

Public Sector Comparator (PSC): A Value for Money (VFM) Assessment Instrument for Public Private Partnership (PPP)

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Abstract

Economy, efficiency and effectiveness of service provisions known as value for money (VFM) have been the main catalyst for Public Private Partnership (PPP) procurement. VFM can be achieved through the evaluation of quantitative and qualitative aspects of projects. The method commonly used in the assessment of VFM for PPP project is the Public Sector Comparator (PSC) which is the key management tool in the quantitative assessment of VFM. However, this method had been criticised on numerous grounds such as: lack of accuracy of risk transfer; discount rate methodology; complexity of financial modeling; assumptions underlying and limitation scope of qualitative and intangible aspects in the PSC calculations. Using the information derived from the review of PSC models from Hong Kong, South Africa, Ireland and Australia, important elements are captured. These are: components of PSC; the developing of PSC, PSC assessment stages and development of PSC criteria. In this respects, the study suggests that in order to produce a robust PSC model across project phases (strategy formulation, procurement stage, construction stage and operation stage), the assessment of PSC for VFM is to embrace both the qualitative (non financial) and quantitative (financial) aspects. Considering these elements, a further empirical research is needed for validation of findings.

Keywords: public sector comparator, value for money and public private partnership

1. Introduction

The need for infrastructure development to provide better services for public entities requires the use of an alternative method for procuring project and financing strategies. The introduction of partnership arrangements for the provision of infrastructure could be one of the alternative options for government to procure public projects. In this regard, Public Private Partnership (PPP) is an increasingly popular infrastructure development model with government in many provinces and countries. Between 2000 and 2007, many governments across the globe used PPPs to deliver some of the world's most important infrastructure (Raisbeck, 2009). PPPs refer to the private sector designing, building, maintaining, operating and financing infrastructure assets traditionally provided by the public sector (William, 2005). Public Private Partnership brings a single private sector entity to undertake and provide public infrastructure assets for their "whole-of-life", generally 20-30 years.

PPPs and other similar types of public/private finance projects have proven their usefulness as may be seen in the examples of countries with the most experience, such as the United Kingdom, Ireland, the Netherlands, the Scandinavian countries, Portugal, Spain, France, Canada, Australia, New Zealand, Japan, Chile or Republic of South Africa. Nevertheless, the objective of PPP is not only to be an alternative for financing but also to combine public and private sector efforts in enhancing innovation, business spirit and effectiveness in delivery of public services (Demirag et al. 2004). This concept is well known as value for money (VFM) which means that the whole investment project life has to be realised at lower cost and optimum output and in line with the opinions of Victorian Partnership (2008) and Cheung et al (2009).

In PPP projects, VFM refers to the best available outcome through a comparative analysis of all benefits, costs and risks over the whole life of the procurement. The notion of Value for Money (VFM) is associated with the concepts of three Es: economy, efficiency and effectiveness which refer to the whole life value of service provided. According to Demirag et al. (2004), economy is acquiring resources of an appropriate quality for the minimum cost. While, efficiency is about ensuring that maximum output is obtained from a given amount of resources and effectiveness regards to the desired results of the output. The achievement of a VFM outcome is a crucial concept throughout the procurement process in all aspects of the project. Assessing the value of these variables requires a degree of judgment and the use of both quantitative and qualitative analysis.

VFM assessment is a continuous process across the following project phases: programme level, project level, procurement and project construction phase in order to achieve project effectiveness (Takim et al. 2009). VFM involves the process of developing and comparing costs between PPP project, traditional project delivery and bid price of private sector, which relies on discount rate and value of risk transfer (Murray, 2006 and Ontario, 2007). Many researchers are of the view that VFM is achieved through the savings resulting from the integration of synergies between designs, build and service operation throughout the procurement process.

Therefore, based on the above definitions, VFM is not the lowest cost option but an understanding of the whole life benefits and appropriate risk allocation between public and private sectors. It is usually associated with utilizing innovative capabilities and skills, efficiency savings and best possible risk transfer to private sector. There are many techniques in quantifying the VFM in PPP projects. For example, there are four main alternative approaches to provide the core test of VFM by researchers (Grimsey and Lewis, 2005). These are full cost benefit analysis, PSC-PPP comparison, UK style PSC –PPP, and competitive bidding (Sach et al. 2005). Nevertheless, PSC is one of the most popular techniques in assessing VFM which has been adopted by many countries such as Australia, United Kingdom, Hong Kong, Japan, and Canada. This is in line with the Malaysian PPP, which highlighted that PSC will play an important role as a benchmark to ensure that the government gets value for money (Ninth Malaysia Plan, 2006).

