

## EFFECTIVE APPROACH FOR EMERGENCY EXIT ROUTE IN A BUILDING

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### ABSTRACT

Every country has their own standards and regulations for fire safety practise in a building. The purpose of fire safety standard and regulation is to prevent death during fire. In case of emergency, it also ensures building occupants able to evacuate from the building. Generally, despite the fact that we have guideline for the fire safety standards and regulations, people's awareness towards the route is still lacking. Hence, in the research of effective approach for emergency exit route in a building, the awareness of people needs to be clarified then the approach can be evaluated. This research use descriptive research design with quantitative dominant research, explanatory sequential mixed- method design with three instruments. The total of response rate from the total sample is 80%. Pilot study has conducted for 30 respondents before distribution to government-operation building. Based on the result, building occupants did aware of the emergency exit route in the building but they need more information regarding emergency route in the building. The contribution of this study is to give awareness of the emergency exit route approach in the building.

**Keywords:** Emergency Exit Route; Fire Safety; Awareness

### 1. INTRODUCTION

Death caused by fire and burns from fires and burns are the third leading home injuries even though every building is equipped with fire safety equipment such as sprinkler, fire hose reel, fire extinguisher, heat and smoke detector, alarm bell and break glass, as well as emergency lighting, yet it is still not enough to prevent fatalities and injuries in fire (International Association for the Study of Insurance Economics 2009)

Included in one of the essential accommodations in a building, emergency exit route will help the building's occupant to evacuate from the building in case of emergency which is mostly fire case. The importance of having emergency exit route is very critical as it is under regulation of Uniform Building by Law (UBBL) by means the emergency exit route should be provided in a building. Moreover, under standard law of Bomba Malaysia (Act 341) also stated that there are regulations regarding the safety element in a building that connected to the safety equipment which are:

"fire-fighting equipment or fire safety installation" means any equipment or installation for-

- a) Extinguishing, fighting, preventing, or limiting a fire;
- b) Giving warning of a fire;
- c) Providing access to any premises or place or any part thereof for the purpose of extinguishing, fighting, preventing, or limiting a fire;
- d) Providing emergency power supply in the event of normal power failure;
- e) Providing emergency lighting for purposes of escape from buildings;
- f) Giving direction towards an escape route or place of refuge; or
- g) Providing adequate, safe egress for the purpose of evacuation or
- h) Exit of occupants in the event of fire;

That means, these regulations are to provide a safe environment for the building's occupant in case of fire emergency. It is an important element that should be highlighted as it will influence the safety of human life and to prevent death in case of fire. The aim of this research is to produce alternative solution to approach building occupant towards emergency exit route in the building. In order to achieve the aim, an objective is developed which to determine building occupant's level of awareness for emergency exit route in a building.

### 3.0 PROBLEM STATEMENT

August 2016, Department of Fire and Rescue Malaysia reported a case of fire when 6 workers jumped from second floor of building to escape the fire. The action was taken because they were afraid for their life. All the victims experienced waist and leg injuries caused by free fall from the second floor. According to Subang Fire and Rescue Second Senior Officer, Hazinan Md Yusof, the victims were asleep in the premises when they realized the fire but they ignored the emergency stairs behind the building and decided to jump from the second floor window.

At Johor, Director of Malaysia Fire and Rescue Department Johor, Datuk Ab Ghani Daud stated that from 8,643 premises that were inspected, a total of 2,434 compounds were given under surveillance for the Section 8 Bomba Services Act (ACT 341) due to non-compliance to the law. The premises owners act were such a thoughtless and irresponsible since they put other's life in danger for the sake of their business operation.

From above statement, that building's occupants are lack of awareness of the emergency exit route in a building. Even though, the implementation of fire safety awareness has been reinforced by law but awareness among the occupant still a huge concern that need to be focused on.

#### 3.1 Research Objective

To determine building occupant's level of awareness for emergency exit route in a building

#### 3.2 Research Question

What is the level of awareness for occupant towards the plan?

