2011 International Conference on Economics and Finance Research
IPEDR vol.4 (2011) © (2011) IACSIT Press, Singapore

A value for money assessment method for Public Private Partnership: A lesson from Malaysian approach

Takim,R[1]., Ismai,K[2]., Nawawi, A.H[3]
Faculty of Architecture Planning and Surveying
Universiti Teknologi MARA (UiTM) Shah Alam Selangor, Malaysia
rtakim59@yahoo.co.uk[1]
khari511@yahoo.com[2]
hadinawawi@yahoo.com[3]

Abstract— **Primarily value for money in public private partnership projects can be defined as the optimum combination of whole life cost and quality to meet the user's requirement. Based on the contingency theory, value for money is abroad term that captures both elements of financial and non-financial aspects in the evaluation. Several diverse approaches to assess value for money had been applied in different countries. Nevertheless, value for money assessment method has been criticised on numerous grounds with respects to: accuracy of risk transfer; discount rate methodology; limitation scope of non financial and consideration of long term evaluation. For these reasons, the research aim is to draw a complete value for money assessment methods (financial and non-financial aspects) by means of 2 objectives (1) to investigate the criteria to be integrated in the evaluation of PPP bids for value for money, and (2) to identify the elements at each stage of PPP in the value for money assessment process.**

This research uses a postal questionnaire technique conducted among all public private partnership stakeholders (public and private sectors) in Malaysia. In total 216 valid responses were received, constituting a response rate of 23.6%. The results were analysed by descriptive and analytical statistical analysis. The results revealed that the six criteria of Public Private Partnership bids for value for money are: optimum whole life cost; innovation in operation; fit for purpose; comprehensive specification, compliance to time and innovation in technology. In addition, the respondents believed that financial and non-financial aspects are vital elements to be captured in the development of value for money assessment methods at each phase of PPP project life cycle.

Keywords- Assessment method; financial; non financial; Public Private Partnership; value for money

I. INTRODCUTION

The public sector underwent an intense period of change in the last two decades particularly in its operations and delivering of services. In both the developed world and emerging economies, the focus of this sector has been fixed on improving efficiency, effectiveness and value for money (VFM) of its projects. Globally, this focus thereby cascaded into the introduction of a more innovative approach known as Public Private Partnership (PPP). PPP is an innovative approach to describe the long term relationship between the public and private sectors in delivering public infrastructure. There are several driving factors that have prompted public sectors to pursue this innovative approach. Principally, two fundamental characteristic of PPP are: transfer of risk to the private sector and the provision of superior VFM for the stakeholders. Undeniably the concept of VFM in PPP is the ultimate goal for most in many developing countries in delivering the public projects. Heald [1] and Cheung et al. [2] portray the VFM are the key factors that have been put forward for PPP across the globe.

In general, literary source had scrutinised VFM in PPP as the optimum combination of whole life cost and quality to meet the user's requirement. Basically, VFM can be shown through the accounting quantification and comparison of the cost and benefit of the conventional public sector procurement option with the PPP option. Predominantly, PPP should only be pursued where the projects are expected to represent VFM to the stakeholders. Thus, the assessment of VFM is a fundamental requirement of PPP procurement. To assess the value of all variables involved would require a degree of judgment using both financial and non financial analysis.

Primarily, there are two ultimate goals in conducting VFM assessment into PPP projects. First is to identify the factors that will determine whether a project delivers VFM to stakeholders and second to assess potential bidders that can significantly contribute VFM to the projects. Zhang [3] points out; the most important requirements for achieving VFM are the selection of a potential bidders and PPP projects is awarded in a competitive environment. Otherwise, the government may face serious performance and financial problems associated with an unsuccessful PPP project.

VFM assessment is being used extensively across the world but there is still much debate regarding its use. Much of the literature and study on VFM has deliberated on the financial aspects. However there is less attention into how PPP bids are actually evaluated for VFM. It is crucial to distinguish the criteria used to evaluate PPP bids for VFM because PPP performance expectations are normally transformed into binding legal agreements. The criteria are also used to monitor the progress of the PPP contract over its concession of 20-30 years [4]. Contracts awarded on the basis of the lowest price tendered for construction works are rarely VFM [5]. A much more reliable indicator is the long term value over the life of the asset. Nevertheless, there is little actual detailed guidance that has been presented on what VFM is and how it should be achieved [5].