The Public Sector Comparator (PSC) is the technical construct developed to test whether privately financed arrangements provide superior VFM to traditional bundled procurement methods. English & Guthrie (2003), describe PSC as an estimated reference project to provide the same level and quality of service expected of the private sector alternatives. It requires assessment of net present costs and risks over the life of the project. Public Sector Comparator (PSC) has been the most common tool used by the public sector to show how much it would cost the government to build the asset through public funding.

Nevertheless, the PSC method has come under growing criticism and debate about their reliability and accuracy of calculation as the method is prone to errors because of the complexity of its financial modeling (Grimsey & Lewis, 2005). The arguments against the use of the PSC method also questioned the appropriateness of this method to evaluate VFM due to its ambiguity and complexity problems. The ambiguity within this technique involved forecasting future cash flow, underlying assumption and choosing an appropriate discount rate in the PSC calculation (Khadaroo, 2007).

However, although this method had emerged with many weaknesses, it is still being accepted and widely applied in most countries. Hence, this paper provides an overview of PSC practices across the globe, focusing particularly on the practice of four countries: Hong Kong, South Africa, Ireland and Australia. The key issues of these models are to enlighten the core components of PSC, the development of PSC instrument, PSC assessment stages and development of PSC criteria that are needed to make a comprehensive assessment for VFM in the PPP projects. From the analysis point of view, this method is mainly focused on the quantitative approach. Furthermore, it is also noted that there is lack of consideration on long - term evaluation in the VFM assessment process as practiced by most countries. It is vital that a complete VFM assessment requires consideration of qualitative factors and long term evaluation in conjunction with the quantitative assessment.

Therefore, this study aims to review on primary issue of the concept of PSC as a VFM tool for PPP project undertaken by Hong Kong, South Africa, Ireland and Australia. The research

findings will then form the basis of a robust PSC model by giving emphasis to quantitative, qualitative aspects and the whole life project cycle during the VFM assessment.

2. Public sector comparator

The implementation of the Public Sector Comparator (PSC) has been a trademark of most countries across the world in establishing value for money (VFM) for PPP projects. The PSC is a hypothetical construct that describes in detail all costs to the public sector, if the project was developed in a traditional way. The PSC is expressed in terms of the net present cost by using a discounted cash flow analysis that adjusts the future value of expected cash flows to a common reference date. The basic idea is to provide a quantitative benchmark in VFM assessment. Thus, the key elements in PSC are: Hypothetical costing and a forecast, Net Present Value (NPV), life cycle costing and risk adjusted.

PSC test examines life cycle project costs, including initial construction costs, maintenance, operation costs and additional capital improvement costs that will be incurred over the whole life of projects. PSC may be used at different stages of the project preparation process. The main distinction is between using the PSC before and after the private sector bids are received. A PSC also seeks to quantify the value of various types of risks transferred to the private sector. The PSC consists of four components which aim to reflect the full and true costs to the government and compared to the private sector bids. It is based on using the NPV of all cash flow, based on a specific discount rate over the life of the concession period.

The PSC is developed at a preliminary stage in the business phase and to be finalised before the completion of the project brief at detailed project development phase. The PSC provides a means of testing private party bids for value for money. It has four components as shown in figure 1.

