’s bankruptcy while the project is on going | Contractor cannot produce work up to par because of the uncertainty e.g.: Weather Clients ability to pay when work done | Poor construction quality causes payment to be held and would be difficult for contractors to pay the suppliers Unforeseen environmental problems |

PBC: Performance based contracting

Table 6: Respondent opinion on Malaysian PBC status

| In your opinion what are the status of PBC implementation in Malaysian construction industry | | | |
|---|--|--|--|
| Interviewee 1 | Interviewee 2 | Interviewee 3 | Interviewee 4 |
| Many are still not aware and familiar of this method. They prefer the traditional method which the payment is based on the stages of work done regardless the performance | Still under used and the individual who is in charge and responsible for a company to carry out this method should be aware of this related method | This method is relevant in contractor’s world. It would not only increase their performance but also quality of work. However, due to work culture and many deadlines to meet, there is no ample time to introduce this method let alone exercise it | Not sure. Believed that not many practice PBC in their company because it would be new and requires a lot of time and tedious paperwork if this method to be newly implemented in the organization |

PBC: Performance based contracting

4.6. Status of Malaysian PBC Implementation

Based on Table 6, the interviewees strongly felt that PBC within Malaysian construction industry is still at infancy. Traditional method still dominates the industry where payments are made purely based on the stages work done with no consideration made on aspect of performance. Other than that, interviewee 3 and 4 considered that “this method is relevant in contractor’s world. It would not only increase their performance but also quality of work.” This is most related to work culture and many deadlines to meet, therefore no ample time to introduce this method let alone exercise it.

Currently, the Malaysian government has incorporated the use of PBC in contracts relevant to maintenance, repair and overhaul (MRO) of complex equipment. For examples, they have executed the fire and rescue department (Jabatan Bomba) helicopters and the Malaysian maritime enforcement agency (MMEA) amphibious aircraft based on PBC, and there are more PBCs gradually being expected to replace the traditional contracts in coming years (Public Sector Engineering Special Interest Group, 2016).

Other than that, Malaysia cooperates with International Road Federation from Washington to provide training for applying PBC. This program highlights sustainable transport policy development, contract management and financing from expert speakers who involve in asset management (Rafiq, 2015). They also present best practices and case studies adopted from other countries and how PBC can be applied. This is one of the approaches to start the awareness of need to change for Malaysian procurement method and innovation of Malaysian construction industry.

4.7. Ideas of Improvement

Based on Table 7, the interviewee believed that there will be more companies practicing this method in future, hence allowing them to enhance their work skill and knowledge that improve better and competitive tendering process. As well as, there will be more

Table 7: Respondent ideas of improvement

| How do you think PBC can improve Malaysian construction industry performance? | | | |
|---|--|--|--|
| Interviewee 1 | Interviewee 2 | Interviewee 3 | Interviewee 4 |
| There will be more companies practicing this method in future hence allowing them to enhance their work skill and knowledge which directly exposes and makes this method being more knowable They should conduct more seminars and workshops so that people working in this field will be familiar and more aware of this method | This will ensure our construction industry to become more systematic and at the same time achieve better work quality More talks and conferences regarding PBC method | Contractors will improve the work quality by maximizing skill as well as learn to minimize cost but making it a compulsory method to be used in this industry and creating a real standard of procedure as guideline | There will be more cost saving projects Introducing this method through seminars and talks. Companies can send their staffs to this course so that they are well aware of it |

PBC: Performance based contracting

cost saving projects and this will ensure our construction industry to be more systematic and at the same time causing work quality to be better.

The interviewees agreed that this method should be used more in Malaysian construction industry as it is beneficial to all parties involved. Among the suggestions given on how to promote this method, one of it is by organising more seminars, conferences and workshops so that people working in this field will be familiar and gain more knowledge regarding this method. Besides that, one of them suggested that there should be guidelines on PBC so that it would be easier for others to carry out this method by having guiding principle in monitoring their flow of work.

5. CONCLUSION AND RECOMMENDATION

This paper intends to improve the status of Malaysian construction industry by adopting tools and strategies in PBC. For improvement in Malaysian Construction Industry, tools and strategies like management, purchasing, services provider, selecting contractor, delivery process and financial can be used as PBC is known to bring benefits in its application. Awareness is the important thing for construction workers. To overcome the challenges in Malaysian construction industry, it is important for authority to encourage the use of new procurement that suits the projects to improve their performance. Well, it is proven by the experts in Malaysian Construction practitioner that the use of PBC is not so active due to the lack of exposure. Traditional construction method serves them well enough and it is hard to move out from comfort zone and to learn new things.

