

A Study on Problems Arises in Practicing Fire Drill in High Rise Building in Kuala Lumpur

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Abstract. Fire drill is one of the steps taken to mitigate the risk trapped in a building during outbreak of fire. Hence, it is very important for every building to practice fire drill, especially high-rise building. Referring to Fire and Rescue Department of Malaysia (BOMBA), high-rise building had a higher risk compared to other type of buildings. However, there might be problems arise to practice fire drill especially in high-rise building. This research intends to study on fire drill procedure and identify any possible common problems arises when practicing fire drill in high-rise building in Kuala Lumpur. Information was gained through regulations and guidelines associated with fire drill procedure and also parties involved in the practice. Besides, a survey is done for awareness of occupants in high-rise building on fire drill practice. For the case study, three high-rise building are selected in Kuala Lumpur based on specific criteria. Analysis for this research comprises of comparative and descriptive approach as well as statistical analysis which are documented based on case studies and questionnaire survey. The findings indicates that there is no standardized procedure in fire drill, while the most common problems that can be seen in practicing fire drill are lack of commitment among occupants, lack of information on fire drill and output on weaknesses after fire drill been practiced.

1 Introduction

Fire is a hazardous and life threatening towards living things. Although it said that not all fire resulting in death but the effect came from outbreak of fire are rather alarming. It is further worsen, if fire occurred in the building which fully occupied by the human being. Hence, it will absolutely cause an enormous loss of property and in extreme cases the fire can lead to progressive building and structural collapse. Hence, fire drill is one of the steps that can mitigate the risk being trapped in a building during outbreak of fire. Fire drill is a method of practicing the evacuation of a building for a fire or other emergency. Generally, the fire drill serve as an opportunity for the occupant to demonstrate, under simulated fire conditions, that they can perform evacuation safely and ensure they are aware enough of that responsibilities. Body that is responsible and involved in doing and supervising fire drill is Fire and Rescue Department Malaysia (BOMBA) while regulations and guidelines associated in fire drill are Uniform Building By-Law (UBBL) 1984 [1], National Fire Protection Association (NFPA) Codes and Standards [2], Fire Services Act 1988 and Hazardous Material (HAZMAT) code and also Occupational Safety and Health (OSHA) 1994 [3].

2 Literature Review

In Oxford and Collin Dictionary, fire drill is defined as practice of emergency procedures to be used in case of fire and a rehearsal of duties or escape procedures to be followed in case of fire. High-rise building is defined in NFPA 101®, Life Safety Code, 2012 Edition as a building more than 75 feet or 23 meters in height, measured from the lowest level of fire department vehicle access to the floor of the highest occupiable story.

In addition, high-rise building usually consist of mix tenancy which cater for office premises, malls, retails, hotels and others. Indirectly, the population of occupant is enormous and might reach to several thousand at a time [4].

The risk of fire for high rise building is quite high rather than the landed buildings, the multiple floors of a high-rise building create a cumulative effect of requiring great numbers of person to travel great vertical distances on stairs in order to evacuate the building.

The risk of fire is commonly recognised as a serious threat to the life safety of occupants in the buildings. History has repetedly demonstrated how hazardous and catastrophic impact of fires can have on buildings and their occupants [5].

Basically, when arranging fire drill, the employers or the building manager set up the date with the nearest Fire Department to conduct a good fire drill. Once the date have been set up, the building manager or the building department will inform to the head of floor in each floor about the fire drill and it will be spread out through all the occupants in that premises.

Fire drills may be pre-announced to building staff or occupants, or they may be unannounced. As noted in Section 2.8 of the Fire Code, the chief fire official must be consulted on the development of fire drill procedures.

