

A POLEMIC ON DEFECTS LIABILITY IN PUBLIC PRIVATE PARTNERSHIP (PPP) PROJECT

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Abstract

Construction risk in Public Private Partnership (PPP) produced the highest risk factors compared to other development stages. Construction defect in PPP project often reported among the common construction risk that affected the project performance of completed facility. A serious attention about defect liability could prevent any impact of completed facility especially during project handing over to avoid any consequences towards time and operational performances. Without specific reference on defect liability, it has created a polemic on their contract principles and effectiveness. Within that scenario, the objective of this study is to identify the issues pertaining to defect liability with associated risk factors and consequences which give effects toward the project performance. A qualitative approach was used to analyse literature reviews to provide a basis for improvement of PPP project specifically in Malaysia context. The publications related to PPP project performance were reviewed where the information was classified into three sector which are issues, risk factor and possible effects. The Malaysia PPP structure model was highlighted as an evidence to support the reviews. The findings showed that the polemics arise due to the lacking of guidelines and legal documents in discussing the defects liability. Hence, the study had recommended four resolutions to overcome the issues such as specify defect liability time frame, develop defect management framework, monitor the transition period during project hand over and improvise quality assurance and quality control in order to sustain the service level during the operation of completed facilities.

Keywords: Polemic, Defects liability, Public private partnership (PPP).

1. Introduction

Public Private Partnership (PPP) is a unique procurement method and has a different characteristic from traditional contract mainly in the aspects of contract duration, financial, risk allocation and value for money. It has been widely adopted by various countries worldwide including Malaysia. PPP scheme undergo a long period of contractual relationship between public and private sector which it promotes a performance based output to protect their rights [1]. According to [2] many performance assessments has been conducted in the aspect of performance mechanism, risk management, value for money, affordability, cost saving, effectiveness, efficiency and quality of service delivery. However, it has a very limited study discussed on the quality of asset delivery particularly related to construction defects and associated risks.

Construction defects perceived as a major contributing factor that could distract the handing over process and operational phase [3,4]. To avoid any negative consequences, the defects have to be liable by appropriate party for rectification [5]. Generally, defects liability is a process to rectify any defects, shrinkage, imperfection, any fault based on complaint by end user within specific time frame [6,7]. Lacking of guidelines and legal reference about defect liability caused the polemic and constraints in adopting the PPP scheme [8]. The statement was supported by [9,10] mentioned that many critics in PPP project such as absence of referred guidelines and unclear framework for performance audit and monitoring.

Therefore, this study will investigate the polemic on the issues of defect liability for PPP projects throughout the globe through relevant literature reviews. The reviews will be discussed on the issues, risk factor and possible effects. The reviews also would reflect to the Malaysia practices and implementations. Finally, the research findings will propose a framework to describe the flow of contributing factor with related component involve in defect liability polemic and provide a solution for improvement.

2. Defect Liability Issues in Public Private Partnership (PPP) Project

The principle of defect liability between traditional contract and PPP project is contradicted. In a traditional contract, the contractor is liable to rectify the defects within 12 months after receiving the certificate of practical completion called as Defect Liability Period (DLP). The DLP under the traditional contract is shorter than PPP procurement which the PPP contractor is liable for the asset delivery and maintains wide range of soft and hard facilities management (FM) services during the project spanning up to 25-35 years [3,11].

A construction defect is a major risk factor that contributes directly to defect liability issue. According to [3], it could be a significant risk issue related to any subsequent patent or latent defects found in the PPP asset. Moreover, in National Health Services (NHS) PPP building contract, it is absence with no specific reference on defects liability period that normally found in traditional contract for any latent defects which possibly may occur within limited period approximately around 12 years. In addition, [11] stated the defects liability is inevitably extended in line with longer performance based contracts gained the risk to PPP contractor.

The initial part of operation and maintenance stage is crucial after passing all compulsory tests and commissioning being imposed by government and relevant authorities. It is due to the capital spend is reach at highest ceiling point and no return on capital to date. The project will be entering in to a phase of transition between a contractor who has complete constructed facilities, with the possibility of liquidated damages and adequate temporary supports being prepared if problem occurs. The construction contractor remains responsible during an inception period of operations when facility is functioning proven and that there are appropriate “snagging” rectification arrangements and defects liability with no cut-off date on facility hand over from contractor to FM [5].