### 4.0 RESEARCH METHODOLOGY

This study employs explanatory sequential mixed methods that gives opportunity to approach quantitative analysis as the main study and supported by the qualitative analysis. A set of 476 questionnaire related to the objective of this research have been created to collect data from the respondents which are the staff in the building. Selected buildings are buildings in Klang Valley, Malaysia. In this research the buildings will be referred as building A and building B. Both building are under government operation. This is to avoid bias while giving perspective during the analysis. By using the SPSS software version 24.0, a very high response rate was achieved of 95.7%. The researcher decided to use two types of instrument in order to collect data in this research. The instruments are questionnaire and interview.

### 5.0 DATA ANALYSIS & DISCUSSION

#### 5.1 Data Analysis

The questionnaires were distributed to both buildings at the same date and collected four weeks after the distribution date. From 234 questionnaire distributed to building A, 196 usable questionnaires were received meanwhile for building B, 209 out of 242 questionnaires were received back. Analysis of this research is conducted by Statistical Package for Social Sciences program (SPSS) for data analysis and generating essential result in order to achieve this research aim and objective.

**Table 5.1 (a) Descriptive Statistics of finding in Section A questionnaire**

Building	A		Building	B	
	N	Mean		N	Mean
Follow ERT instruction	196	3.46	Follow ERT instruction	209	3.50
Awareness of ERT	196	3.16	Awareness of ERT	209	3.22
Accident & risk consideration by ERT	196	3.16	Involve in fire drill	209	3.22
Understanding plan and emergency procedure	196	3.13	Accident & risk consideration by ERT	209	3.19
Implementation of ERT	196	3.01	Understanding plan and emergency procedure	209	3.13
Involve in fire drill	196	2.92	Implementation of ERT	09	3.01

In section A, the highest mean for both buildings are the awareness to follow Emergency Response Team (ERT) instruction as the occupant of the building trusts the team's skills on handling fire cases. Table 5.1 shows the lowest mean for building A is involvement in fire drill with a score of 2.92 as per stated the building A did not conduct any fire drill in the past two years to be experienced by the respondent. As for Building B, the lowest mean score for implementation of ERT with a mean of 3.01. ERT implementation should be practiced because they are the competent personnel to explain fire emergency procedures to the occupant due to safety issues in the building and to increase awareness. If the building does not perform any fire drill for its occupant, it does not help the occupant to picture the real situation of fire emergency. During the fire drill, standardize procedures that follow Standard Operating Procedure (SOP) of Emergency Response Team (ERT) is run to ensure the safety of the occupant and also the building.

**Table 5.1 (b) Descriptive Statistics of finding in Section B questionnaire**

Building	A		B	
	N	Mean	N	Mean
Occupant follow exact safety procedure	196	3.37	209	3.42
Awareness to use exact route for evacuation	196	3.36	209	3.35
Occupant secure of the emergency procedure in building	196	3.19	209	3.26
Awareness of received sufficient information for emergency route	196	2.66	209	2.72
Tendency to immediately move than following fire marshal instruction	196	2.32	209	2.36
Tendency to use alternative method for evacuation	196	1.77	209	1.61

For Section B, it evaluates awareness of the occupants towards emergency exit route that analyze their tendency of action and awareness towards emergency exit route. From Table 5.1 (b), it shows that the lowest mean scored to tendency of using alternative method for evacuation for both buildings. This shows positive level of awareness towards emergency exit route whereby the occupant may not want to take action by themselves due to lack of knowledge about the fire emergency. This action somehow lead to the highest mean that goes to the occupant will follow exact safety procedure in the building in case of any emergency case happen with the mean score of 3.37 for Building A and 3.42 for Building B.

