

PERSONNEL SELECTION CRITERIA FOR  
EMERGENCY RESPONSE TEAM BASED ON  
FIRE SAFETY AWARENESS FOR AN  
ORGANIZATION

MOHAMMAD FARHAN BIN NADZRI

Bachelor of Occupational Safety and Health  
(Hons)

UNIVERSITI MALAYSIA PAHANG

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ID Number : PA15007

Date :

PERSONNEL SELECTION CRITERIA FOR EMERGENCY RESPONSE TEAM  
BASED ON FIRE SAFETY AWARENESS FOR AN ORGANIZATION

MOHAMMAD FARHAN BIN NADZRI

Proposal submitted in fulfillment of the requirements  
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## **ABSTRACT**

Increasing number of fire accident in Malaysia leading a greater demand on Emergency Response Team (ERT). Improper selection for ERT personnel could risk a larger fire accident happen in the future. Thus, fire safety awareness should be a main concern to select ERT personnel in every organization. A study on personnel selection for ERT based on fire safety awareness involving ERT members in Universiti Malaysia Pahang (UMP) and Zaque's Hotel Sungai Petani, Kedah had been done by using questionnaire. A structured questionnaire was used to determine the level of understanding ERT on fire safety. This questionnaire were participated by 65 respondents which is 60 respondents from UMP and 5 respondents from Zaque's Hotel. It was found that the level of understanding ERT on fire safety in UMP are better than Zaque's Hotel. ERT members in UMP are also better than Zaque's hotel. In conclusion, there are four criteria that need to be complying by all ERT members in the organization.



## **ABSTRAK**

Peningkatan bilangan kemalangan kebakaran di Malaysia menyebabkan permintaan yang lebih tinggi terhadap Pasukan Tindakan Kecemasan (ERT). Cara pemilihan yang tidak betul bagi ahli ERT boleh membahayakan kemalangan kebakaran yang lebih besar berlaku pada masa akan datang. Oleh itu, kesedaran keselamatan kebakaran harus menjadi perhatian utama untuk memilih ahli ERT dalam setiap organisasi. Satu kajian mengenai pemilihan kakitangan ERT berdasarkan kesedaran keselamatan kebakaran yang melibatkan ahli ERT di Universiti Malaysia Pahang (UMP) dan Zaque's Hotel Sungai Petani, Kedah telah dijalankan dengan menggunakan soal kaji selidik. Soal kaji selidik berstruktur digunakan untuk menentukan tahap pemahaman ERT mengenai keselamatan kebakaran. Soal selidik ini disertai oleh 65 responden dimana seramai 60 responden terdiri daripada UMP dan 5 responden pula daripada Hotel Zaque's. Hasil daripada kajian, didapati bahawa tahap pemahaman ERT mengenai keselamatan kebakaran di UMP adalah lebih baik daripada Hotel Zaque's. Ahli ERT di UMP juga lebih baik daripada Zaque's Hotel. Sebagai kesimpulan, terdapat empat kriteria yang perlu dipatuhi oleh semua anggota ERT dalam organisasi.

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## LIST OF SYMBOLS

$X$  *Total Number of Correct Question*

## **LIST OF ABBREVIATIONS**

ADSS	Active Dynamic Signage System
BCP	Business Continuity Plan
ERP	Emergency Response Plan
ERT	Emergency Response Team
FEEP	Fire Emergency Evacuation Plan
FRD	Fire and Rescue Department
NFPA	National Fire Protection Association
RNRMU	Russian National Research Medical University
RRO	Regulatory Reform
SOP	Standard Operating Procedure
SPSS	Statistical Package for the Social Science
UMP	Universiti Malaysia Pahang

## CHAPTER 1

### INTRODUCTION

#### 1.1 Background Study

Emergency Response Team or known as ERT actually one group of people or member in organization that has responsibilities to prepare and also respond to any emergency incident happen at their places which can interrupt their business operations. ERT also consists of top-level management which their functions are as representative for their agency involving in any response activities. ERT also contribute as technical expertise and support the delivery of the emergency resources used to support local emergency operations (George D. Haddow, 2007).

Examples of emergency incidents that required ERT have been list by The American Red Cross Organization (2018) are chemical emergency, earthquake, fire, flood, heat wave, hurricane, land slide, thunderstorm, tornado, tsunami, terrorism, winter storm, water safety and power outage. This team also generally made by specific members that has been designated before any incident occur. Some of members also include group of willing volunteers.

Every change in the process of the training can assist to identify the improvements and weaknesses of the problems. It was suggested that the ERTs' attitude towards fire safety need to change for better. Next, behaviour of the participants on taking educational training also need to be change for ERT members act correctly in the future (Andrej Cebela, 2012).

Fire safety awareness among ERT members can be determining by verify their knowledge of escape routes in their building and their preparedness for fire emergency. ERT members also need to know the right action on before, during and after of fire incidents happen. Hostel in Universiti Malaysia Pahang (UMP) has been chosen to do

this study. All ERT members will be evaluate on their knowledge about emergency response plan based on fire safety perspective.

