

**UNIVERSITI TEKNOLOGI MARA**

**INTEGRATING SAFETY ELEMENTS  
INTO POST OCCUPANCY  
EVALUATION FOR LOW-COST  
HOUSING IN MALAYSIA**

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Thesis submitted in fulfillment  
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## **AUTHOR'S DECLARATION**

I declare that the work in this thesis 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 other 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

The general building conditions in low-cost housing act as an indicator of human quality of life. The enhanced aspects on quality will create a safe environment for the occupants. However, issues arisen have concerning the delivery performance in Malaysia's low-cost housing since the occupants are likely to perceive safety hazards. The safety issues and challenges during the occupancy period include structural instability and falling building fragments. Without defining the occupants' requirements in the early housing development, it is hard to determine the prevailing safety factors. To achieve a better safety provision during the occupancy period, this study used the Post Occupancy Evaluation (POE) approach that incorporates participation from the occupants. POE is used to examine specific performance issues in the building occupancy stage. It generally encompasses a comprehensive review of the building's current situation. The fundamental concept of POE stresses the importance of obtaining feedback from the building occupants. Therefore, the main aim of this research is to develop a Post Occupancy Evaluation (POE) framework that integrates safety elements for low-cost housing (LCH) in Malaysia to meet the occupants' satisfaction level of LCH. A building inspection survey and occupants' satisfaction survey was conducted to 24 low cost housing schemes, known as Program Perumahan Rakyat (PPR) housing schemes in Kuala Lumpur, Malaysia. The sample size for both surveys was 380 (380 for housing units; 380 for occupants). Statistical correlation was used to affirm the incorporation of occupants in respect of safety performance in the POE approach. The analysis used Spearman's rho correlation since the variables in both surveys consist of an ordinal scale. It was found that all attributes have a significant relationship and successfully support the research hypotheses. In other words, the user's satisfaction has a direct relationship with the overall safety performance of buildings in meeting the needs and expectations of the users. The results have generated an insight into the effectiveness of POE as a means of assessing safety performance. The development process of the framework utilized the vital phases of POE and inputs of safety elements, which were validated through the methodology phases in this research. There are three main phases in this framework: i) planning phase, ii) conducting phase and iii) applying phase, which are related to the concept of POE. The phases involved the safety category, safety elements and safety attributes that have been determined and developed through the preliminary survey, the semi-structured interviews and the main survey. The developed framework shows the steps undertaken for each phase and provides a description of the activities addressed in each step. The results from the validation interviews with the industry practitioners have allowed the usage of the proposed framework for improving safety performance to meet the satisfaction of the occupants. The proposed framework has fulfilled the vital phases of POE and integrates the safety elements with the satisfaction of occupants. The applicability of POE as the assessment tool has generated a new method to optimize housing safety performance during the occupancy stage. The proposed POE framework with integrated safety elements is able to provide a significant input to related government and housing agencies. It is also suggested that the framework is able to propose a modification and improvement concerning the safety performance and maintenance in low-cost housing during the period of occupancy.

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## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 INTRODUCTION**

Housing conditions constitute one of the most common quality of life indicators. The aspects in a completed residence or house should be able to enhance the quality of a building as well as to provide safety to the occupants. In the current economic situation, the emerging problem in housing property is the growing demand of residents for safer housing. Therefore, it has become increasingly important to evaluate housing properties for many reasons. First of all, the standard of housing has become increasingly unsatisfactory, and, secondly, evaluating housing provides the required information necessary for 'feed-back' into the current housing property and 'feed-forward' into future projects (Preiser et al., 1998). In relation to the terms of evaluation, the Universal Declaration of Human Rights (UDHR), as proclaimed by the General Assembly of the United Nations, mentioned as follows:

*"Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control."*

*(Universal Declaration of Human Rights (UDHR), Article 25(1))*

In Malaysia, section 4(4) of the Human Rights Commission of Malaysia Act 1999 (Act 597) specifically provides for the Human Rights Commission of Malaysia (SUHAKAM, 2003), in respect of the above provisions of the UDHR. The above statement supports that every human has the right to an acceptable standard of living including housing. As supported by Idrus & Ho (2008), residential and neighbourhood satisfaction constitute important indicators of housing quality and the conditions that affect the quality of life of individuals. The factors that determine their level of satisfaction are essential inputs for monitoring the success of housing policies.