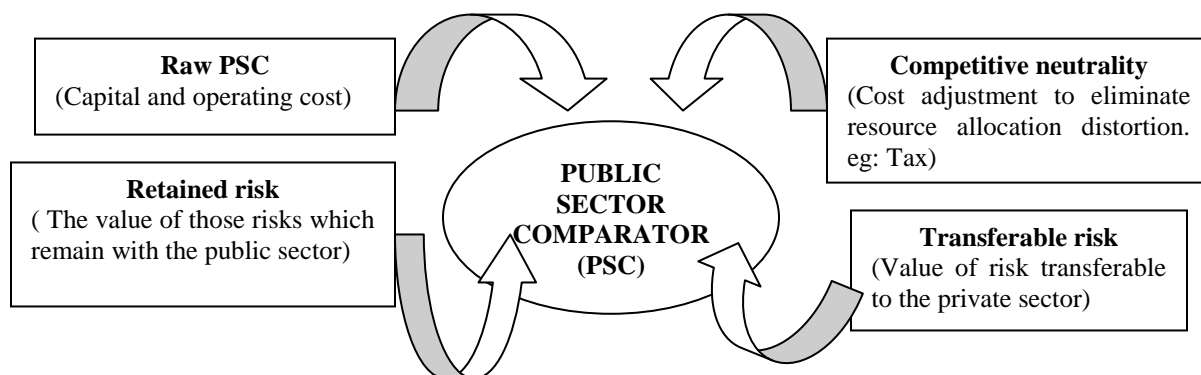


Figure 1: The components of PSC (Source: Victoria partnership, 2008)

The four components start with 'raw PSC' (Capital and operating cost). Raw PSC deals with the base cost of delivering the services specified in the project brief under the public procurement method. Secondly, is the 'competitive neutrality' which concerns with cost adjustment to remove any net competitive advantages that accrues to a government business (i.e., the nonpayment of insurance premium or taxes by a government). Thirdly, is the 'transferable risk' which deals with the value of risks in which the government would transfer to the private sector (example: design and construction, operating, maintenance and technology risks). Finally, is the 'retained risk' with regards to the value of those risks that are likely to be retained by the government (example: demand and security risks).

3. Methodology

This is an initial phase of research and purely based on the literature review. It reviews PSC assessment models applied in the Hong Kong, South Africa, Ireland and Australia. It addresses four areas of concern: components of the PSC, discount rate methodology, refining the PSC process and evaluation criteria of PSC. A rigorous literature review would provide area and scope to the study to be undertaken. Furthermore, a comprehensive empirical research in the form of triangulation approach (questionnaires and case studies) is planned for the findings and conclusions.

4. Synthesis of public sector comparator (PSC) models

In spite of many criticisms of PSC, PSC is seen to play an important role in justifying VFM for PPP projects. Table 1 and 2 shows a summary of PSC models as practiced by several countries such as Hong Kong, South Africa, Ireland and Australia. As seen in Table 1 and 2, Hong Kong, South Africa and Ireland had developed the PSC model based on the financial aspects (quantitative) only. Meanwhile, Australian PSC model had taken assessment for both aspects of financial (quantitative) and non financial (qualitative) aspects. Thus, the next section explores some of the key issues of the PSC model as a tool in VFM assessment as practiced by Australia, Hong Kong, Ireland and South Africa. These models are discussed in turn.

4.1 Hong Kong

The Hong Kong PPP efficiency unit works on the premise that PSC is an estimated, risk adjusted, cost of the government itself delivering the project output. The PSC provides the basis of comparison between the PPP and the public sector alternatives in creating the early appraisal of project and allocation of risks that encourages bidder competition in line with the government needs. The Hong Kong PSC model has three core components: Raw PSC; competitive neutrality and the value of transferable risks. A further component, the value of retained risk, may be calculated and added to each private sector bid. According to the PPP unit, this will be necessary if different bidders accept different levels of risk transfer.

In Hong Kong, the Economic Analysis and Business Facilitation Unit (EABFU) will regulate on the appropriate discount rate to be applied. Conversely, the government does not advocate a rate to use for the discount rate in the VFM assessment for PPP projects. The PSC may be used at a different stage of the project preparation phase. The current practice by most countries such as Hong Kong is for the PSC to be developed at the early stage of the project phase. The PSC process in Hong Kong starts by formulating output specification, defining reference project and finally identifying all raw PSC components

Table 1: Summary of Public Sector Comparator (PSC) guidance for Australia and Hong Kong