## 1.2 Problem Statement

Emergency Response Team is a main concern in producing emergency management operations (Azuddin Bahari et al.(2001)) . This is because every employer wants to make sure that fire, or any other incidents will not occur in the organization, but not all risks can be avoided because it can happen at any time.

To reduce the consequences of incidents, all organizations are advised to arrange in-house emergency response services which mean the organization need to build ERT that can eligible to create Standard Operating Procedure (SOP) for any accident and well prepared.

Hostel for educational also needs ERT members since the students are being exposed to fire accident is higher. Based on US Fire Administration, accidents related to fire in 2015 are being worried because hostel and residential places are same in terms of internal environment. Utusan Online 2015, Russian National Research Medical University (RNRMU), Moscow, has been involved in fire accidents at their hostel and 21 students from Malaysia are involved in the fire accidents. Fire rescue from Moscow reported that this can be avoid if the hostel have ERT members and guide all victims to safe place.

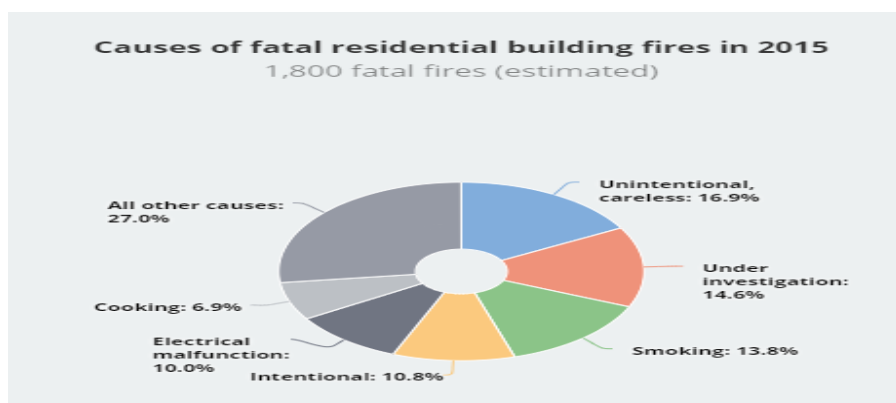


Figure 1.1: Statistic Cases Fatal Residential Building Fire (US Fire Administration,2015)

Meanwhile in Malaysia, Hostel Kolej Kemahiran Johor destroyed in fire on July 2018 and be reported Sinar Harian 2018. Fire rescue had reported that third floor of the hostel totally destroyed and there are two students need to have emergency help in the incident. Unfortunately, they have ERT members in the hostel, but their ERT do not know the right action need to be taken when fire happen. This has been proved that criteria of ERT members are important especially in fire incident. What exactly criteria have to be as ERT? This question has been asked to determine the right personnel of ERT in any organization.



Figure 1.2: Fire Accidents in Kolej Kemahiran Johor (Sinar Harian Online 2018)

On average, about 6000 premises are destroyed by fire every year, (New Straits Times, 2017). All of these 2400 are private houses and hostel. According to the Fire and Rescue Department (FRD)'S statistic between 120 and 150 people perish in fires annually.

The selection criteria for Emergency Response Team in fire safety are one of important to select ERT members. As the size of an incident grows, and as more resources are drawn into the event, the command of the situation may shift through several phases (John W. Jones, 1988).

What criteria need to be as ERT members? Volunteer or ad hoc team are enough to be in ERT members?

There is no previous study or research due to the fire safety awareness as part of personnel selection of ERT in an organization at Malaysia. Most of previous research and study focus on evaluating effectiveness of an improved active dynamic signage

system using full scale evacuation trials. There is also less awareness of fire safety among ERT members at organization.

Fire safety awareness is still lacking among adults and also ERT, too. Meanwhile, fire fighters are able to be at the scene of a fire within 10 minutes of a distress call only 45 per cent of the time. Therefore, every hostel must endeavour to become first responders (ERT). The safety of occupants depends on fire detection equipment, such as smoke detectors or fire alarm but ERT is main role on rescue. So, what are criteria need to have in every ERT members?

### **1.3 Research Objectives**

- a) To measure the level of understanding ERT on fire safety.
- b) To determine the selection criteria for Emergency Response Team personnel based on fire safety perspective.
- c) To assist the Human Resource department of an organization to select ERT.

### **1.4 Research Questions**

- a) What is the level of understanding and responsive action based on fire safety?
- b) How to determine the selection criteria for Emergency Response Team personnel based on fire safety perspective?
- c) How to assist the Human Resource department of an organization to select ERT?

### **1.5 Significance Study**

The study is conducted to measure the level of understanding Emergency Response Team based on fire safety. This study will help to increase the level of fire safety awareness in ERT members. This study will focus on ERT members in organization as experimental subject. By knowing the level of understanding Emergency Response Team based on fire safety, this study will come out with the best criteria for ERT members.

In this study also, it will gives benefit to organization in terms of findings the competence ERT members. The study will come out with the fire safety to be proposed is adequate in function as Emergency Response Team. As reported, emergency can

happen at any time generated by indoor sources in the any organization such as, flammable substances, walls, furniture, machine and electric item. By improving the ERT knowledge on fire safety, it can save lives, reduce permanent disability, provide medical services to the injured, and reduce the risk of disease and death due to illness or other health risks.