Many policy makers and researchers argue that there is a need for more comprehensive assessment method which can give emphasis to a broader definition of VFM rather than the financial approach only [6]. Some stress the need for a long term evaluation of PPPs, arguing that undue emphasis is given to the pre-decision stage when considering VFM. A long term evaluation enables judgments on whether or not the projects will actually produce the benefits promised, hence delivering VFM [7]. In other words, the ongoing performance of the project's facilities and related management services should be compared to the proposed implementation on which the VFM assessment is based.

Many researchers therefore suggest a long term VFM assessment process including construction and completion stage be put in place [3], [7], [8]. The lack of an explicit inclusion element in construction and completion stages of VFM assessment process makes it inappropriate for further consideration within this research. To assess the significance of the VFM philosophy, emphasis on both factors of non-financial and financial related aspects are paramount. In the case of Malaysia, the implementation and policy of VFM has been the subject considerable debate and critiques.Even though the government acknowledges the importance of VFM assessment project, a robust VFM framework yet to be established in Malaysia.

This paper hence attempts to put forward the issues in developing VFM assessment process of PPP in Malaysia through the questionnaire survey findings. All aspects of criteria in PPP evaluation bids and elements in developing a VFM assessment method were highlighted. In addition, financial and non-financial aspects are vital elements to be taken into consideration in the development of the VFM assessment method.

II. CRITERIA IN VFM EVALUATION PPP BIDS

Literature denotes many criteria in VFM evaluation had been listed and discussed throughout the research. The dominant criteria as agreed by HM Treasury[6]; Ekambaran et al [8]; Fitzgerald [10]; and Central PPP unit [11]; are financial aspects, innovation; whole life cost; incentive and monitoring; health, safety and environment, appropriate risk allocation; acquisition of facilities management services, market interest and compliance the specification. In addition, Zhang [12] had classified the criteria into four essential packages that can be effectively measure the bidders' capability. These are: financial package (optimum whole life cost); technical package (innovation of all aspects); safety, health and environmental package and managerial package (risk management, dispute and contractual aspects).

While, Yuan et al. [13] had drawn 5 different classifications of VFM evaluation criteria that include: (i) Physical characteristic of projects (design, technology, bidders knowledge & capabilities, risk allocation); (ii).Financing & marketing; (iii). Innovation & learning; (iv) Stakeholder's indicator (client satisfaction) (v) Process indicator (facilities management, resources utilization, health & environment and time management).

Nonetheless, even though many researchers highlighted the aforementioned criteria in VFM evaluation bid, there is little explicit consideration into the actual significant criteria that should be considered in evaluation of bids towards to VFM. As mentioned earlier, it is crucial to distinguish the criteria used to evaluate PPP bids for VFM because PPP performance expectations are normally transformed into binding legal agreements. Thus, a much more effective criteria bid evaluation as an indicator is necessary to represent VFM of the proposed PPP project rather than the cheapest option among the alternatives bid. The full evaluation of bids should seek to identify the bid that offers the best combination of financial and non financial aspects.

III. ELEMENTS IN STAGES OF VFM ASSESSMENT PROCESS

Basically, there are four phases involved in PPP approach with various term are used to interpret the stages in PPP life cycle. However for the purposes of this research, 4 terms are used to explain the stages in a PPP life cycle. These are: Strategy formulation; procurement; construction and completion stage. These terms are similar used by other researchers Takim [14]; and Li [15] in their study. Nevertheless most guidelines do not detailed out the assessment processes for the construction and completion stage.

