

The 2nd International Building Control Conference 2011

Development of Hierarchy for Safety Elements and Its Attributes for Malaysia's Low Cost Housing

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Abstract

Since the First Malaysia Plan (1966–1970), there is an emergence development of low-cost housing construction in Malaysia that intentionally acts as an approach to resettle of squatters or illegal residential. In the current economic situation, there is a growing demand from residents for a better and safer housing. Evidence shows that safety is a major problem in low cost housing and it is apparent after the building is occupied by the residents. The evaluation of safety hazards, such as structural failures in a high-rise context and quality defunctional, were largely ignored during occupancy period. This paper provides a review of safety performance assessment tools that has been used for high-rise housing. Based on the review, this paper also suggests a development of hierarchy for safety elements and attributes for low cost housing. The attributes in the hierarchy are suggested to be used as parameters in safety performance evaluation, by integrating the occupants' opinion as the benchmark of the evaluation.

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Selection and/or peer-review under responsibility of Universiti Teknologi MARA Perak and Institution of Surveyors Malaysia (ISM)

Keywords: Low cost housing; Safety Assessment; Post Occupancy Evaluation; Safety Elements; Attributes

1. Introduction

Housing is a major concern for all people in every corner of the world as the wellbeing of a country is reflected in its people enjoying a certain standard of living. As stated by Idrus and Ho [1], residential and neighbourhood satisfaction is an important indicator of housing quality and condition, which affects individuals' quality of life. The aspects of safety in a completed residential 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

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situation, the emerging problem in residential property is the growing demand from residents for a better and safer housing. Therefore, it has become increasingly important to evaluate residential property for many reasons. First of all, housing has become the target of being highly unsatisfactory even though there is no empirical evidence to back these claims. Second, evaluating housing provides the required information necessary for ‘feed-back’ into current housing property and ‘feed-forward’ into future projects [2]. In relation to the safety aspects in the building performance, many cases have shown that most buildings fail to meet their objectives right from the moment they were declared complete. Housing developments are not only providing structures to live in, but are supposed to address other aspects of housing as well. While the previous efforts in housing have been directed towards meeting the quantitative shortage of dwellings, safety aspects of housing have gained importance in recent years.

A study conducted by Ahmad et al. [3] shows that generally safety is one of the four objectives to maintain a building’s sustainability in terms of ensuring health and safety of building users and occupants. Safety is therefore critically contributing to the high or poor performance achievement of a building. In low cost housing, most cost–benefit studies of low cost housing programs do not include social and indirect costs of construction transformations, which are the requirements needed by the occupants, including safety requirements. Abdul Rahman et al. [4] asserted that external customers are the people who actually buy the products or services. This implies that the occupants have the final say as to whether a certain product has fulfilled their needs or requirements as they are the end-users of the products and services. Feedback from these customers is important in determining the customer attributes to be incorporated into the design of a new product or upgrading the features of an existing product. According to Abdul Mohit et al. [5], there is a need to determine satisfaction with households’ housing conditions that be able to “indicate the absence of any complaints and a high degree of congruence between actual and desired situations”. Hence, the best application that can be related to these specific human needs is described as Post Occupancy Evaluation (POE). The concept of POE comprise the evaluation of the performance of buildings after being used and occupied in order to understand the mutual interaction process between buildings and the user needs. In POE, the end-users or the building occupants are used as the benchmark of building performance evaluation.

According to Zimring et al. [6], POE is a continuous process of systematically evaluating the performance and effectiveness of one or more aspects of buildings in relation to various issues such as accessibility, aesthetics, cost-effectiveness, functionality, productivity, safety and security, and sustainability. POE studies are performed on buildings for a variety of reasons such as; to solve problems that occur in buildings after being occupied; to correct unforeseen problems in building use [7]; to fine-tune the building through continued feedback; to assess specific building performance aspects; to document successes and failures in building performance to justify new construction or remodel existing buildings; to specify design guidelines for the improvement of existing facilities and the design of new ones.

2. Problem Statement

The attempt to enhance the aspect of safety planning in developing low cost houses are still neglected and one of the reason that may contribute to this factor is due to the low price of the houses. Despite the low price, it should be able to provide a safe, comfortable environment and satisfy user’s need. A study conducted by Lim and Sen [8] pertaining to safety issues to 355 groups of low-cost house occupants in Penang, Malaysia has concluded that safety is a major problem for low-cost housing project, whereby the occurrence of poor workmanship and quality creates unsafe environment in low cost housing.

Recently, there are several reported cases and safety failures of Malaysia’s low cost housing that harmed the residents’ or the occupants’ life. In the context of low cost housing construction in Malaysia,

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