Researcher discloses that lacking of knowledge in fire safety increases the awareness of the occupants to follow the exact safety procedure. Some of the occupants may never experience any fire drill or real fire case before that makes them unsure of the right action to be taken during the emergency. This behaviour somehow is a good practice because it is safer to follow the instructions from the Emergency Response Team (ERT) rather than making self-decision during the emergency. The occupant knows that lack of knowledge and experience can bring harm to the occupant, people around them and also to the property. In the future, every company should provide fire safety training to their workers to improve their response level towards emergency case.

**Table 5.1 (c) Descriptive Statistics of finding in Section C questionnaire**

Building	A		Building	B	
	N	Mean		N	Mean
Occupant aware the location of assembly point	196	3.19	Occupant aware of all indicator used for emergency exit route in building	209	3.24
Occupant aware of all indicator used for emergency exit route in building	196	3.16	Occupant aware the location of assembly point	209	3.20
Awareness of emergency route signage visible & clearly indicated	196	3.06	Exit route in the building clear & not obstructed with anything	209	3.17
Exit route in the building clear & not obstructed with anything	196	3.06	Awareness of emergency route signage visible & clearly indicated	209	3.10
Sufficient exit route signage indicated	196	3.01	Sufficient exit route signage indicated	209	3.09
Emergency route layout plan visible & clearly indicated	196	2.98	Emergency route layout plan visible & clearly indicated	209	3.07

The scale: 1 (Strongly disagree) 2 (Disagree) 3 (Agree) 4 (Strongly agree)

Table 5.1 (c) shows the mean of awareness of the occupant towards way finding as a provided factor by researcher to effective emergency exit route in a building. The occupant in building A feels that the emergency route layout plan is not visible and clearly indicate as the mean level are at the lowest level.

In Malaysia, there are numbers of law that related to fire safety that has been established and used as standard requirements for all buildings in Malaysia. According to Department of Occupational Safety and Health (DOSH) official website, Uniform Building By-Laws (UBBL) 1984, Occupational Safety and Health (OSHA) 1994 and Fire Service Act 1988 are one of the previous law that enforced fire safety. All the buildings built by the developer must comply with this act in order for the building to be awarded with Certificate of Completion and Compliance (CCC). From the questionnaire result (Section C) shown that the emergency layout plan is visible and clearly indicated had scored the lowest mean point. This can be assumed that the plan may be placed at non-strategic location. Researcher also has a point of view whereby that the occupant of the building does not know the meaning of the plan that management try indicates. Even though the plan usually comes with legend of the symbol but mostly the occupant does not understand the real meaning of each of it. This may lead to misinterpreting data information that may bring harm to the occupant.

## 6.0 CONCLUSION

Based on the research question 'what is the level of awareness for occupant towards the plan?' that derived the research objective which is to determine building occupant's level of awareness for emergency exit route in a building, it can be stated that the occupant really aware about the exit route in both building A and building B. It then gave clear and positive views to researcher that the occupant notices the implementation of the emergency exit route in both building too. Through the interview, a positive feedback of ERP towards occupant from both respondent of the building A and building B was given.

According to Zahari, et. al. (2014) fire drill is one of the steps to mitigate the risk of fire emergency in a building especially in high-rise building. The training demonstrates method of evacuation for occupant from the building ensuring all of the occupant aware their own role and responsibilities during the emergency of fire, During the fire drill, the occupant will be exposed to the fire risk and what should be taken into consideration to save lives. As an occupant of a building, preparedness with basic knowledge is important to confront the fire emergency even though not appointed as one of the ERT members. This is to make sure the safety for people surrounding know the evacuation plan. However, instruction from professional personnel in evacuation is the best action. This is because they know best practice on how to handle the fire emergency procedure in terms of evacuation of occupants and the protocol related to the building.

As a conclusion, the objective of this study had been achieved and indirectly impact was given to the building awareness towards emergency exit route in a building. A new perspective for effective approach for emergency exit route in a building that need cooperation from building occupants, management and owner as their power and responsibility towards the issue is crucial also has been discovered throughout the study. This study conducted not only helps in building awareness but also in researcher view on the awareness for emergency exit route approach in a building.

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