The procedures for conducting fire drills must be included in the fire safety plan. When developing the fire drill procedures, consider the following factors to ensure the fire drills are relevant:

- a) the building use and associated fire hazards;
- b) the safety features provided in the building;
- c) the desirable degree of participation of occupants other than supervisory staff;
- d) the number and degree of experience of participating supervisory staff
- e) the testing and operation of the emergency systems installed in buildings within the scope

The main objective of this research is to study the procedure of fire drill in any regulations in Malaysia. Second objective is to identify the most common problems that arise in practicing fire drill in high rise building in Kuala Lumpur. Third objective is to determine the awareness among building occupants towards the importance of fire drill and knowledge on the fire safety in their workplace.

3 Methodology

The research methodologies consist of a serial chronological process that requires a step-by-step approach; specifically designed in order to achieve the research objectives with the main concern of studying procedure of fire drill in any regulations in Malaysia, identifying common problems arise in practicing fire drill in high-rise building and awareness among building occupants towards the importance of fire drill and knowledge on the fire safety in their workplace.

The method of identification and examination is based on analyses of questionnaires, personal interview and observation through those three case studies. Appropriate methodologies are designed specifically to ensure achievement of objectives.

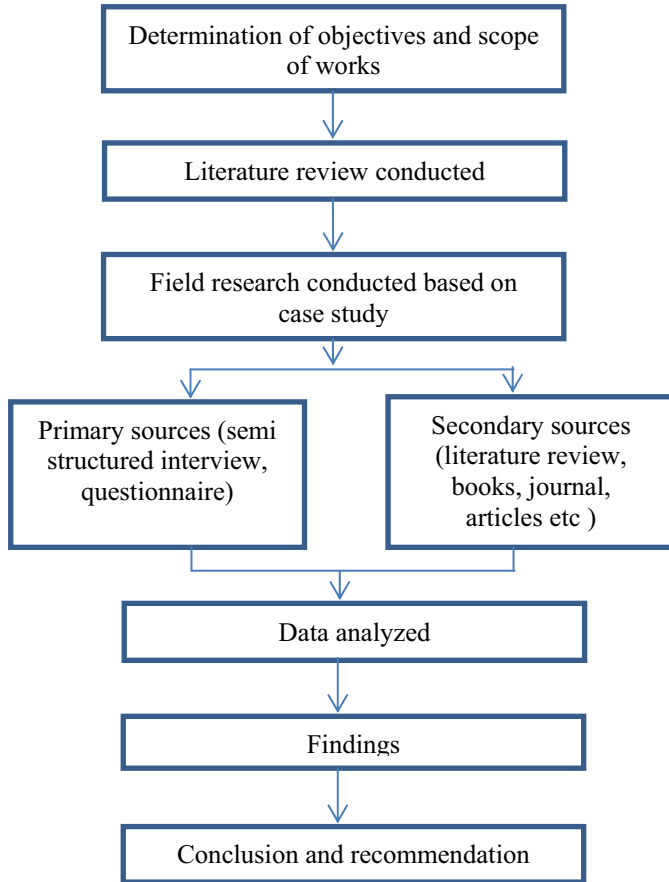


Figure 1: Research Methodology Flow

4 Case Study

4.1 Introduction

The case study was conducted in three locations which are TH Selborn Tower (Figure 2), PJD Tower (Figure 4) and Celcom Tower (Figure 5) where all three towers are located in Kuala Lumpur. Selection of building is based on average height between 20 to 30 floors. All three buildings practices fire drill conducted and supervised by nearby Fire and Rescue Department. Based on the criteria required, these buildings are suitable in order to be selected as the case studies.



Figure 2: TH Selborn Tower, Kuala Lumpur.

4.2 TH Selborn Tower, Kuala Lumpur

This building was completed in 2001 fully owned by the Lembaga Tabung Haji as one their office buildings in Malaysia. This building is located at 153, Jalan Tun Razak, Kuala Lumpur at the junction of Jalan Semarak and Jalan Tun Razak. Menara Selborn is a 31 storey building with 4 level of basement parking and 1 level of service floor and 26 floor of office space and also mezzanine floor. There are few tenants that rent in the TH Selborn such as Malaysian Airforce, Bank Simpanan Nasional, Perpustakaan Negara and other companies.