Typically, the VFM assessment is conducted during the strategy formulation phase, when the economic viability of a project reviewed before being open for bid and focus on the development concept that best meets output specification of the projects. The process will be continued in the procurement phase to identify the potential bidder offer a VFM solution and compare the cost to Public Sector Comparator [9];[11]; [16] and [17]

In many cases there are usually two components in VFM assessment process: financial and non financial assessment. The financial components include all the factors that can be valued. In general, the VFM assessment process involves some financial comparison of the net present cost of PPPs with conventional approach called Public Sector Comparator (PSC). As a neutral benchmark of financial aspects, PSC is used by procurement authority for demonstrating VFM potential of the proposed PPP projects. While the non-financial aspects regard factors such as quality of services, facilities management, environmental aspects, protection of public interest and contractual matters which cannot be quantified.

Surprisingly, there is a little consideration on how to assess the VFM of PPP projects. Although, some guideline presents the VFM concept in PPP projects, detailed elements are not well explained and elaborated. Due to a lack of research that explains on elements that are required in each stage of a VFM assessment, therefore, this paper is purely based on VFM guidelines from various countries. Guidelines from the UK, Australia (Queensland), South Africa, Partnership British Colombia and Ireland are used to obtain a clearer picture of VFM process. This could serve as references on elements that should be applied for the development process for a robust VFM assessment in Malaysia.

Basically the four guidelines (i.e., UK, Queensland, South Africa and Ireland) have identified three stages of VFM assessment process. These included: programme; project and procurement level assessment. Primarily, PSC is used to compare issues related to the financial aspects. The qualitative aspects embrace the elements of: risk management; project level objectives; innovation solution; flexibility of operation; anticipated of users benefits; incentives and monitoring; facilities management services; public interest consideration, life cycle cost, market interest and sustainability requirements [9]; [11]; [15]; and [18]. Most countries (except the UK guideline) do not postulate clearly elements for a VFM assessment process at each stage of a project life cycle.

Khadaroo [7]; and Broadbent [5]; are among some researchers who agreed to have a complete guideline that specifies all elements necessary for each stage of a PPP lifecycle. Hence, based on this notion, a set of questionnaire was distributed to Malaysia PPP stakeholders. The intention is to develop a comprehensive VFM assessment method embracing the four stage of project lifecycle (strategy formulation, procurement, construction and completion).

IV. METHODOLOGY OF RESEARCH

The questionnaire survey was undertaken to determine the perception of PPP stakeholders both including public and private sectors regarding the criteria and elements that should be taken into consideration in development of VFM assessment process. An empirical questionnaire survey was undertaken within Malaysian PPP stakeholders for a period of four months from February to May 2010.

In order to obtain an accurate and precise knowledge, the purposive sampling technique was used. Target respondents were selected based on their direct hands-on involvement with Malaysia PPP projects. Data were accumulated from 216 target respondents which comprised top management levels of contractors, consultants and governments. These were chosen on the consideration that they are the key stakeholders in the Malaysia PPP approach. The selection being based on preliminary survey analyses which were carried out in the entire Malaysia PPP project as listed in the 9th Malaysia Plan.

It was anticipated that some of these target respondents would have the required personal connection or knowledge including experience in local BOT projects or PPP projects overseas. A total of 51 completed questionnaires were returned representing a response rate of 23.6%. The response rate is not unusual for a construction industry survey with the norm of 20-30% for postal questionnaire [14]. Two separate statistical analyses (Descriptive and Inferential) were adopted using the Statistical Package for Social Sciences (SPSS) to verify the results of the analysis. The first analysis ranked the criteria and elements based on mean value of responses. One–way analysis of variance (ANOVA) was executed to test whether the mean values on each criteria and elements for the groups were equal.

V. KEY RESEARCH FINDING

A. Criteria in PPP evaluation bids

Table 1 presents the result of analysis based on mean and ANOVA which indicates the level of critical criteria that had been ranked by the respondents. Results from the analysis reveals six criteria were regarded very critical with the mean value ranging from 4.02 to 4.14 (using scale 1-5 in which 5 is extremely important and 1 as not important). All the probability values (F ratio) of the criteria recorded are above 0.05 suggesting that similar consensus of opinion occurred between groups (Government officers, consultants & contractors) These variables do not have significant differences between groups. The results indicated that the null hypothesis could be accepted.