More researches for PBC should be conducted to fit Malaysian construction industry. By doing so, perhaps a change of Malaysian status of new procurement can be made. In ensuring this method can be practiced widely in Malaysia, we should necessitate support from the authority in making it as an obligatory method to be employed during the construction period. Besides that, create a handbook for Malaysian construction industry standard can be used as guideline in helping to ensure that they are practicing this method accurately, thus minimizes bumps and glitches along the way. Organizing an annual seminar or workshop can assist in broaden the knowledge and information on PBC to those people working

in this related field to be more productive and they may also carry out a workshop in order to obtain the first-hand knowledge about PBC.

REFERENCES

- Arrowsmith, S., Treumer, S., Fejø, J., Jiang, L. (2010), Public Procurement Regulation: An Introduction. The EU Asia Inter University Network for Teaching and Research in Public Procurement Regulation, UK.
- Berkowitz, D., Gupta, J., Simpson, J.T., McWilliams, J.B. (2004), Defining and implementing performance-based logistics in government. Defense AR.J.15. Available from: <http://www.dtic.mil/dtic/tr/fulltext/u2/p018510.pdf>. [Last retrieved on 2013 Dec].
- Bin, C., Jack, K. (2009), Accountability or Discretion? Challenges for Multi-Service Nonprofit Agencies in Performance-Based Contracting. in New York: A Preliminary Report.
- CIMP. (2007), Construction Industry Master Plan CIMP 2006 - 2015. Kuala Lumpur, Malaysia: CIMP.
- CIPS. (2014), Performance-Based Contracting Across Public and Private Organisations: Taking Stock (C. I. O. P. A. Supply, Trans.).
- CIPS, editor. (2012), Principles and Practices of Public Procurement: Performance Based Contracting. Washington, DC: CIPS and NIGP.
- Dennis, C.S., William, J.G. (2003), The Promise and Pitfalls of Performance-Based Contracting. Paper Presented at the 25th Annual Research Conference of the Association for Public Policy Analysis and Management (APPAM). Washington, DC.
- Donna, D., Jennifer, T.T., Carrie, G. (2004), Innovations in Performance-Based Contracting.
- Ghosh, U. (1997), The Memorandum of Understanding and Performance of Central PSEs. New Delhi: MOU Division.
- Hambleton, K., Kirkpatrick, D., Holder, I., Kimberley, D., Bragg, M., McNally, S., Williams, T. (2005), Conquering Complexity-Lessons for Defence Systems Acquisition. Norwich, UK: The Stationery Office, (TSO).
- Hensher, D., Stanley, J. (2003), Performance-Based Quality Contracts in Bus Service Provision: Version 28a. Paper Presented at the In: 8th International Conference on Competition in Land Transport (Threadbo 8), Rio De Janeiro.
- Hensher, D., Stanley, J. (2007), Transacting under a performance-based contract: The role of negotiation and competitive tendering. Paper Presented at the 10th International Conference on Competition in Land Transport (Thredbo 10), Hamilton Island.
- Jiang, H., Pang, Z., Savin, S. (2012), Performance-based contracts for outpatient medical services. *Journal of Manufacturing Services Operational Management*, 14(4), 654-669.
- Jin, T., Wang, P., (2012), Planning performance based contracts considering reliability and uncertain system usage. *Journal of the Operational Research Society*, 63(2), 1467-1478.