Items	Hong Kong	South Africa
<i>Definition & Characteristics</i>	<ul style="list-style-type: none"> An estimated, risk adjusted, cost of the government itself in delivering the project output. The PSC is expressed in terms of the NPV to the government, using a discounted cash flow analysis that adjusts the future value of the expected cash flow to a common reference date. 	<ul style="list-style-type: none"> The base PSC model represents the full costs to the institution of delivering the required service according to the specified outputs via the preferred solution option using conventional public sector procurement. Expressed as the NPV of a projected cash flow based on the appropriate discount rate for the public sector. Based on the cost for the most recent similar public sector project or a best estimate.
<i>Purpose</i>	<ul style="list-style-type: none"> To provide the basis of comparison between the PPP and the Public sector alternatives. To provide a benchmark of what the government believes is an appropriate level of investment 	<ul style="list-style-type: none"> Promote full cost pricing at early stage Initial indication of VFM. Consistent benchmark and evaluation tool Encourage bidding competition by creating confidence in the financial robustness and integrity of the feasibility process.
<i>Components of PSC</i>	<ul style="list-style-type: none"> Raw PSC –Direct cost , indirect cost and expected third party revenue. <ol style="list-style-type: none"> Expected cash flow of the raw PSC need to be forecast over the life of the ref. project Competitive neutrality (government rent, taxes, duties, fees and charges, accommodation costs) Transferable risks Retained risk 	<ul style="list-style-type: none"> Base cost (Capital and operating costs) <ol style="list-style-type: none"> Direct and indirect cost Revenue cost Assumption Depreciation cost are not included Cost of risk adjusted
<i>Discount rate</i>	<ul style="list-style-type: none"> Sought from the economic analysis division of EABFU on the appropriate discount rate to be applied. 	<ul style="list-style-type: none"> Discount rate to be the same as the risk adjusted cost of capital to government. Treasury does not prescribe a rate to use. Using the yield of a government bond with a remaining maturity similar to the duration of the project.
<i>Refining the PSC process</i>	<ul style="list-style-type: none"> Conducted at the strategy formulation stage and procurement stage 	<ul style="list-style-type: none"> Conducted at the strategy formulation stage and procurement stage
<i>The criteria of PSC</i>	<ul style="list-style-type: none"> Quantitative factors (Raw cost, competitive neutrality and risk) <ol style="list-style-type: none"> Evaluate private bids against the PSC. Identify the least cost procurement option. Output specification and allocation of risk 	<ul style="list-style-type: none"> Quantitative factors (Raw cost and risk) <ol style="list-style-type: none"> Evaluate private bids against the PSC. Identify the least cost procurement option. Output specification and allocation of risk

Sources: National PPP guidelines. Volume 4: Public sector comparator (2008) and PPP Hong Kong guide (2006)

Table 2: Summary of Public Sector Comparator (PSC) guidance for South Africa and Ireland

