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Examining Relationship between Project Management Success Factors and Sustainable Housing Criteria

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ABSTRACT

Housing is a critical issue that plays a vital role in sustainable development. Traditional project management practices have evolved and effective project management is becoming increasingly important for sustainable housing to remain competitive. Critical success factors of project management practices and sustainable housing criteria were established through review on existing research, and the relationship between project management success factors and housing sustainability criteria was explored. Self-reported questionnaire was administered to 73 (23%) out of 677 housing developers licensed by Ministry of Housing and Local Government of Malaysia. The data were analysed with Partial Least Square approach using Smart PLS 2.0. Findings show that authority of the project manager/leader, information/communication, planning stage, project mission/common goal and monitor performance and feedback significantly explained the variance in sustainable housing criteria.

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INTRODUCTION

A sustainable house is cost-efficient over time, comfortable, cheap to maintain and complements our unique environment. "Sustainable Housing" is a new concept in developing countries and unearthing projects covering all aspects of sustainability has proven to be difficult to achieve (Ebsen, 2000). For housing that make up a great proportion of building, sustainable housing could be defined as housing practices, that strive for integral quality (including economic, social, and environmental performance) in a broad way (John, 2005). From the ecological perspective, sustainable housing should be of good quality with long life span and adaptability which is the basis for eco-efficiency.

In Malaysia, there is increasing public awareness and interest in how constructions affect the environment, worker productivity and public health. As a result, both the public and private sector are beginning to demand housing as well as buildings that optimize energy use, promote resource efficiency, and improve indoor environmental quality. Strategies in housing mainly deal with affordability rather than sustainable inhabitation. Apart from being affordable, housing must be at the same time, environmentally friendly and energy-efficient, life-sustaining, safe and healthy. Thus, this paper examined the project management success factors towards sustainable housing development that will allow key players, especially housing developers to determine which critical success factors deserve the most attention.

Research Framework:

This paper focuses on the project management success factors that contribute in sustainable housing development. The various variables affecting the project success are identified followed by criteria of sustainable housing. It is expected that study of project management in the extent of project success could lead toward meeting criteria of sustainable housing. This approach in sustainable housing area will provide much needed information to local authorities to take more effective control of housing issues. A research framework was developed which incorporates the critical success factors of project management and the criterion of measuring sustainable housing (see Figure 1). To date, previous researches have focused on identifying and analyzing project management success factors and sustainable housing criteria as separate groups.

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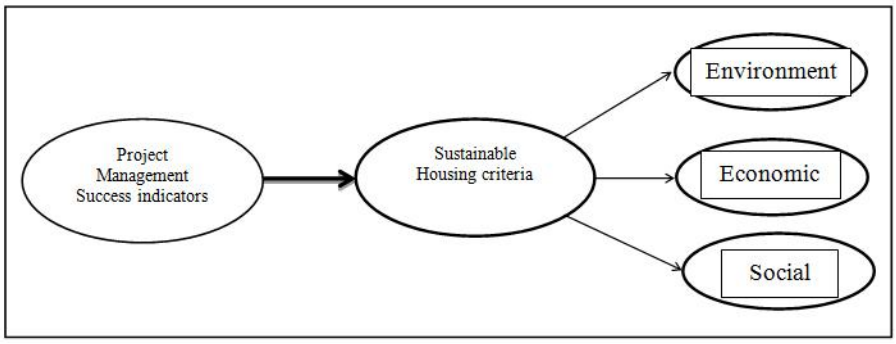

Fig. 1: Research Framework.

Methodology:

The research model developed in this study reflects a positivist notion as it attempts to validate, empirically a relationship among project management success factors and housing sustainability criteria through attributes formulated from the past literature. The main survey was limited to housing developers licensed with Ministry of Housing and Local Government. Through a simple random sampling method survey population was calculated at 318 out of 677 population, from which 73 (23 percent) useable responses were gathered through survey by conventional mail method and direct approach. A quantitative survey method is adopted. The research model is tested with Partial Least Square (PLS) path modelling using Smart PLS M2 Version 2.0.

Analysis:

PLS (Validity and Reliability):

Convergent validity measures the degree to which items on a scale are linked. A usual practice is a loading greater than 0.7 according to Chin (Chin, 2010). All items in this paper loaded on their constructs from 0.798 to 0.925 indicating value is above threshold value of 0.5 (Hulland, 1999), thus supporting item convergent reliability. In term of reliability, all alpha values (Composite Reliability) in this paper are above 0.8 as suggested by (Nunnally, 1994) and we can conclude that the measurements are reliable.