Table 1. Comparison aspect of defect liability between traditional method and PPP contract (authors perspective).

Variables	“Traditional” and “Design & Build” Contract	PPP Contract
Terminology	Duration (as specified under contract) of defect liability starting from the date of practical completion cover any defect, imperfection, shrinkage or any other fault due to material, goods and workmanship not accordance with contract.	No specific reference of defect liability period. The projects usually rectify “non-conformance” before receive certificate of acceptance and making good construction minor defects during maintenance phase.
Duration	12 – 24 months (based on contract document)	25 – 35 years
Legal provision (Example: Malaysia)	PWD 203A (2010), PAM 2006 (B.Q), DB Project (DB Condition of Contract, PWD 2007)	Concessionaire agreement (between government, client and concession company)
Responsibility	Contractors own cost and expenses	Concession companies own cost and expenses
Approach	Superintending Officers may issue written instruction (Schedule of Defects) to the contractor to make good such defects	Minor defects from construction will be recovered by contractor or facility management operator and will be recorded into the system as “complaint”
Risk	Risk fully absorb by public sector	Risk allocation delegates to an appropriate party
Project scale	Based on type of tender for traditional contract (small or medium ordinary project)	Based on private investment capital, huge infrastructure and large capacity of facility
Effect of non-conformance and pending defects	Customers claim for remedies and compensation	Payment deduction

Most of the problems occurred in constructed facilities usually arise from the design stage due to the failure to establish detail requirements during the project brief which caused a poor performance of completed facility [12]. Institute for Public Policy Research (IPPR 2001) revealed that the specific problems have been identified during hand over and operational in the health and education sectors under PPP projects. It is recorded about 11% of projects were not delivered on time, 24% of public sector clients were dissatisfied on operational performance, 48% of client organisation and 17% of construction organisation were concerned about sustaining the service level during the operation of completed facilities is crucial. At the development stage, defects and rework are among significant issues rated by client and construction organisation [13].

Table 1 shows a comparative analysis of defect liability between traditional method [6,7] and PPP procurement contract [14] according to authors understanding to differentiate their characteristics.

From the above Table 1, the PPP contract is modified from the traditional contract to fulfil the partnering requirements. Eight variables were assessed to determine the differences. Overall, the significant differences are conceptual framework, financial mechanism, performance evaluation, risk allocation, legal provision and lengthy duration.

3. Risk During PPP Project Hand Over

Risk allocation process in PPP contract during project hand over involves (1) risk assigned to the private contractor; (2) risk shared between the public and private partners; and (3) risk retained by the public clients [4]. PPP contract and traditional method usually can be distinguished based on criteria of construction risk such as liability of site conditions, design risk, delay, variation order, relief and compensation, practical and substantial completion and defects liability [3]. Moreover, risk factors (meso level risks) associated with construction risk during project hand over are; poor quality of workmanship, insolvency / default of sub-contractors or suppliers and design deficiencies [4]. For example, National Audit Office (NAO) United Kingdom revealed that public services in UK are facing few type of risk such as financial loss, waste of efficiency, fraud, service delivery failure or delay and missing an opportunity to deliver services in new ways.

Project hand over involves with complexity of risk allocation due to project coordination issue. Project coordination is very complex during the design stage and construction towards operating efficiency. Lacking of capable operator for construction and facility management services also part of risk to absorb by private sector. Other than that, attention must be given to resolve the conflicts arrangements among project operator and their ability to lead a project role. They should not leave the leading role to the contractor because it will possibly extend a short time over the end of construction after project hand over [15].

For PPP project, key risk factors identified by [16] which can influence the project time and operational performances are:

- a) Time performance: construction defects, change of stakeholder and misunderstanding the role of stakeholder.

- b)Operational performance: fail or delay in commissioning test, construction defects, change of stakeholder and misunderstanding the role of stakeholder.