Items	Ireland	Australia
Definition & Characteristics	<ul style="list-style-type: none"> It is represented as a single monetary value that represents the full estimated cost, risk, income to the public of delivering the project by using traditional public sector procurement.. Presented as estimated annual values arising over the whole lifetime of the project. These values will then be discounted back to a present day value. PSB does not include any costs/income/risks that will be retained by the sponsoring agency itself. 	<ul style="list-style-type: none"> An estimate of the hypothetical, whole life cost of a public sector project if delivered by government. It is developed in accordance with the required output specification, risk allocation based on the most efficient form of government delivery, adjusted for the lifecycle risks of the project. Expressed as the Net Present cost of a projected cash flow based on the project specific discount rate over the life of the contract. Included an adjustment for competitive neutrality Contain an assessment of the value of the risks transferred to bidders and risk retained by government.
Purpose	<ul style="list-style-type: none"> Provide a structured approach to the costing of a PPP project at an early stage before invitations to tender are issued. To reassess at an early stage prior to the initiation of the tendering process whether the project and the procurement method chosen have the potential to offer value for money. To be used as a quantitative benchmark against which are the highest ranking bids can be evaluated in the formal VFM comparison. 	<ul style="list-style-type: none"> To provide government with a quantitative measure of the VFM. It provides the government with an approximate measure of the range of outcomes. It is accompanied by qualitative consideration, subject to sensitivity testing and scenario analysis.
Components of PSC	<ul style="list-style-type: none"> Capital cost (upfront cost of providing a capital asset for the project eg: design cost, raw materials, off site works, equipment, professional fees, service connection and building cost) Operating, maintenance and life cycle costs (costs of daily running of the capital asset to meet the output specification eg: consumables cost, waste management, security, asset refurbishment, facilities management, administration and staffing cost) Third part income (income that can be generated by charging third parties for the use of an asset. Transferred risk (Risks for which the private sector will be asked to tender) 	<ul style="list-style-type: none"> Raw PSC (base costing of direct and indirect cost – using discount rate, real pre- tax rate and inflation assumption). <ol style="list-style-type: none"> Financial costs and revenue (economic and cost benefit analysis are considered) cash flow forecast (excluding depreciation costs, including fixed asset and maintenance costs) Exclude risk and contingencies Retained risk (operating risk, demand risk and security risk) Competitive neutrality(Land tax, local government rate, stamp duty and payroll tax) Transferred risk (Design and construction risk, operating risk, maintenance risk and technology risk)
Discount rate	<ul style="list-style-type: none"> Equivalent public sector project and reflect the relative value of the cash flows from the state authority’s perspective.. 	<ul style="list-style-type: none"> Risk free rate and adjusting for risk using classic methods based on the capital asset pricing model (CAPM). Real discount rate used 6.5%
Refining the PSC process	<ul style="list-style-type: none"> Conducted at the strategy formulation stage and procurement stage 	<ul style="list-style-type: none"> Conducted at the strategy formulation stage and procurement stage
The criteria of PSC	<ul style="list-style-type: none"> Quantitative factors (Capital, operating, maintenance, life cycle cost, third party income and transferred risk) <ol style="list-style-type: none"> In light of the quantifications in the PSB should the project still proceed using a PPP Does the highest ranking bid compare favorably with the PSB from a quantitative perspective in term of the impact. 	<ul style="list-style-type: none"> Quantitative factors (Raw cost, competitive neutrality and risk) <ol style="list-style-type: none"> Evaluate private bids against the PSC. Identify the least cost procurement option. Output specification and allocation of risk Qualitative factors (reputation of the bidder, sustainability of service delivery and design amenity) <ol style="list-style-type: none"> Identify material factors which have been included in the PSC Consider impact of qualitative factors on the private bids <p>Construct the list of all qualitative factors at an early stage conjunction with PSC</p>

Sources: National Treasury PPP, South Africa (2004) and PPP Guideline (2007), Ireland government

(base cost, competitive neutrality and risk). It is clear that the process of constructing the PSC is similar to other countries at the early project stage. Nevertheless, the PSC process in Hong Kong tends to focus on the quantitative assessment without implying the qualitative factors.

4.2 South Africa

The PPP manual of South Africa states that the PSC model represents the full costs by using conventional public sector procurement (National Treasury, 2004). The purpose of the PSC to South Africa is to promote full cost pricing at an early project stage apart from initial indication and benchmark of VFM for PPP projects. The National Treasury of South Africa takes a different mode in constructing the PSC model. The PSC model is based on two basic components: base cost (including capital and operating costs) and cost of risk adjusted. The Treasury does not prescribe a rate to use for the discount rate. However, it states that one should begin by using the yield of a government bond with a remaining maturity similar to the duration of the project. Similar to Australia, the PSC is constructed at the procurement stage.

The PSC was constructed based on two significant elements. Firstly, the development of the base PSC model which includes numerous steps; provide a technical definition, calculation of direct, indirect and revenue costs and compilation of project assumption. Secondly, the development of the risk adjusted PSC model. This process is basically engaged with the identification, estimation, mitigation and allocation of risks that may occur in the PPP projects. The South Africa PSC guideline provides a complete example of the process outlined in constructing the PSC model. There are six steps involved such as providing a technical definition of the project; calculating direct, indirect costs and revenues; explaining all assumption used and finally, constructing the base PSC model. Nevertheless, the South Africa PSC model merely emphasises the assessment at the pre-contract stage and failing to assess on the post-contract stage of PPP projects. In addition, qualitative factors are not stated clearly in the PSC calculation as they are not accurately quantifiable.

4.3 Ireland

In Ireland, there have been slight differences of the PSC mode called Public Sector benchmark (PSB). According to Central Guidance in Ireland State (2007), PSB is a key tool in the PPP procurement process. It is seen as a single monetary value that represents the full estimated cost, taking income and risks into account to the public sectors in delivering the project using traditional public sector procurement. The ultimate purpose of the PSB is to act as a reference throughout the PPP procurement process. It also plays an important role in the assessment of whether the highest ranking bid received has the potential to offer VFM for PPP projects.