TABLE 1. CRITERIA IN PPP EVALUATION BIDS

Criteria	***Overall mean***	***Gov***	***Cons***	***Cont***	***ANOVA***	
					f	*Sig*
Optimum whole life cost	4.14	4.29	4.10	4.22	0.925	0.403
Innovation in operation	4.**12**	4.18	4.04	4.20	0.389	0.680
Fit for purpose	**4.10**	4.20	4.08	4.10	0.024	0.977
Comprehensive specification	4.06	4.24	4.09	4.11	1.256	0.294
Time	4.02	4.00	4.03	3.89	0.661	0.699
Innovation in technology	4.02	4.18	4.00	3.89	0.357	0.702

Based on the findings, the six criteria are: optimum whole life cost, innovation in operation, fit for purpose, comprehensive specification, compliance on time, and innovation on technology. In agreement with HM Treasury [9] the optimum whole life cost is believed to be the most critical criterion in VFM evaluation of PPP bids. All respondents (government officers, consultants and contractors) agreed this criterion as the utmost important with the overall mean value of 4.14. This indicates that the concept of VFM itself refers to the whole life value of the service provided. Fundamentally, PPP is an approach which involved the integration of finance, design, construction and operation. Therefore, the performance of PPP would be assessed over the entire whole life cost of a project from inception to end of the contract duration.

The second critical criterion is innovation in operation. Spiering [19], advocates innovation is a tool for cost saving in construction and operation and often mentioned as one of the benefits of PPP approach. The results showed that contractors rated innovation in operation as crucial in the evaluation of VFM of PPP bids with the mean value of 4.20. This indicates that contractors believed in order to win the PPP bids, it is important for them to offer innovation solution in the proposal. However, government and consultants are contradicted with the contractor where they rated in 'innovation in operation' as less critical.

Government officers and consultant survey respondent groups ranked 'fit for purpose' in the third place with the overall mean value of 4.10. This indicates that both groups have shown a high concern for this criterion to form a vital judgment of VFM for the projects. Aligned with Akintoye [20], suggest that the achievement of VFM should be assessed in conjunction with other projects aspects of PPP projects such as quality and comply with building functionality (fit for purpose). Thus, the PPP bids should be streamlined and presents the fit for purpose of the PPP projects.

The fourth critical criterion is comprehensive specification with the overall mean value of 4.06. Government officers and consultants appear to be more aware on the comprehensive specification of the proposed projects compared to contractors. The probable reason could be government officer and consultants regarded comprehensive specification could produce a quality project outputs. In parallel with Akintoye [20] portray that, VFM is important not only on cost savings but through focusing on specification to ensure the quality of the finish products. Time and Innovation in technology are ranked in the fifth and sixth places with the overall mean value of 4.02.This may be explained by the fact that the respondents are more cost- quality oriented rather than the configuration of these factors.

Clearly, in order to gain the best VFM of the PPP projects, it is vital to ensure the contractor's bids are evaluate based on the six criteria.. This is in line with the opinions of Marallos and Amekudzi [4] indicating that VFM evaluation should take into consideration both the technical, financial and economic parameters and also the non- financial aspects.

B. Elements of VFM assessment process

Literature place VFM as a process that should have continuity throughout the project lifecycle from the strategic formulation phase until completion stage [8]; and [9]. Thus, the survey results had identified significant elements in each stage of PPP life cycle for a VFM assessment process. Table 2, 3, 4 and 5 present the survey results on the elements which showed high percentages to be considered in VFM assessment process at each phase of PPP project life cycle (strategy formulation; procurement, construction and completion phase).

Based on the findings, it is not surprising that different elements were rated differently at each project phase. Nevertheless, the respondents' recorded financial aspects should be considered at each stage of PPP in VFM assessment process. For instance, project viability is ranked first in the strategy formulation phase and sixth in the procurement phase. Meanwhile, a 'financial factor' is ranked fourth in the construction phase and second in the completion phase.

Undeniably, financial aspect is the most important element used as a benchmark by decision makers in deciding to procure the PPP approach. This findings correlate with literary indicated that financial aspect is a significant element oblige at each stage of VFM assessment process [11]; [16] and [917.