Structural Model:

This study obtained a GoF value of 0.64, exceeding the cut-off value of 0.36 for large effect size of R2 (Wetzels, 2009). GoF is used to determine the overall predictive power of the model by accounting for the performance of both measurement and structural parameters (Chin, 2010). The structural model gives information as to how well the theoretical model predicts the hypothesized paths (Halawi, 2008). Smart PLS provides the t-values for each construct in the model and the path coefficients (β). The figure 2 shows the cross-validated redundancy by Q^2 in the dependent constructs and the t-statistics for the model.

The t-statistic value at 4.036 with path co-efficient 0.209 show that the value is significant at $p<0.01$ (see Figure 2). The model quality or predictive quality gives the value of Q^2 as 0.03 for second order endogenous variable (sustainable housing criteria) and 0.64 for environmental sustainability, 0.49 for Economic Sustainability and 0.62 for social sustainability (figure 2), which is indicative of a predictive relevance of the model as the value is greater than zero (Chin, 2010) showing that prediction of observables or potential observables is of much greater relevance than the estimation of what are often artificial construct parameters (Geisser, 1975).

Conclusion:

The implementation of project management practices in sustainable housing is important in other to ensure successful project management. Apparently, the housing expansion is one of the major contributors to the development of any country. Unfortunately, the issue of sustainable housing development is still new. Thus, this research identifies success factors for project management practices in sustainable housing areas with a new area of managing sustainable housing for future direction. This study shows that the Authority of the Project Manager/Leader, Information/Communication, Planning Stage, Project Mission/Common Goal and Monitor Performance and Feedback have significant ($t = 4.036$), moderate to weak relationship ($R^2= .044$) with housing sustainability criteria with predictive relevance ($Q^2=0.03$) and an excellent global Goodness of fit value ($GoF=0.64$) .

As this is the initial step towards the development of a framework between project management best practices and housing sustainability criteria, further research is needed to explore in more detail which factors are important and to understand how the factors interact with each other to develop sustainable housing criteria in relation to project management success factors.

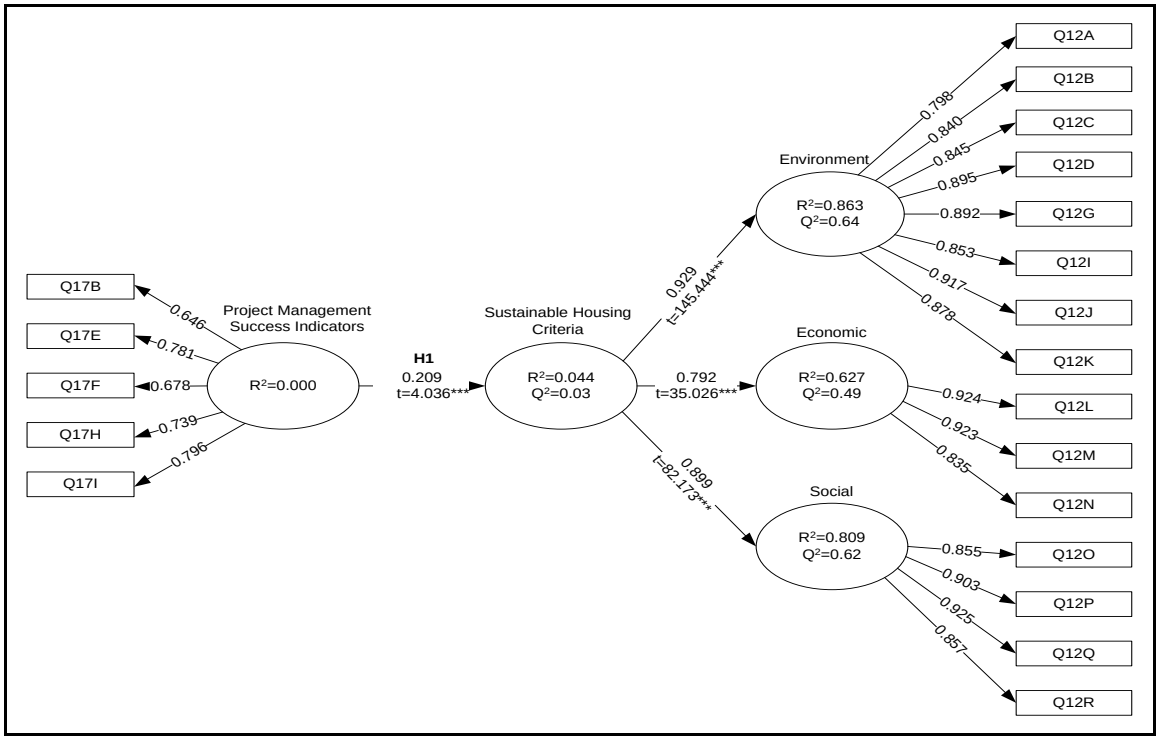

Fig. 2: Factor Loadings and R-square values, Path Coefficients, Model Quality and Hypotheses Testing.

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