There are four main components included in the PSB approach. These are: capital costs, operating & maintenance costs, party income, and cost of risk transferred. The approach demonstrates the dissimilarity from other countries as Ireland takes account of third party revenue into the PSB calculation. According to the Ireland government, a revenue stream from third party income could reduce

the overall costs of funding a project. However, it should only be included where there is a clear policy that third parties can be charged for using a public sector asset or service. The Ireland PSB approach does not take in account any costs/income or risks that will be retained by the public sector irrespective of the procurement method used. In this way, the PSB can serve as a direct like-with-like comparator against the highest ranking bid received.

Central guidance in Ireland states that the discount rate to be used in VFM assessment was equivalent to public sector project. It should reflect the relative value of the cash flows from the state authority's perspective. The government will ensure that the discount rate used has been updated. However, there is no clear narrative into the rate of discount rate used in the VFM assessment. As a general practice, once the output specification for a project has been completed, the PSB can be compiled. According to the Ireland government, the PSB for each project in the PPP project must be finalised before the tender for each project is received at project procurement stages.

Depending on the type of PPP arrangement being pursued, some or all of the following process will be carried out using the PSB approach. The process starts by compiling the PSB in conjunction with output specification, cost, risk and third party income; project cash flow; valuation used in the PSB; compiling the assumption and finally consideration of other key aspects that may affect the PSB process. The assessment of VFM is an overarching concern throughout the PPP procurement process. In practice, four formal VFM tests are carried out at various stages of the PPP process i.e., procurement, completion of the PSB, tender evaluation and contract awarding stage. Hence, the weakness in Ireland model of PSC is that the PSB assessment is concentrated purely at the pre-contract stage. Undoubtedly, a comprehensive VFM assessment requires consideration of a long-term evaluation and should also incorporate qualitative factors in conjunction with the PSC as part of a fully informed evaluation process (Victoria Partnership, 2008 and Blanken, 2008).

4.4 Victoria Australia Partnerships

Analysis of the use of PSC in Australia is focusing on the assessment for both quantitative and qualitative aspects of PPP projects. Victoria Partnership (2008) has defined PSC as an estimate of the hypothetical, whole life cost of a public sector project (if delivered by government). It was developed in accordance with the required output specification and risk allocation. The main purpose of PSC according to Victoria Partnership is to provide government with a quantitative measure and range of outcomes. The assessment is accompanied by qualitative consideration. The PSC Australia model is the sum of four components: Raw PSC; Competitive neutrality; risk transferred and retained risk. The Victoria Partnership takes a different approach from Hong Kong, South Africa and Ireland. They build up the discount rate by beginning with a risk free rate by adjusting for risk using classic method based on the capital asset pricing model (CAPM).

The PSC was constructed and refined during the initial assessment and pre market stages of a project prior to release of the project brief. Fundamentally, the PSC process starts by defining the reference project and subsequently by identifying all raw PSC components (direct, indirect cost, competitive neutrality and risk allocation). The reference project is the most likely form of public sector delivery that

could be employed to satisfy all elements of the output specification. The PSC in Australia uses a pragmatic mode of assessment which deals with two important aspects of evaluation; quantitative and qualitative factors. In a quantitative assessment, the evaluation of private bids against the PSC will be carried out and identify the least cost procurement option. Some other factors for instance, material costs, credit standing and proven reputation of the bidder and social benefit which are not capable of being quantified for a project will be identified during the qualitative assessment in the process. It should be noted that PSC approach in Australia is the only method that signify for both aspects of quantitative and qualitative factors during the assessment of VFM process. However, once again the appraisal was carried out at the pre-contract stage of the PPP process. The model does not provide possibilities assessment over the long term period of the whole life PPP projects.

5. Summary and discussion of the public sector comparator (PSC) models

Based on the considerations of these models, by and large, the PSC is required to address all costs, income and risk of the PPP projects comprehensively across project phases. Most of the PSC models, if not all, are focusing on the definitions, characteristics, purposes, components, discount rate, process and the criteria of PSCs. The PSC of Hong Kong provides a basis of comparison between PPP and the Public Sector alternatives based on four fundamental components (i.e., raw PSC, competitive neutrality, transferable and retained risk). The appropriate discount rate was sought from the Economic Analysis and Business Facilitation Unit EABFU). The quantitative assessment is underlined as core criteria in PSC calculation. Nevertheless, this model is lack of many important elements in PSC calculation such as qualitative aspects and long term factors.