- Johanna, L., Mika, V., Anna, H., Maria, I.G., Hanna, L., Magnus, G. (2016), Performance-based and functional contracting in value-based solution selling. *Industrial Marketing Management*, 59(13), 37-49.
- Kavanagh, P. (2016), A case for negotiated performance-based contracting rather than competitive tendering in government public transport (Bus) service procurement. *Journal in Transportation Economics*, 1(4), 1-10.
- Kim, S.H., Cohen, M.A., Netessine, S. (2007), Performance contracting in after-sales service supply chains. *Journal of Management Science*, 53(12), 1843-1858.
- Kleemann, F.C., Essig, M. (2013), A providers' perspective on supplier relationships in performance-based contracting. *Journal of Purchasing and Supply Management*, 19(1), 185-198.
- Lawler, E.E. (1971), *Pay and Organizational Effectiveness: A Psychological View*. New York: McGraw-Hill.
- Lawler, E.E. (1989), Pay for performance: Making it work. *Compensation Benefits Review*, 21, 55-60.
- Lee, D.A. (1998), *A Guide To Best Practices for Performance-Based Service Contracting*. United States: Office of Management and Budget.
- Leykum, L.K., Pugh, J., Lawrence, V., Parchman, M., Noel, P.H., Cornell, J., McDaniel R.R.Jr. (2007), Organizational interventions employing principles of complexity science have improved outcomes for patients with Type II diabetes. *Journal of Implementation Science*, 2(28), 2-28.
- Mallon, R.D. (1994), State owned enterprises reform through performance contracts: The Bolivian experience. *Journal of World Development*, 22(6), 925-934.
- Michael, E., Andreas, H.G., Kostas, S., Jens, K.R. (2016), Performance-based contracting in business markets. *Industrial Marketing Management*, 59(7), 5-11.
- Mirzahosseini, H., Piplani, R. (2011), A study of repairable parts inventory system operating under performance-Based contract. *European Journal of Operational Research*, 214(2), 256-261.
- Natalya, S., Navaid, Q., Cesar, Q. (2005), *Performance-Based Contracting for Preservation and Improvement of Road Assets*. Washington, DC: Transport Note.
- Neely, A.D. (2008), Exploring the financial consequences of servitization. *Operations Management Research*, 1(2), 103-118.
- Ng, I.C.L., Maull, R., Yip, N. (2009), Outcome-based contracts as a driver for systems thinking and service-dominant logic in service science: Evidence from the defense industry. *European Management Journal*, 27(6), 377-387.
- Nowicki, D., Kumar, U.D., Steudel, H.J., Verma, D. (2008), Spares provisioning under performance-Based logistics contract: Profit-centric approach. *Journal of Operational, Research, Society*, 59(3), 342-352.
- OFPP. (2001), *Seven Steps to Performance-Based Services Acquisition*. Pennsylvania, Washington: Office of Federal Procurement Policy.
- Plsek, P.E., Wilson, T. (2001), Complexity, leadership, and management in healthcare organisations. *British Medical Journal*, 323, 746-749.
- Public Sector Engineering Special Interest Group. (2016), In: Engineers, T.I.O., editor. *One-day Course on Performance Based Contract (PBC)*.
- Qianli, D., Limao, Z., Qingbin, C., Xianglin, J. (2014), A simulation-based decision model for designing contract period in building energy performance contracting. *Journal of Building and Environment*, 1(71), 71-80.
- Rafiq, A. (2015), In: International Road Federation, editor. *Performance-Based Contracts Certified Training*, Internet. Kuala Lumpur, Malaysia: IRF.
- Randall, W.S., Pohlen, T.L., Hanna, J.B. (2010), Evolving a theory of performance-based logistics using insights from service dominant logic. *Journal of Business Logistics*, 31(2), 35-61.
- Ronald, L.S. (2006), Performance-based contracting: Results, performance standards, incentives. Paper Presented at the 91st Annual International Supply Management Conference.
- Sekaran, U. (1984), *Research Method For Manager*. Canada: John Wiley & Sons.
- Selcuk, B., Agrali, S. (2013), Joint spare parts inventory and reliability decisions under a service constraint. *Journal of the Operational. Research. Society*, 64(6), 446-458.
- Shirley, M.M., Xu, L.C. (2001), Empirical effects of performance contracts: Evidence from China. *The Journal of Law Economics and Organisation*, 17(1), 168-2000.
- Smeltzer, L.R., Ogden, J.A. (2002), Purchasing professionals' perceived differences between purchasing materials and purchasing services. *Journal of Supply Chain Management*, 38(1), 54-70.
- Ssengooba, F., McPake, B., Palmer, N. (2012), Why performance-based contracting failed in uganda-an "Open-Box" evaluation of a complex health system intervention. *Social Science and Medicine*, 75(12), 377-383.
- Stanley, J., Betts, J., Lucas, S. (2005), Tactical Level Partnerships: A Context of Trust for Successful Operation. Paper Presented at the In: 9th International Conference on Competition in Land Transport (Thredbo 9), Lisbon.
- Tongdan, J., Zhigang, T., Min, X. (2014), A game-theoretical approach for optimizing maintenance, spares and service capacity in performance contracting. *International Journal Of Production Economics*, 161(1), 31-43.
- VSG. (2016), *Achieving excellence in government procurement. Complexity and Capability Assessment Policy*. Available from: <http://www.procurement.vic.gov.au/Buyers/Policies-Guides-and-Tools/Complexity-and-Capability-Assessment-Policy>. [Last retrieved on 2016 Dec 12].