Despite the financial assessment constitutes a significant portion of the VFM analysis; it is not sole factor driving in VFM of a project. Subsequently; five non-financial elements had been declared by the respondents as important elements that should be taken in strategy formulation phase. The elements are; project objectives; risk management; innovation on scope of works; anticipated users benefits; and technology innovation. The findings are support the UK guideline of VFM of PPP projects.

In addition, the survey results suggest that most of the respondents opined innovation of the whole aspects (design; material; technology; services; scope of works and operation); health and safety; flexibility of operation and environmental matters are essential elements to be considered in the VFM assessment process at project procurement phase. All these elements ought to be incorporated on VFM basis prior construction.

Moreover, the respondents optimistically suggest six elements to be considered in the VFM assessment at project construction phase. These are: risk management; management of resources allocation; facilities management; financial; monitoring mechanism and asset utilization. This parallel to the opinion of Arkibiyikli and Eaton [21] indicating that appropriate risk allocation between the parties in PPP approach is critical to the achievement of VFM

One of the difficulties in listing elements of VFM at project construction stage is due to the lack of information as argued by Arbiyikli & Eaton [21]. According to them the PPP literature has mostly focusing on examining VFM at the initial stage, while lacking on information at project construction and completion stage of the PPP. To a certain extent, no researcher or guidelines have ever covered elements for VFM assessment process at project construction stage.

TABLE 2. STAGE 1 (STRATEGY FORMULATION PHASE)

Element	%
1. Project viability	76.5
2. Project objectives	74.5
3. Risk management (Risk allocation & calculation)	72.5 62.7
4. Innovation on scope of works	60.8
5. Anticipated users benefits	60.8
6. Technology Innovation	60.8

TABLE 3. STAGE 2 (PROCUREMENT PHASE)

Element	%
1. Innovation of design	80.4
2. Innovation of material	76.5
3. Innovation of technology	68.6
4. Innovation of services	62.7
5. Innovation of scope of works	59.9
6. Project viability	54.9
7. Comply with environmental standard	54.9
8. Public health and safety	52.9
9. Flexibility of operation	52.9
10. Innovation on operation	52.9

TABLE 4. STAGE 3 (CONSTRUCTION PHASE)

Element	%
1. Risk management	77.1
2. Management of resource allocation	75.2
3. Facilities management services	72.3
4. Financial factors	63.1
5. Incentives &Monitoring mechanism	53.9
6. Asset utilization	51.2

TABLE 5. STAGE **4** (COMPLETION PHASE)

Element	%
1. Enhance quality of life	78.8
2. Financial factors	78.0
3. Meeting environmental standard	74.9
4. Facilities Management service	62.9
5. Public health and safety	62.9

On the other hand, at project completion stage, most of the respondents believed that environmental issues, facilities management, financial and enhance the quality of life as significant elements in VFM assessment process. This shows that the concept of VFM refers to the whole life value of the service provided embracing the facilities management and environmental impact factors. Due to these reasons, it is crucial to carry out a VFM assessment process at project completion stage to assess the environmental implications of a proposed strategic decision. It has been agreed that project's inability to meet environmental requirements can have an adverse impact on its financing efforts and may reduce the possibility to demonstrate VFM of the projects. This findings reflects to the Spiering [19] mentioned that, in the Portugal context environmental issues is one of the major elements there are necessitate in their VFM assessment process.

In conclusion, although the respondents believed the significance of the financial aspects, the overall findings shows the perception of respondents to include the non-financial aspects in the VFM assessment process as inevitable. This is important for the fact that when the lowest private bid is very competitive to the Public Sector Comparator (PSC).

VI. CONCLUSION

Value for money in PPP projects starts at the level of strategy formulation phase and is generated throughout the project cycle. VFM is the broad scope, thus it is crucial to ensure rigorous financial and non- financial elements are integrated in the VFM assessment process.

Thus, this paper has highlighted two important points related to VFM assessment process. Firstly is the establishment of a set of significant criteria in evaluating the PPP bids with regards to VFM matters. The other point is the development of elements in VFM assessment process in every phase of PPP project life cycle.