## **1.6 Scope of Study**

The study will focus on ERT members in an organization. All ERT members will be given questionnaire about fire safety which used to measure the level of understanding on fire safety. The questionnaire will have questions based on preparedness of fire emergency which is evacuation, education, rules and regulation on fire safety and also discipline of the occupants. The set of questionnaire have been divided into three part which is before, during and after of incident that need ERT need to do when incident happen. Based on three part, it will refer to two criteria as ERT members which is safety control and honesty and responsible.

## **1.7 Expected Results**

The expected result from this study is to know the level of understanding ERT based on fire safety after distribute questionnaire to respondents. In addition, this study will get the best selection criteria for ERT in fire safety. Result will obtain from analysing the questionnaire that has been distributes to sample.

The expected result of this study will ensure that fire safety to be prepared is adequate in function as ERT is lower based knowledge of fire safety. The result collected would also expect that all candidates that want to be in ERT in organization are not aware on fire safety awareness.

## 1.8 Conceptual Framework

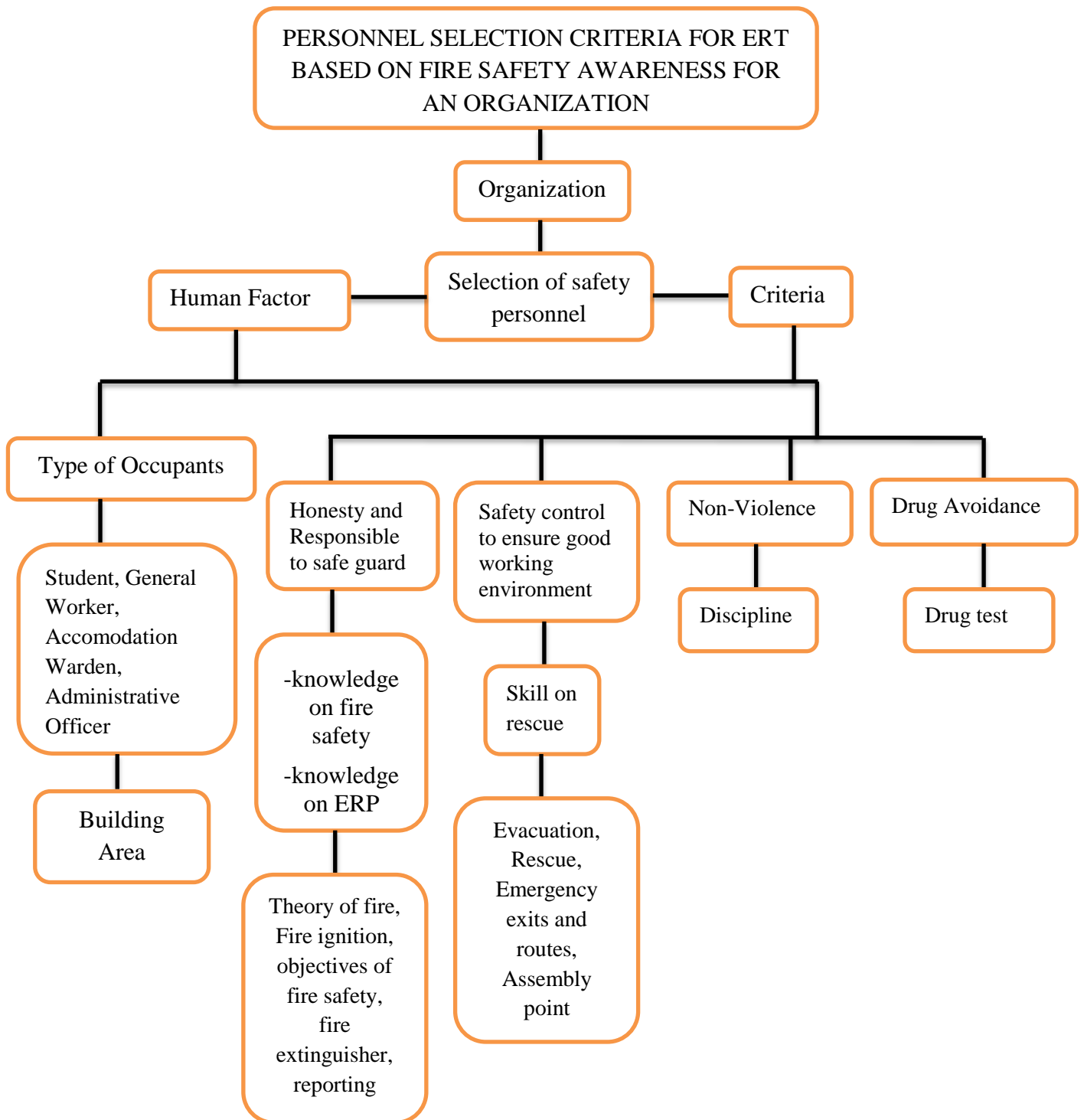


Figure 1.3: Conceptual Framework of Study



## 1.9 Operational Definition

Table 1.1: Operational Definition

	<b>Definition</b>
Fire Safety	The set of practices intended to reduce the destruction caused by fire.
Fire Alarm	Device that makes a noise, for example with a bell, to warn people when there is a fire. In addition, it act as signal to announce the outbreak of a fire, the activation of a smoke detector.
Emergency Response	The actions taken in the initial minutes of fire emergency.
Assembly Point	Designated place where people have been told to wait after evacuating a building in the event of a fire or other emergency for organization
Safety Signage	A signboard is a combination of shape, colour and symbol or pictogram made visible by adequate lighting and which may have supplementary text.
Emergency Evacuation	The urgent immediate egress or escape of people away from an area that contains an imminent threat, an on-going threat or a hazard to lives or property
Incident Response Team	Group of people who prepare for and respond to any emergency incident, such as a natural disaster or an interruption of business operations. Incident response teams are common in public service organizations as well as in organizations.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **Introduction**

This literature review is about fire safety awareness as part selection of ERT in an organization. Fire safety awareness are important for every organization in case of emergency happen, all the occupants in the building especially ERT need to use escape route to ensure their save their life, it also for prevention of lost property and injury. There have cases among workers negligence when the fire occurs in the factory they cannot out from the factory and being trapped. All workplaces must have planned to escape during emergency. To ensure that everyone can escape in the building during emergency, the escape route must keep clear every time. The entire occupant in the building can escape easily and quickly to a safe place without obstruction and dangers.

There are few criteria needed for candidate that really eligible to get the title as emergency response team or as safety officer. There are several emergency response procedures that need to be known as ERT operation steps which are step-by-step operation of the systems. Marcus Veytia, 2014 claims that “ERT needs to acknowledge and read the information on the annunciator and how to bypass a malfunctioning fire alarm initiating device such as how to reset the system and return it to normal based on Fire alarm system (FAS)”. Employee’s behaviour or selection is one of strategic electorates for an organization and it is key factors to bring innovation in organization (Kim, 2012).