Bing *et al.* has promoted a meta level approach comprises macro level risk, meso level risk and micro level risk for PPP projects [4]. The macro level risk associated with national level status was influenced by political and legal environment, economic stability, social and weather conditions. Although the risks occurred beyond the project boundaries, however it would indirectly impact the project outcomes. The meso level risks arise within the project boundaries such as implementation, usage, design, location, construction and technology issues. The micro level is related to human factor and usually found through stakeholder relationships that can be seen during procurement and contract management. Table 2 shows type of risk affected the PPP project hand over.

Table 2. Type of risk affected the PPP project hand over (authors review).

Type of Risk	Risk Factors	Stage	Risk Meta-Level
Strategic Risk	Design deficiency	Design	Meso
	Coordination complexity	Design	Micro
	Waste of inefficiency	Design	Meso
Financial Risk	Financial loss	Procurement	Meso
Compliance Risk	Defects in construction	Construction	Meso
	Fraud	Construction	Meso
	Misunderstanding the stakeholder's role	Construction	Meso
	Change of stakeholder	Construction	Meso
	Insolvency / default of sub-contractors or suppliers	Construction	Meso
Reputational Risk	Failure / delay in commissioning test	Handing over	Meso
	Poor quality of workmanship	Handing over	Meso
	Complex of coordination	Handing over	Micro
	Capability issues of operators	Handing over	Micro
	Conflicts arrangements between operators	Handing over	Micro
Operational Risk	Planned levels of service delivery are not met and delayed	Operation & maintenance	Meso
	Opportunities to deliver services in new ways are missed	Operation & maintenance	Meso

From the above Table 2, five types of risk were identified that potentially affected the PPP project hand over namely strategic risk, financial risk, compliance risk, reputational risk and operational risk. Construction stage and hand over stage produce more risk factors compare to the other development stages. In term of risk meta level, it is involving meso risk and micro risk meta level which meso risk more prominent that influence from many technical risk factors.

4. Effects from the Defect Liability Issues

Preparations of output specification seem difficult and very risky. It is because the liability of contractor span in the long term throughout performance period requires highly visible imagination on future planning of what is intended. Thus, it can create “affordability problems”. “Affordability problems” occurs when the cost of the project is over from the whole life cycle and the situation cannot be supporting by the public-sector client’s budget seek other financial commitments [17].

In principle, facility management operator taking on the unproven facility just after construction finished and it will have the possibility of deductions to be imposed due to poor performance and unavailability issue which may be caused (wholly or partly) by relevant facility problems [5]. An example brought by [11] proved that there were deductions of the payment mechanism for PPP hospital project under the performance based measurement system that mostly related to construction defects to be recovered by the respective contractor. Despite on its practicality, payment mechanism is still indistinct in setting out a reasonable time period for repair and rectifications of defects, depends on priority level of affected area before payment deductions can be enforced [12].

5. Overview of Malaysia PPP Structure

Figure 1 shows the typical Malaysia PPP structure as stipulated under the Malaysia PPP guideline [14]. Stakeholders who involved in PPP were not given a clear determination on their relationship boundaries for example in between the contractor and the facility operator’s roles in terms of project control, the management and supervision (in the circle). Furthermore, the guideline did not explain about the time frame of the contractor and facility operator’s involvement from the inception stage until the completion of job in their scope of work. It may potentially cause the conflict and redundant of work between them especially during the project handing over and managing defects liability.

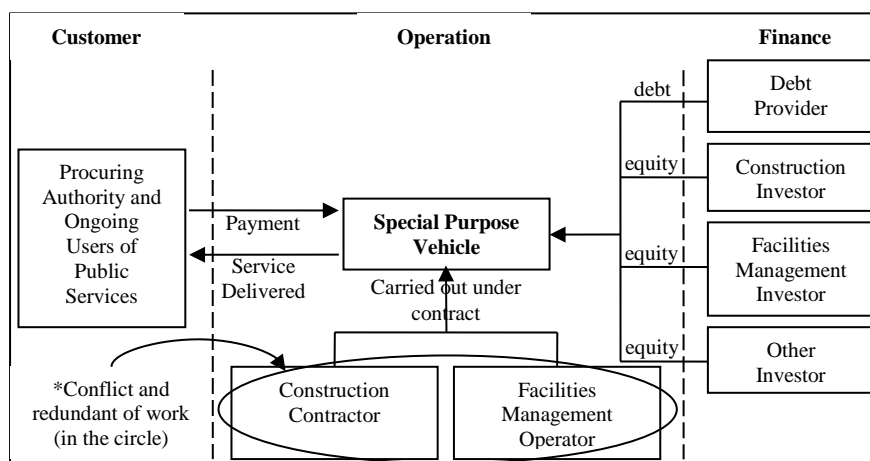


Fig. 1. Malaysia PPP structure.

