

VALUE-BASED BUILDING MAINTENANCE MANAGEMENT FRAMEWORK
FOR UNIVERSITY CAMPUSES

by

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ABSTRACT

This thesis researched university building maintenance from a value-based perspective by considering both the building users and maintenance organizations' perspectives. In addition to that, it considers both quantitative and qualitative criteria in building maintenance management. This is imperative because despite the increase in maintenance expenditures there are increase complaints and criticisms on the poor service delivery. For this reason, it is the aim of this research to develop a value-based maintenance management framework in order to increase building users' satisfaction, organizations' productivity and better total service delivery. In order to achieve the set aim, four objectives were set; 1) to analyze the criteria influencing university building maintenance; 2) to determine maintenance criteria of the user value system; 3) to determine defects in university buildings; and 4) and to quantify relationship for building element, costs, performance and operational criteria

The proposed value-based maintenance management framework comprises of conceptual and Analytical Hierarchy Process (AHP) frameworks. The conceptual framework was developed based on objectives one, two and three. By utilizing the refined conceptual framework, decision making framework were developed using AHP. Apart from the refined factors extracted from the factor analysis, building elements and building performance criteria were included in the AHP frameworks. The research collects primary data through survey questionnaire administered to both university maintenance organizations and university building users. The results of the research clearly revealed service mismatch in terms of what the users wants and what the maintenance organizations provide. The research also indicates that the process of maintenance organizations require systemic restructuring

maintenance management. While the AHP frameworks provide a consistent and transparent method of prioritizing maintenance needs, the conceptual framework serves as a tool for identifying diagnostic information to improve maintenance service delivery.

Finally, the research found that the value-based maintenance management framework can facilitate the delivery of improved services and higher productivity. This research recommends applying the value maintenance management framework in order to facilitate providing value added services. Although, the research specifically concerns university buildings, other public and private sector organizations face similar maintenance management problems. Therefore, the findings of the research are suitable for improving maintenance services in other maintenance organisations.

Keywords: university buildings; maintenance management; value management; service delivery; AHP Framework, Malaysia