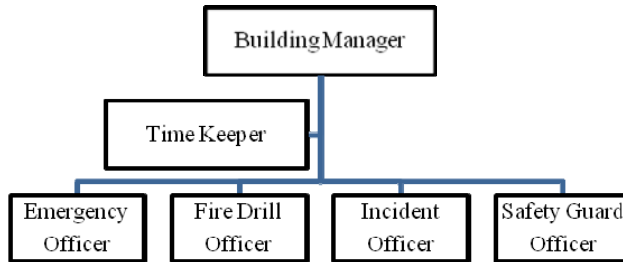


Figure 3: Emergency Response Team (ERT) Organization Chart in TH Selborn.

There are 6 basic roles that responsible in the aspect of prevention, fire control and rescue the occupants in the building before the arrival of Bomba. The Building Manager act as an Emergency Manager and Time Keeper is the one who keep the records and take down all the details of fire drill and emergency for future records saving. Lembaga Tabung Haji has its own Safety Officer that manages all of their buildings in order to protect and control in terms of safety among their staff and tenants. Property Management Department responsible in ensuring their buildings are in good conditions and safe to occupy. Fire drill has been practiced once a year in this building (Figure 3).

4.3 PJD Tower, Kuala Lumpur

With 28 storey high, this commercial and office tower consisting of 5 floors of commercial podium and 8 floors of car park located at Jalan Tun Razak, Kuala Lumpur was completed in year 2010. Near to the Titiwangsa LRT Putra and monorail. This building is owned by the PJ Developer Holdings Berhad and the anchor tenant for this building is JKR- Cawangan Kerja Bangunan Am. The management for this building is PJD itself. For mean of fire risk and hazard for this building, there is no specific organisation chart that control or manage the fire drill. The fire drill had been practiced once a year in this building.



Figure 4: PJD Tower, Kuala Lumpur.

4.4 Celcom Tower, Kuala Lumpur

This Celcom building is 22 stories high with basement parking, office space and commercial space where it has been Celcom Axiata Berhad Kuala Lumpur headquarters since 2002. This building was formerly known as Wisma Telekom Jalan Semarak and is next to Marina Tower (Menara 238) and opposite to the Wisma Perkeso. The fire drill has been practiced twice a year in this building with the supervision of Balai Bomba Hang Tuah and Balai Bomba Maharajalela. However, there is no specific organization or team act as ERT.

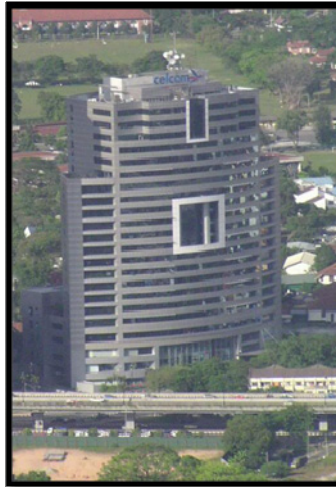


Figure 5: Celcom Tower, Kuala Lumpur

5 Finding Analysis

Analysis of this research is divided into three sections where each section achieving the objectives stated earlier. Critical analyses are done on the regulations, standards and codes that associated with fire drill while personal interview is done to find out the common problem when practicing fire drill and questionnaire is done to see the awareness level among building occupants.

5.1 Analysis on Regulations, Standards and Codes

There are a few fire regulations that implemented in Malaysia by the Bomba such as Uniform Building By-Law (UBBL) 1984, National Fire Protection Association (NFPA) codes and standards, Fire Services Act 1988, and also from Occupational Safety and Health (OSHA) 1994. Generally, these codes and standards are used as the reference regarding the fire for buildings. However, there are no standard procedure of fire drill stated in these regulations, standards and codes and this finding analysis is supported by three officers of Fire Department in Putrajaya, Kuala Lumpur and Ipoh. However, they provide the standard of operation prepared by them as below:

- i. The building owner or the building manager prepare an intent letter and send it out to Bomba for asking them to monitor or handle the fire drill
- ii. letter received. Bomba reply the letter of acceptance for joining and monitoring the fire drill.
- iii. then, building manager set up the date and time and all the details for the fire drill exercise. send again to the Bomba to inform them
- iv. Bomba received that letter and set up the date for the coming fire drill
- v. Before that day, Bomba having a simple briefing to the Emergency Response Team (ERT) and staff about the fire drill.
- vi. On that day, fire alarm rang in that premises. Gathered all the occupants in assembly point. Time keeper records all the details happened.