## 2.1 Selection of Safety Personnel

Safety is important for every organizations, fire safety is one of the safety awareness that need to be taken care of. The personnel selection will help employers to systematically screen job applicants for positions as safety officer and also emergency response team for their organization. This selection also can help in determine high accident risk that can be identified and screened out during the planning the risk assessment. Workers can identify high risks for accidents due to individual differences in attitudes and personality when to evacuate from building if fire accident happen.

John W. Jones and Lisa J. Wuebker (1993) found that there are 4 scales that need to be considered by personnel selection which is honesty, non-violence, drug avoidance and safety-control.

**Honesty and responsible:** Worker that score lower on this scale mostly exhibit more rumination over theft activities, theft in projection towards others, theft in rationalization, and more inter-thief loyalty. Responsible to the job scope and honest while do the job.

**Non-violence:** as ERT or safety officer, forms of counter productivity and work applicants' tendencies toward job violent behaviour are the needs that we need to measures to choose as safety personnel.

**Drug avoidance:** do the assessment risk of drug-related industries towards worker who apply the job.

**Safety control:** make a checklist about safety requirement at the workplace especially about fire safety. Set of attitudes need to be measured to the applicants.

Knowledge sharing and problem saving also include in ERT personnel criteria which is most important in decision making, informing and coaching (Srivastava, Bartol, & Locke, 2006). This also has been discussed widely by Hon and Grunig's

(1999) study, which has been suggested four indicators of criteria for ERT are commitment, control mutuality, trust and satisfaction.

### **2.1.1 Type of Occupants**

In every organization, there is certain type of occupants in the workplace. For example of type of occupants are students, visitors, admin worker, general worker such as cleaner and maintenance team and also professional worker. Every type of occupants has their own role in the organization and also in emergency response plan.

## **2.2 Fire Awareness Tips**

Since the nature of fire and its consequence is vital which lead you to be aware of steps to extinguish and evacuate from the fire emergency. Every organization or workplace are following the legal which need to provide its staff with preparedness of fire emergency which contain details of escape route, assembly point, and any guidelines that helps worker what to do in the event of a fire. In Scottish Qualification Authority (2007) claimed that every employees has responsibility to know and remember with all information provided by employer or top management.

### **2.2.1 General List**

In 2013, Eurofire Protection states that there is a general list that every worker needs to follow when handling the fire emergency. Below are general list of advice that every worker needs to follow when discover fire at workplace:

1. Try to extinguish fire if you discover the fire in its early stages and be confident that you can extinguish it. However, always be aware that even it in its early stages, the fire can spread quickly and cannot be control.
2. Know the escape route and the path is not blocked.
3. Fire extinguisher only used to fight in early stages of fire.
4. If the fire cannot be extinguish easily, immediately go to nearest fire alarm and turn it on. Contact fire brigade immediately and evaluate the building

## **2.3 Education on Fire Safety**

There are many approaches to educate building occupants about fire safety especially about preparedness of fire emergency. By doing this, there are also many ways to approach them about education fire safety such as:

- a) Formal: school, college, university, and even new hire training at your place of employment.
- b) Non-formal: television, radio, magazine, social media

### **2.3.1 Building Life Cycle**

Building life cycle are created to refer the view of a building over the course of its entire life and also taking into account the design stage, constructional stage, operation, demolition and waste treatment. This view is very useful especially when attempt to improve an operational feature of a building.

