Value Management Based IT Procurement Model for Construction Organisations

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Dedication

To my parents with love……

Declaration

I hereby declare that this submission is my own work and that, to the best my knowledge and belief, it contains material or facts neither previously published or written by another person nor which to a substantial extent has been accepted for award of any degree or diploma of a university or other institute of higher education, except where an acknowledgement has been made.

UOM Verified Signature ...

31.01.2006

Karunasena G.I. Date

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List of Abbreviations

- ASP -Application Services Provision
- DB -Database
- DSS -Decision Support System
- FAST -Functional Analysis System Technique
- HW -Hardware
- ICTAD -Institute Construction Training And Development
- IDE -Integrated Development Environment
- IESL -Institute of Engineers, Sri Lanka
- ISO -International Standard Organisation
- IT -Information Technology
- J2SDK -Java 2 Soft Development Kit
- JDK -Java Development Kit
- LAN -Local Area Network
- MM -Method Message
- MS -Microsoft
- RDMS -Relational Database Management System
- SAVE -Society of American Value Engineers
- SDK -Soft Development Kit
- SPSS -Statistical Package for Social Science
- SQL -Standard Query Language
- SW -Software
- TQM -Total Quality Management
- UK -United Kingdom
- UML -Unified Modeling Language
- VA -Value Analysis
- VE -Value Engineering
- VM -Value Management
- VP -Value Planning
- WAN -Wide Area Network

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Abstract

Lack of effective IT exploitation in construction organisations often create difficulty in justifying future expansion and use of benefits of IT innovations. The problem of identifying best IT products, procurement approaches, costs and benefits is one reason behind that. It is a global problem experienced at all types of business sectors and organisations. However, it is more acute in the construction industry as a result of its structure, fragmentation and under capitalization.

A recent article by Central Unit of Procurement, UK states, *everybody benefits from fast, effective and transparent procurement. It reduces supplier cost, enables the organisation to fulfill commitments faster and more effectively and gives better value for the client's money.* This necessitates existence of a tool to identify best-valued procurement options and provide feedback on their probable successes or failures. Therefore, the primary aim of this study is development of Decision Support System for construction organisations to assist in IT procurement capable of increasing customer satisfaction while eliminating unnecessary expenditure with value management principles. Value management is an organized approach providing necessary functions at the lowest cost.

For development of the model, theoretical considerations and current industry practices were reviewed to synthesize a new approach drawing from the best practices of procurement in construction industry. This new approach also incorporates principles of value management in selecting the best procurement route. The selection was then modeled into an Object Oriented information model allowing users to make intelligent and informed decisions on procurement routes. It was then tested with real life IT procurement scenarios and refined accordingly. The evaluated model was enhanced as a Computer Aided Decision Support tool providing a user-friendly guide for IT procurement in construction organisations. The research samples comprised of experienced academics and industry representatives, all with direct experience in IT based systems within construction organisations. The research established need for a new approach to assist IT procurement in construction organisations. Moreover, no satisfactory IT procurement method for individual construction organisations was discovered.

The developed Decision Support Model provides an interactive and automated system for procuring IT in timely manner with the best value. The model has been designed to help users to understand procedures, merits and demerits associated with ranked list of best valued procurement methods that can be used to procure IT for identified IT solutions and IT procurement requirements. The model is targeted at the senior management level, particularly those without much knowledge in IT procurement, but responsible for such. The model is effective in satisfying established objectives and requirements of construction organisations, eliminating deficiencies in IT procurement. The main benefit expected from IT procurement model is assurance of best value, cost savings and better performance in procurement process encouraging enhanced investments in IT.

KEYWORDS: Information Technology Procurement, Value Management, Construction Industry, Procurement Model, IT Solutions, Decision Support System