- vii. Each floor warden check up on their staff by head counting, then report to the responsible personnel.
- viii. Briefing by the Bomba personnel regarding the programs and demonstrated the emergency and rescue the victims and also the right way to use a firefighting aid such as fire extinguisher.
- ix. Post mortem meeting among the management team and Bomba regarding to the fire drill and the analysis as the report and reference in the future.

5.2 Analysis on Personal Interview

Semi structured interview is adopted in this research. The purpose of the interview is to get more information and achieving the second objective of this research. The semi structured interview only conducted to selected person from the Building Management Department of the case studies. The question in this interview was in open ended question.

Table 1: Analysis on the common problems of fire drill.

Question: What are the common problems arises in executing fire drill in this building?	
Respondent 1	<ol style="list-style-type: none"> 1. Lack of commitment among occupants. 2. The floor warden and ERT did not perform his/her role appropriately 3. Lack of information and output after the fire drill be given to the occupants
Respondent 2	<ol style="list-style-type: none"> 1. Poor planning by the management 2. Absence of occupants during fire drill exercise. 3. Lack of information and output after the fire drill be given to the occupants
Respondent 3	<ol style="list-style-type: none"> 1. Absence of 'Pelan Tindakan Kecemasan' by the management 2. Lack of commitment by the occupants. 3. Lack of information and output after the fire drill be given to the occupants

The respondents stated that the common problems are lack of commitment among occupants during fire drill, the floor warden and emergency response team (ERT) members did not execute their role properly due to insufficient information and training before the fire drill carried out. Then, the most common problems for the three surveyed site is lack of information and output after the fire drill or postmortem are not given to the occupants as they need to know what the weaknesses that need to be improve. Then, the poor planning by the management also been highlighted in the interview, as the respondent said, the management team did not properly plan the fire drill and what should be stress on that day to give an optimum information and awareness to the occupants.

5.3 Analysis on Questionnaire

The design of the questionnaire comprised with three (3) section which is part A, part B and part C. Part A focused on the demographic data. Parts B are questions in Likert-scale which is on knowledge of fire safety in workplace. Meanwhile Section C is about the awareness on the importance of fire drill.

Table 2: The awareness and knowledge on the fire safety at workplace.

Score	Frequency (person)	Percentage (%)
Strongly Disagree	4	0.9
Disagree	35	7.6
Not Sure	193	41.8
Agree	227	49.1
Strongly Agree	3	0.6
Total	462	100.0

Most of the respondents, 49.1 percent of them were agreed on this statement that they really know and aware of fire safety at their workplace. However, only 0.9 percent of respondents did not know

and aware of the issues given and 41.8 percent were not sure whether they agree or not towards the statement given. Based on the result above, majority of the respondents know and aware on the fire safety because of the proper installation, signage and information of fire safety being exposed to them as the occupants.

6 Implication of Research

This research intends to contribute to a significant practice of fire drill and increase the awareness of fire safety among building occupants. Besides, through findings of common problems found in practicing fire drill, this research hopes for all parties to be aware and solving the problems together. This study however only limited to the use of self-reported measures that may affect the responses by intentional distortions and misinformation.

7 Conclusion

Through this research, it is found that there is no standard procedure of fire drill even though there are regulations, standards and codes and this could lead to many different procedure among states or worst among Fire and Rescue Department. Moreover, every party should play their role in order to ensure a good practice of fire drill is implemented. However, awareness and knowledge of fire safety is at an average level which indicates that there must be a strategy to be implemented in order to increase the awareness and knowledge.

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