1. Design Stage
2. Constructional Stage
3. Commissioning Stage (immediately, before and after occupation)
4. Fire Accidental Stage
5. Recovery Stage
6. Cost Effectiveness and Maintenance Stages
7. Continuation of Mission Stage

Next page show that table of building life cycle which also state the relationship between stages of fire development, building construction process and activities or action that need to be taken when fire emergency happen. This table are get from Mohd Fadzil Mohd Idris,1997 in research about the development of a fire safety evaluation for the educational establishment.

Table 2.1: Building Life Cycle (Mohd Fadzil Mohd Idris,1997)

Stages of Fire Development	Building Construction Process	Activities, Actions and Requirements
I	Design and approval	Assessment on Fire Safety,(Regulation & Act) Costing, Performances Maintainability Reliability Safety Plans & Supervision
II	Construction	Health and Safety on Site (workers and staff, visitors) Layout Plan Housekeeping and Material distribution on site Security and Monitoring on site
III	Commissioning	Introducing new system if possible Introduce Support System Occupancies Responsibilities Checking and Maintenance
IV	Accidental Coverage	Insurance for Recovery Life & Properties Structural Stability Performance Assessment Notify the Safety and Risk Factors Loss Estimation
V	Improvement Rebuilding or Maintenance or Alteration or Maintenance	Rechecking the Regulations, & Acts, Layout, Boundary Building Structural Building Materials Building Services Building Environment

### 2.3.2 Theory of Fire

Mohd Fadzil Mohd Idris,1997 in his research states that definition of fire are combination of combustible material, fuels, heat, oxygen, high temperature, flame and also chemical reaction between all of it. If one of it is taken away, it will stop the conflagration of fire.

**Fire Chemistry:** There are 3 components that needed to start the ignition of fire.

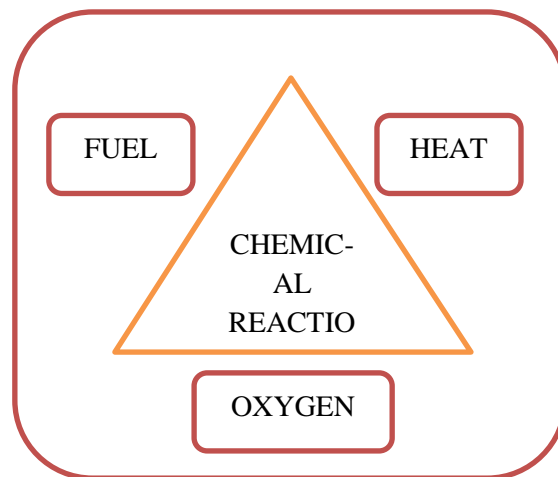


Figure 2.1: Chemical Reaction Between Three Main Components.

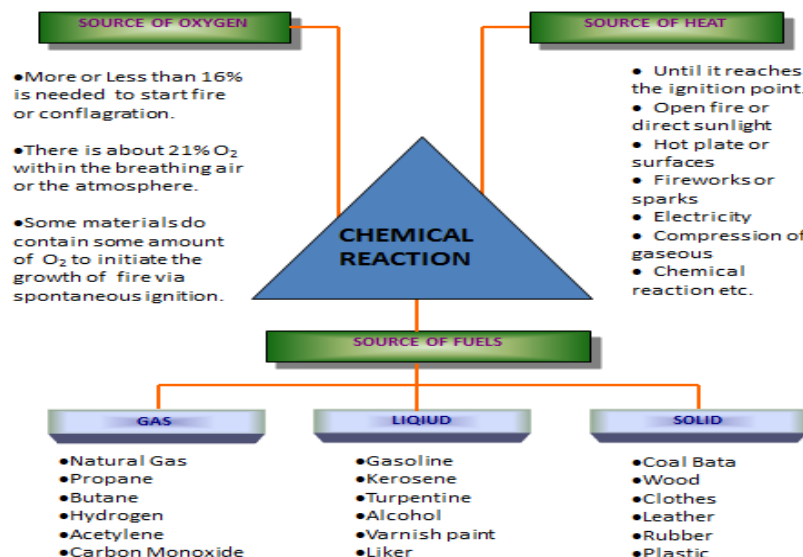


Figure 2.2: Chemical Reaction Between Three Components (Mohd Fadzil Mohd Idris,1997)

### **2.3.3 Source of Fire Ignition**

In 1997, Mohd Fadzil Mohd Idris stated that there are a lot of source of fire ignition such as:

- Electricity
- Smoking
- Incendiarism
- Overheated materials
- Hot surfaces
- Open flames
- Cutting and welding
- Friction
- Spontaneous ignition
- Mechanical and static sparks
- Chemical reactions
- Lightning

### **2.3.4 Objectives of Fire Safety**

Safety, Health and Wellbeing (2017) states that in study of fires safety, there are several objectives that need to be referred on fire safety such as:

- To ensure the life safety of people that involve with fire emergency;
- To prevent the fire and explosion occurred;
- To reduce the risk of damage property that may cause by fire



### 2.3.5 Classes of Fire

Based on Marsden Fire Safety (2017), Fire class is used to know the type of fire. This fire class are relates to materials which can lead to ignite of fire. Alphabets from A to F are being used to differentiate types of fire with different territories. This is the list of classes of fire using alphabet:

1. Class A - fires that involve solid materials.
2. Class B - fires that involve flammable liquids.
3. Class C - fires that involve gases.
4. Class D - fires that involve metals.
5. Class E - fires that involve live electrical apparatus.
6. Class F - fires that involve cooking oils.

