A MODEL TO DETERMINE THE DEGREE OF HOUSING DAMAGE

FOR A FLOOD AFFECTED AREA IN KUALA KRAI, KELANTAN

RESEARCH MANAGEMENT INSTITUTE (RMI)
UNIVERSITI TEKNOLOGI MARA
40450 SHAH ALAM, SELANGOR
MALAYSIA

BY:

THURAIYA MOHD
MOHD NASURUDIN HASBULLAH
SITI FAIRUZ CHE PIN
TAJUL EDRUS NORDIN
DZULKARNAEN ISMAIL

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1. Letter of Report Submission

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Penolong Naib Canselor (Penyelidikan)
Institu Pengurusan Penyelidikan (RMI)
Universiti Teknologi MARA
40450 Shah Alam

Ybhg. Prof.

Per: **LAPORAN AKHIR PENYELIDIKAN "A MODEL TO DETERMINE THE DEGREE OF HOUSING DAMAGE FOR A FLOOD AFFECTED AREA IN KUALA KRAI, KELANTAN.**

Dengan hormatnya perkara di atas adalah dirujuk.

2. Bersama-sama ini disertakan dua (2) naskah laporan akhir penyelidikan beserta CD bertajuk di atas untuk perhatian dan tindakan RMI yang selanjutnya.

Sekian, terima kasih.

Yang benar

THURAIYA MOHAMAD
Ketua Projek

5.2 Enhanced Executive Summary

Flooding is a frequent hazard to life and property. Its severity has ranged from minor inconvenience to destruction of properties, businesses, livelihood and normal family life. In Malaysia, more than about 10% of the country is flood-prone. Floods can cause damage to homes and possessions as well as disruption to communications. Some houses were slightly damaged, significantly damaged, destroyed, inhabitable and require extensive repairs. Inherently, victims should be given temporary or permanent houses depending on the degree of damage to their houses. Therefore, an assessment on the levels of damage must be carried out in the aftermath of a flood as a direction for recovery effort for example housing resettlement. In fact, in Malaysia, there is still no standardized damage assessment used by the authorities or relevant agencies in assessing the degree of housing damage after a disaster. As a result, errors in assessing the degree of housing damage and providing inaccurate type of assistance might occur. Thus, this research seeks to perform a comprehensive assessment on the degree of housing damage and recommend significant input in developing the damage assessment framework in Malaysia. An empirical study was conducted along Sungai Krai encompassing Mukim Tualang as a case study area. Questionnaires survey forms have been distributed to 50 respondents consisting of engineers, architects, quantity surveyors, real estate valuers and building surveyors in order to gauge their perceptions on attributes of degrees of housing damage. Whereas, ten (10) technical expertise have been selected among the MERCY volunteers to validate the model. Besides that, an observation has been done on the 223 houses damaged by flood at the case study area. The findings indicate that the degree of damage can be classified as ‘minor’, ‘major’ and ‘destroyed’ and based on the observation on the 223 houses affected by the flood, the highest degree of damage shows ‘minor damage’. Research findings will give input in the form of a Housing Damage Assessment Framework for the government, NGOs, MERCY, insurers or other appropriate bodies involve in assessing or evaluating the condition of houses affected by floods.

5.3 Introduction

Increasing population has resulted in an increase in the number of property ownerships. Therefore, a greater percentage of the country's land area, often in areas that previously have been not fit for urban development and human settlement, have been taken up to cater for the need for accommodation (Eves, 2014). These increased numbers of properties, changes in water collection, flows and poor drainage system coupled with heavy monsoon rainfall, intense convection rainstorms and other local factors have caused seasonal floods in Malaysia (Chan, 1996; Eves, 2014). According to the Malaysian National Security Council [MNSC] (2015), flood is the most common type of disaster that occurs in Malaysia. Floods occur annually in Malaysia, causing damage to property and loss of life. The worst flood event in Malaysia was in December 2014 that rendered people helpless. The moving water had destructive powers that picked up and carried off bridges, houses, trees, and cars. The east coasts states of Kelantan, Terengganu and Pahang expose to annual recurrence of flood as these states are directly in the path of the seasonal monsoon season (Chan, 1996). The unprecedented flooding of December 2014 has been the worst flood event in the history of Kelantan.

Following such a disaster, there is often a tally of the preliminary damage assessment in respect to the injuries, loss of lives, cost of damage and destroyed properties. With these disasters attracting considerable media attention, people are more aware of the damage occurred at the affected areas. There have been a number of studies pertaining to preliminary damage assessment to buildings after the flood. There are many ways of damage assessment which have been carried out in different countries after the event of a natural disaster. There are several guidelines for assessing the degree of building damage prepared by government agencies, researchers, local authorities and non-governmental organizations (NGO). For example, Attaullah Shah, Hamid Mumtaz Khan and Ehsan U. Qazi (2009) had outlined the evaluation of the buildings destroyed or damaged due to flooding in Pakistan. The evaluation of damage is made on mud houses that are the most common type of building structure in Pakistan. In the USA, Federal Emergency Management Agency [FEMA] has developed an operations manual to standardize the procedures in preliminary damage assessment nationwide. There are several state authorities in the USA, like New