

UNIVERSITI TEKNOLOGI MARA

**DEVELOPMENT OF
PERFORMANCE MEASUREMENT
TOOL (PMT) FOR OPERATIONAL
AND MAINTENANCE PHASE IN
MALAYSIAN PUBLIC PRIVATE
PARTNERSHIP (PPP) PROJECTS**

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the requirements for the degree of
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AUTHOR'S DECLARATION

I declare that the work in this dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Public Private Partnership (PPP) is conceptualised as a performance-based procurement in which concessionaires are contracted to provide efficient facilities and services to the government. The quality of the facilities and services provided by the concessionaires will be assessed using key performance indicators (KPIs). This is for determining the level of performance against the agreed level of standards as expected by the government. However, most of the PPP projects are currently facing the difficulties in meeting the expectation. It is due to several issues such as lack of methods for measuring the KPIs, the lack of understanding of the KPI implementation, project performance not reflecting the actual performance (physical) on site, the absence of a weightage system on KPIs, and inconsistent of works performance. These shortcomings have led to the difficulty in determining the performance level of the PPP projects. Therefore, this research aims to develop a performance measurement tool (PMT) for assessing the operational performance of PPP projects in Malaysia. Towards this end, the study sought to achieve the following objectives: (i) to identify the important criteria for selecting KPIs; (ii) to investigate the implementation of KPIs in measuring the operational performance of PPP projects; (iii) to determine the relative importance weight for KPIs and (iv) to develop and validate a KPI-based method performance measurement tool for PPP projects. Two methods of empirical research using case studies (semi-structured interviews) and questionnaires via the Analytical Hierarchy Process (AHP) method were conducted within PPP stakeholders. The important criteria and appropriate KPIs were determined from the data obtained from 32 semi-structured interviews conducted across six case studies. The KPIs were subsequently prioritised according to the assigned weight attained from the AHP method. Nineteen experts of PPP project participated in the rating process. Subsequently, a performance measurement tool was developed based on the findings from both the qualitative and quantitative approaches and were validated by seven (7) PPP/FM/KPI experts in the Malaysian construction industry. The results indicate 11 important criteria to be considered when establishing the KPIs for PPP projects. The analysis also identified 36 sub-dimensions which are categorised under seven (7) elements of dimensions such as operational element, mechanical, electrical, telecommunication, civil, structural and architectural, landscape and ground and pest control and wildlife control. These KPIs, which were prioritised through the AHP process, are therefore determined as the most important KPIs that have a greater impact on project operations. The AHP results prioritised seven (7) KPIs (dimensions) based on the assigned weight namely mechanical, electrical, operational element, civil, structural and architectural, telecommunication, landscape and ground, and pest control and wildlife control. The proposed performance measurement tool for PPP projects (3Ps-PMT) can serve as an improved measure for assessing the operational performance of PPP projects through a more systematic process. The 3Ps-PMT can be beneficial to the public sector (government agencies and end users) and the private sector (concessionaires and FM contractors) as PPP stakeholders.

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