The South Africa PSC model offers a near complete and ample process outlined of PSC calculations. All the processes involved are spelled out clearly and comprehensively. However, the model is less focusing on the discount rate and appropriate assumption aspects which are one of the crucial items of PSC. Meanwhile, the model of Ireland of PSC (known as PSB) seems to be broad and comprehensive which takes into consideration the full estimated costs, income and risks as key components of PSB. Nevertheless, once again, the PSB model failed to consider further on the qualitative and long terms aspects which is vital in the VFM assessment process.

Among others, the Australia PSC model is the most applicable to be adopted and practiced in the assessment of VFM for PPP projects. The model commences based on two crucial assessments, qualitative and quantitative aspects. All the processes involved in terms of discount rate, components and calculation of PSC, major assumptions in the raw PSC and the qualitative aspects associated with PPP projects are clearly clarified. Conversely, the model fails to discuss long term and post contract assessments which are paramount to a complete VFM assessment. This could be due to the difficulty to specify outputs clearly and obtaining the future data for cost estimate.

Most of the models above failed to consider in detail the qualitative (except for Australian model) and long term assessment in the PSC calculations. The implementation of PSC across project phases is

required to ensure the project benefits for the whole life cycle of the PPP project by considering for both factors quantitative and qualitative. This is in line with Broadbent and Laughlin (2003) and Blanken (2008), who state that there is a need for a more comprehensive and preferable assessment systems by emphasising on both the pre and post stages of the PPP project.

Further, the development of PSC approach should consider the criteria from both quantitative (base and risk cost) and qualitative elements (non-financial aspects) to become a robust assessment approach. In VFM assessment, every evaluation will consider a range of quantitative and qualitative factors. Usually the quantitative aspect benchmarks the cost of the PSC against the cost in the bids received. The quantitative assessment considers how the quantifiable costs of using the PPP approach compared to those of the conventional procurement. Assessing the private bids against the PSC provides a quantitative answer to the VFM question.

In addition, a complete VFM assessment requires consideration of qualitative factors along with quantitative assessment. Following Broadbent et al. (2003), it is essential to draw a VFM framework by considering both financial and non financial appraisals to provide pointers for relevant factors during the evaluation process. Apart from that, there are a range of qualitative factors that need to be considered alongside the quantitative assessment to determine whether a PPP project is likely to give value for money. Principally, there are two evaluations that can be considered concurrently in the qualitative assessment: identify material factors and the impact of qualitative factors on the private bids. Those assessments of qualitative factors will relate into the viability, achievability and desirability of the PPP projects (HM Treasury, 2006). Generally, the viability involves the assessment on the equity, efficiency and accountability of project objectives, outputs and operational flexibility. Whereas, the assessment of desirability entails into the relative benefit provided through the PPP projects such as innovation, risk transfer, service provision and lifecycle cost. The achievability assessment basically involves gauging the level of likely market interest, skill and capacity of the private sector and their perception into risk in the PPP project.

6. Conclusions

This paper attempts to review and synthesise various models of PSC from, Hong Kong, South Africa, Ireland and Australia to highlight the critical components and factors in the development of a robust PSC model as a VFM tools. Based on the consideration of these PSC models, many lessons can be learned. It appears that the PSC model is dominated by quantitative aspects (financial) and short-term estimation and fails to consider the qualitative and long term aspects of a project. Therefore, it is imperative to take into consideration both factors (qualitative and quantitative) in the formulation of PSC.

However, most of the PSC methods as explained previously are surrounded by many deficiencies. These deficiencies are related to the accuracy of risk transfer, discount rate methodology, and complexity of financial modeling, the underlying assumptions and limited scope of qualitative and intangible aspects in the PSC calculations. A combined approach of both quantitative and qualitative methodologies would be useful for data collection prior to further validation processes.

The research presented in this paper is part of an ongoing PhD research at the Faculty of Architecture, Planning and Surveying, UiTM Malaysia to develop a framework of Value for Money (VFM) assessment for Public Private Partnership (PPP) projects focusing on Public Sector Projects. The results of the study could provide an insight into the Malaysian construction project development and will hopefully provide valuable guidelines, especially to public or private sectors in Malaysia.

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