### 2.3.6 Portable Fire Extinguishers

According to the National Fire Protection Association (NFPA), fire extinguisher can be used to diminish the fire. For apartment building and medical centres the presence of a fire extinguisher can provide incredible benefits. The mere presence of a fire extinguisher can have a significant impact towards diminishing the damage caused by a fire. Figure 2.3 show example of fire extinguisher.



Figure 2.3: Example of fire extinguisher (Fire Equipment Manufacturers Association, 2015)

Fire extinguisher are been used as an agent that will remove oxygen or help in stop chemical reaction so that fire can be extinguish. Agent will expelled out from the nozzle when handle of fire extinguisher being compressed.



Figure 2.4: Label on fire extinguisher (Fire Equipment Manufacturers Association, 2015)

Testing laboratory needed for all fire extinguishers to get approved by national recognized.

- Each type of fire hazard need to identify within the facilities and each type of fire hazard has their own proper type of fire extinguisher.
- Employees or occupants that will be to use fire extinguishers must be instructed by looking on:
  - Steps on fight the types of fire that may erupt
  - Properly operate the fire extinguishers available
  - Procedures to follow in alerting others to the fire emergency.
- Only approved fire extinguishers are permitted to be used in workplaces:
  - Inspected annually
  - Recharged after they have been used.

## 2.4 Preparedness on Fire Emergency

In “Business Continuity Plan” fire safety is the most important aspect that needs to be focus. A well plan of execute, out may prevent injuries and can save many lives. It requires review, training and testing the plan make. In Scottish Qualification Authority (2007) said that providing proper exits, fire fighting equipment, emergency plans, and employee training to prevent fire deaths and injuries in the workplace is the primary objective of a good Fire Prevention Plan.

Josephat Gachoka Kiongo (2012) said that in his thesis that disasters or fire can cause destruction, disturb people’s live by causing human suffer with communities which it difficult to cope. As a human, we cannot stop the fire or disaster happen, but

we have power and ability to minimize the impact of accident happen on our lives and also can adapt and survive in any situation.

#### **2.4.1 Evacuation**

A fire emergency evacuation plan (FEPP) is a plan that be written in form of document which includes the safety action that need to be taken by all staff or building occupants in the event of fire and also the steps for calling the fire fighter or fire brigade that have been state in Fire Safety Advice Centre 2011. It also can include all relevant information about evacuation plan and how to fight the fire in relation to the FEPP.

General Fire Notice is more focus on small premises. This is because, worker or building occupants can read the simple fire action posted and will become familiar with the contents. On the other hand, Staff Fire Notice is for high fire risks or in large premises. Since it is in large premises, it needs to take account more detail emergency evacuation plan especially on the risk assessment. Notice need to be gives in clear and full of instruction that need to be followed if fire event happen.

In the Fire Safety Advice Centre 2011, write that in Fire evacuation strategy need to consider the arrangement of evacuation of the premises in the form of risk assessment and other fire precaution. In larger complex premises, the arrangement of emergency are be designed to allow people that are not in the immediate risk from fire event happen to the evacuation started. It most important to start the evacuate by allowing the building occupants that are closest to the area of fire and gives warning sign to other people who near to them to be standby from any possibility happen.

It is normal that give priority to building occupants evacuate from the floor that fire happen first and then the occupants that be in floor above. Meanwhile, the other occupants from the other floor evacuate one by one to avoid any congestion on the escape route. The fire warning system need to be on differently by looking on the situation or its very capable to give voice message so that it will be more clear to other occupants. Figure 2.5 shows that example of fire evacuation plan.

By doing this Emergency Evacuation Plan need to be written that:

- show the safe emergency exit routes and assembly point;

- outline of the proper procedure of safe emergency evacuation;
  - accounting procedures for all employees and visitors in more detail;
  - gives training evacuation for employees; and
  - Identify the leader among employee(s) during a crisis.
- Large premises may require several fire wardens for each floor and a ‘Emergency Response Team’, that is been trained in prepare and respond to all types of emergencies or accident, not just fire emergency.
  - Procedures for employees that need help for physical may need to be taken in the plan.
  - Alarm system need to be in many type, for example voice communication or bells, or horns should be outlined in the plan and all employees or building occupants should be trained as to what each signal means.

