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Title : RELATIONSHIP BETWEEN REFURBISHMENT PROJECT COMPLEXITY AND ENERGY EFFICIENCY DESIGN PERFORMANCE THROUGH THE MEDIATING DESIGN TEAM ATTRIBUTES

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There is a rising concern about energy consumption in buildings and its possible adverse impacts on the environment. This situation has made the existing building owners and designers to integrate Energy Efficiency (EE) design features into their refurbishment projects. However, the complexities of the refurbishment projects and design team attributes have been argued to be the main factors that determine the EE design performance in the refurbishment projects. Therefore, the main aim of this research is to produce a framework of energy efficient design for refurbishment projects. The research objectives are (1) to identify the extent to which energy efficiency design performance measure incorporated in refurbishment projects, (2) to determine the complexity of refurbishment projects (3) to determine the design team attributes of refurbishment projects (4) to establish the extent to which design team attributes mediate the effects of project complexity on the energy efficiency design performance of refurbishment projects. The respondents for this research are Architects, Electrical Engineers, and Mechanical Engineers. The data collection started with a pilot research on twenty-three (23) respondents and followed by online final questionnaire survey that involved 510 respondents. The response rate of the online final questionnaire survey was 29.8 percent. Exploratory Factor Analysis (EFA) was conducted to validate and refine the data collected. The Statistical Package for Social Science (SPSS) and Relative Importance Index (RII)

analysis was used in the data analysis for both descriptive and inferential statistics. The overall relationships of the conceptual framework were analysed by using structural equation modeling (SEM) based on the PLS approach. The research found that refurbishment projects are generally moderately complex. The top three factors that caused the complexity are, 'matching of new material with the existing materials', 'the availability of energy efficient material databases' and 'integrating energy efficiency technology into the existing building'. The quality of the design team attributes and the energy efficiency design performance are also at moderate level. The findings also found that the design team attributes mediate the effect of refurbishment projects complexity on energy efficiency design performance. The research recommends the design team attributes, especially those related to Managerial Attributes should be improved in order to increase EE design performance of refurbishment projects.