In evaluating the criteria in PPP bids, six recommendations from the questionnaire have to be taken into consideration. The most significant is to ensure the PPP bids have the optimum whole life cost. Other points rest on issues of innovation in operation; fit for purpose; comprehensive specification; time; and innovation on technology. This study has ascertained various elements that are important such as: financial aspects; innovation; risk management; anticipated users benefits; flexibility of operation; facilities management services; health & safety and environmental issues. For impact the consideration VFM assessment process of PPP projects, these elements embrace financial and non- financial aspects.

In conclusion, the development of a VFM assessment framework comprising both financial and on-financial aspects could provide a comprehensive dimension of VFM assessment method into the Malaysian PPP approach.. Within considering of these initial variables, a further empirical research in the form of case studies of PPP/PFI projects in Malaysia is required. A combined approach of the two methodologies would be useful for data elicitation prior conclusion.

REFERENCES

[1] D. Heald, "Value for money test and accounting treatment in PFI schemes" Accounting, Auditing and Accountability Journal. 16 (3) 2003, pp 342- 371

[2] E. Cheung, A.P.C, Chan and S. Kajewski, "Enhancing value for money in public private partnership projects: Findings from a survey conducted in Hong Kong and Australia compared from previous research in the UK" Journal of Financial Management of Property and Construction. **14** (1) 2010, pp. 7-20

[3] Zhang. X. Q, Best value concessionaire selection through a fuzzy logic system. Expert system with application. Article in press. 2008

[4] D. Morallos and Amekudzi, " A state of the practice of value for money analysis in comparing Public Private Partnership to traditional procurements," Public Works management Policy 13, 2008.

[5] J. Broadbent, J. Gill and R. Laughlin, ". Evaluating the Private Finance Initiative in the National Health Service in the UK.," Accounting, Auditing and Accountability Journal. 16 (3), 2003, pp 95 – 114.

[6] J. Broadbent, J. Gill and R. Laughlin, ". Evaluating the Private Finance Initiative in the National Health Service in the UK.," Accounting, Auditing and Accountability Journal. 16 (3), 2003, pp 95 – 114.

[7] I. Khadaroo, "The actual evaluation of school PFI bids for value for money in the UK public sector," Critical Perspectives on Accounting, 19(8), 2008.

[8] P. Ekambaran, M. Kumaraswamy and N.Thomas, Targeting optimum value in public sector projects through " best value- focused contractor selection. Engineering, construction and Arhitecture Management, vol 10 (6), 2003. Pp 418-431

[9] HM Treasury, "Value for money assessment guidance" @ Crown copyright, 2006

[10] P. Fitzgerald, Review of Partnership Victoria provided infrastructure. Final report to the treasurer. Melbourne Australia. Growth solution group, 2004.

[11] Central Public Private partnership policy unit in the department of finance. Value for money and the Public Private Partnership procurement process. Dublin, Ireland National Development finance agency. 2007

[12] Zhang. X. Q, Factor analysis of public clients best value objective in Public Privately Partnered Infrastructure projects. Journal of Consruction Engineering and management, sep 2006, pp. 956-965

[13] J. Yuan, A. Y Zeng, Skbniewski. M.J and Q. Li. Selection of performance objective and key performance indicators in Public Private partnership projects to achieve value for money, Consruction management and economics, March, vol 27, 2009.pp. 253- 270

[14] R. takim. A Framework for successful construction project performance. Unpublished PhD Thesis . 2005

[15] B. Li. Risk management of construction public private partnership projects. Unpublished PhD thesis. 2003

[16] Partnership British Colombia. Project report: achieving value for Money Sea to sky highway improvement project. 2005

[17] Queensland Government, Public Private Partnership guidance material. 2008

[18] National Treasury South Africa. Public Private Partnership manual:Pretoria, South Africa: National Treasury PPP unit. 2004

[19] M. B. Spiering and G. Dewulf. Strategic issues in Public Private Partnership: An International perspective. Blackwell publishing . 2006

[20] A.Akintoye C. Hardcastle, M. Beck, E. Chinyio, and D. Asenova (2003). Achieving best value in private finance initiative project procurement. Construction Management and Economics 21, 2003, pp 461-470

[21] R. Akbiyikli and D. Eaton, "A value for money framework proposal for PFI road projects," 2008