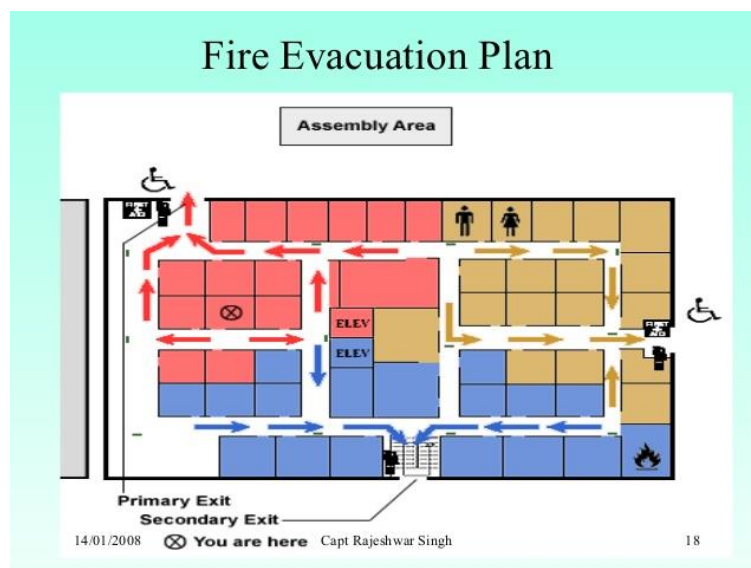


Figure 2.5: Example of Fire evacuation Plan (Jonathan Gehandler,2017)

## 2.4.2 Emergency Exits and Routes

Maina Kironji, 2015 state that if there occur fire in workplace, as a safety officer or emergency responses team need to make sure that everyone evacuate from work area as fast as possible. Emergency exit or route need to be seen very clear and easy to occupants to see while evacuate. There are checklists need to be checked either emergency exits or route are effective or not.

## **Emergency Exits**

- Permanent part of the building
- Path for route must be protected
- Must contain the way of access either of stairs, passageways, aisles and stairwells, ramps,
- Must have the ways of access that lead occupants from one area to another

## **Exit Routes**

- Clear from obstructions
- Object that explosive and highly flammable furnishings and other decorations Must be kept free from the route
- The path must wide enough for all occupants that trying to get out
- Put EXIT signs

### **2.4.3 Building Fire Exit**



Figure 2.6: Example of Exit Signage (Richie Earlywine, 2013)

Figure 2.6 shows that example of proper exit signage. Every organization or workplace need to provide signage (EXIT), so that all occupants know the escape route when emergency happen in their company. An emergency exit must be clear, this is because it a help guide to get out from the building in the safe way. Richie Earlywine, 2013 said that, this signage is very helpful because it provides fast path exit in case of emergency especially fire. The exit sign must be lit at all times and clearly visible to all occupants in the organization which is usually located above the doorway, with red or green lettering and marked by a white sign.

Every workplace requires at least two means of escape route or signage which is to be used in a fire emergency. Besides, escape route must not be blocked or locked which mean escape routes from buildings must be clear and free from obstructions and properly marked with signs designating exits from the building (Galea, E. R. 2014).

To ensure the workers can get to a safe place within shortest period of time without travelling excessive distance is the main purpose of supplying to the escape route in building. Maintaining awareness and cannot find the way is a complex layout of the structures. However, occupant in the building attempt to evacuate during emergency via same route that always use every day , bypassing or ignoring alternative to escape.(Galea, Xie, Deere, Cooney, & Filippidis, 2017).

All over the world, exit route from the building widely used emergency signage in the surrounding building that have many occupant to assist people to evacuate and give directional information to escape route from the emergency location. According to (Galea et al., 2017) previous tragedies have advertised the touchy need for upgrade current emergency signage. The emergency exit signage need to be clearly and attract attention to redirect occupant in emergency situation, identify the easy and safe not just exit route but the expansion conventional signage has driven the advance signage system.

#### **2.4.4 Places of Assembly and Roll Call**

The Regulatory Reform (Fire Safety) Order 2005 (RRO) state that “place of safety must be directly lead by emergency routes and exit” and that procedures must be taken in serious and must allow the person worried to “immediately go to place that be confirmed of safety and not be exposed to any danger”.

The RRO also defines that a place of safety as a “safe area beyond the premises”. This definition means that it is intended an area must be clear which no further escapes is can be made without re-enter the building until it announced as a place of safety. BS 9999 mention that on completion of evacuation, all building occupants or staffs should be instructed to report to a previously determined assembly point, which “should be more far from the premises to avoid interference with the fire

brigade or danger from falling debris”. Figure 2.7 are example of assembly point signage.



Figure 2.7: Example of Assembly Point Signage (Onorati, T., Malizia, A., Diaz, P., & Aedo, I. (2014))

There a checklist that personnel or safety officer or emergency response team should checked at a pre-determined assembly point.

1. Roll call of staff and arranged pre-determined assembly points. Person in charge of the assembly point must report about total person counted and the number of missing person to the person that nominated the fire service liaison.
2. The location that has been selected as assembly point must be fully understood about fire emergency evacuation plan. Always count the number of occupants or worker that gathered in assembly point. If there are many department in the assembly point, make sure to co-operate with other occupants.
3. It is very important to know the area of assembly point and the surrounding topography.
4. Always remembered that assembly point must be far enough from the building which is the staff or building occupants in danger of radiated heat and falling debris.
5. Person in charge in the assembly point must have high communication skill which is can communicate with fire liaison person. Fire liaison person must be located near to the main entrance.