6. Findings and Discussion

In order to achieve the acceptable service level during the operation of completed facilities, three components (Fig. 2) were identified as contributing factors that can influence the successful of PPP project specifically in defect liability period. Each of PPP project should prepare feasibility study during project planning on (1) possible issues, (2) forecasting their effects and (3) planning an appropriate solution.

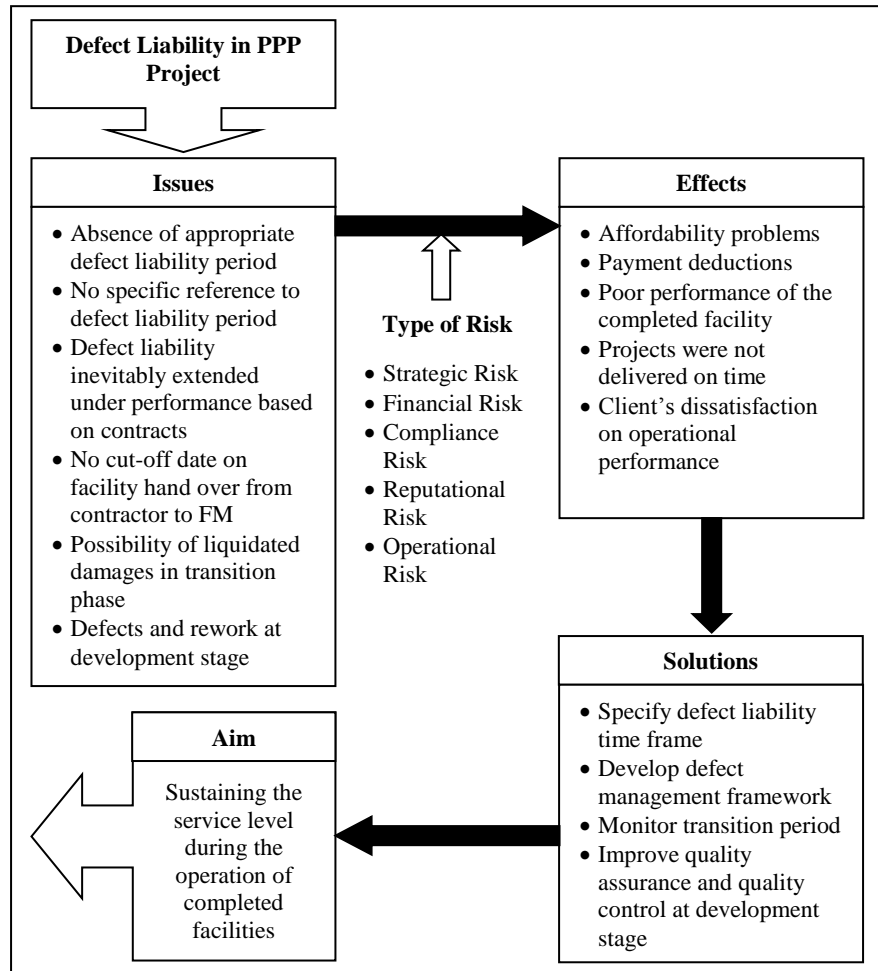


Fig. 2. Framework of findings.

The framework highlights few problems that usually encountered during defect liability for PPP project. The problems triggered when it does not have a specific reference or guideline about defect liability period; absence of implementation and no cut-off date to differentiate between construction and maintenance defect. These problems give an impact towards affordability problems, payment deductions, project delivery failure and client's satisfaction level. Affordability (revenue) is the

most important issue to resolve of PPP scheme which required financial planning and project assessment to obtain value for money. The listed effects can be measured through the performance measurement system that mainly reflects to payment mechanism as a key performance indicator. However, the levels of each effect are determined by a few types of risk that acts as a mediating factor between the issues and its effects. As a solution for this study, the PPP project are suggested to specify defect liability time frame as reference tools for operators and client to monitor, to develop defect management framework, to close monitoring the transition period during project hand over and to improvise quality assurance and quality control aspect. From the above review, it can be summarised as shown in Fig. 2.

7. Conclusions

Defect liability becoming one of construction risks and issues that could bring an impact towards the operational phase. However, as compared to the traditional method, PPP procurement has a different characteristic in defining defect liability terminology, particularly in most cases that it was absence and has no specific reference of defect liability period due to the inevitably extended under long term performance based contracts. The effects from the issues will obviously be reflected in monetary form through the payment deductions. It is recommended that the PPP projects can replicate the idea of defect liability management from the traditional method with an appropriate adaptation to ensure that the transition period between the contractor and the facility management operator are properly managed. Apart from that, the expected outcomes are to reside the responsibility of construction defect to the contractor in order to ensure each root cause are clearly determined. Therefore, the future direction of research is targeted to investigate a multiple case study of PPP projects in Malaysia which focusing on current practice of defect liability management and it will further continue to develop a defect management framework for PPP project specifically in Malaysia.

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References

1. Ninth Malaysia Plan. (2016). *Ninth Malaysia plan 2006-2010*. Government of Malaysia.
2. Ismail, S. (2011). A systematic review of research on private finance initiative (PFI) and public private partnership (PPP). *International Journal of Economics, Management and Accounting*, 19(3), 33-60.
3. Lewis, S.J.; and Greenwood, D.J. (2002). The treatment of risk in construction contracts under PFI/PPP. *18th Annual ARCOM Conference, Association of Researcher in Construction Management*. United Kingdom, 415-423.

4. Li Bing; A. Akintoye; P.J. Edwards; and C. Hardcastle. (2005). The allocation of risk in PPP/PFI construction projects in the UK. *International Journal of Project Management*, 23(1), 25-35.
5. James Harris; and Julien Reidy (2011). *PPP projects in the education sector – Key principles*, Hogan Lovells.
6. Malaysian Institute of Architect (2006). *Agreement and conditions of PAM contract 2006 (With Quantities)*. Malaysian Institute of Architect.
7. Government of Malaysia (2010). *PWD Form 203A (Rev.1/ 2010)*. Public Work Department of Malaysia.
8. Suhaiza, I.; and Fatimah A.H. (2014). Constraints in implementing Public Private Partnership (PPP) in Malaysia. *Built Environment Project and Asset Management*, 4(3), 238-250.
9. Ismail, K; Takim, R; and Nawawi, A.H. (2010). Public private partnership strategies: issues and challenges in Malaysia. *Second International Conference on Construction in Developing Countries*. Egypt.
10. Javed, A.A.; Lam, P.T.; and Chan, A.P. (2013). A model framework of output specifications for hospital PPP/PFI projects. *Facilities*, 31(13/14), 610-633.
11. Herbert, S.R.; and Jon Scott (2009). Service delivery and performance monitoring in PFI/PPP projects. *Construction Management and Economics*, 27(2), 181-197.
12. Lukumon, O.; Oyedele (2013). Avoiding performance failure payment deductions in PFI/PPP projects: A model of critical success factors. *Journal of Performance of Constructed Facilities*, 27(3), 283-294.
13. Patricia, C.; Herbert. R.; Peter, F.; Chimay, A.; and Dino, B. (2008). Participation barriers, and opportunities in PFI: The United Kingdom experience. *Journal of Management in Engineering*, 24(3), 138-145.
14. PPP Unit Prime Minister Department. (2009). *Public private partnership (PPP) guidelines*. Prime Minister Department Malaysia.
15. Darrin, G.; and Richard, G. (1997). PFI in the NHS. *Engineering, Construction and Architectural Management*, 4(3), 215-231.
16. Hemanta, D. (2012). Understanding impacts of time and cost related construction risks on operational performance of PPP projects. *International Journal of Strategic Property Management*, 16(3), 316-337.
17. Bob, H.; and Ilfryn, P. (2001). Input versus output-based performance measurement in the NHS – the current situation. *Facilities*, 19(10), 344-356.