6. Assembly point must be a larger area which it can accommodate all staff or building occupants. Figure 2.8 and Figure 2.9 example of assembly point.
7. Always use the appropriate signs where it can help many staff for evacuation.



Figure 2.8: Example of Assembly Point State (Onorati, T., Malizia, A., Diaz, P., & Aedo, I. (2014)



Figure 2.9: Example of Assembly Point State (Onorati, T., Malizia, A., Diaz, P., & Aedo, I. (2014)

#### **2.4.5 Fire Suppression Systems**

Fire suppression systems function as extinguish and prevent the spread of fire in a building. Fire suppression systems are being use a combination of dry chemicals and wet agents that helps to suppress equipment fires. Automatic Fire suppression systems must enhance fire safety in all the workplace.

There are that checklist information that need to be follow:



- Automatic sprinkler systems in the workplace are among the most well-grounded fire fighting.
- The system must be properly designed, installed, and maintained.
- Make a backup plan if the system out of service.

#### **2.4.6 Active Dynamic Signage Systems**

The Active Dynamic Signage System (ADSS) is a system that more effective to directing occupant away non-viable exits from negative information and positive information to the alternative exit route was also provided (Galea et al., 2017). The ADSS has been developed that intended to give direction occupant in the building away from exit route and lead the occupant to the safe exit such as assembly point are required. While using the ADSS, progressive improvement in the system performance such as signage design was state in the result (Galea et al., 2017). The ADSS can give the big impact to the occupant to escape route from emergency.

One of the ways to reduce number of victim during accident happen is to providing alert communication in emergency situation. This ontology can be representation response during emergency.(Onorati, Malizia, Diaz, & Aedo, 2014). Emergency notification systems give support to prepare the information and communicating sources.

### **2.5 Fire Prevention Plan**

“Fire Prevention Plan” is being written to complement the “Emergency Evacuation Plan”. Fire Prevention Plan also considered important because it may minimize the frequency of evacuation and fire accident happen. Besides, it can stop unwanted fire from occur and give the advice on how to handle the fire. Pereira, L. A., Burgarelli, D., Duczmal, L. H., & Cruz, F. R. B. (2017). Fire Prevention Plan may include:

- Procedures of housekeeping for storage and clean-up of flammable materials and waste.
- Procedures for controlling workplace ignition sources such as smoking, welding and burning, the proper maintenance and cleaning schedules for heat

producing equipment such as burners, heat exchangers, boilers, ovens, stoves, fryers and the safe storage of flammables;

- Employee training including:
  - the potential fire hazards of their job; and
  - The safety procedures to be followed.
- Develop “Employee Procedures” that include requirements to:
  - review the “Fire Prevention Plan” annually;
  - Attend training in the potential fire hazards of their job and the safety procedures to be followed.
  - Report any fire hazards to their manager.

## **2.6 Emergency Response Team**

It is a crucial step in every emergency response planning to form and assign people to be in ERT. If ERT members are not understand enough with their roles and responsibilities, it can cause missed some important response actions.

The role of ERT is guiding the emergency field operations (University Avenue Little Rock, 2016). ERT members will not manage the initial response on accident or respond to the scene of accident. These activities are being responsible by emergency responders at the scene of accident.

The ERT members are definitely responsible on managing and directing the activities of the all the departments in the organizations that will be involved when accident happen in emergency response and recovery. ERT members have role which is provide resources for every field operations when requested especially during initial stage of crisis. Meanwhile, the person in charge that first one see the accidents need to inform the ERT about the status report and provide the team with resources needed.

(Adedeji B. and Lee Ann, 2014) said that, to get successful plan, train and exercise in best practices, there are many ways that organization can follow. This matter have been observed and approved during incident response exercise and competition. Therefore, all organizations need to plan a sufficient that influence training and exercise program.

## 2.7 Management Emergency Response Team

It is important to manage ERT in every organization. The following the best approach based on practices that have been approved the effective for a hazardous materials response team. (Adedeji B. and Lee Ann, 2014) said that, there not inclusive and detailed enough to build a complete ERT but it helps by providing the framework.

Every ERT members in the organization at least must have this framework to make sure their ERT are being ready in any emergency.

1. Initial information gathering
  - Received initial call
  - Make a checklist to get as much information as possible
2. Organizing the team
  - Gather all staff in the office
  - Assigning team roles
3. Initial response team activation
  - Responsible on initial response team kit
  - Know location and direction to Incident Command Post
  - Make safe route
4. Equipment preparation
  - Make checklist for equipment
  - Check the equipment
5. Initial response team arrival
  - Report to Incident Commander
  - Get the detail of critical incident detail
6. Follow-on team entry
  - Report to chief of response team
  - Stage equipment and supplies
  - Get personal protective equipment
  - Get briefing situation and safety
  - Get entry objectives and task
  - Enter hot zone
  - Perform task
7. Follow-on team exit

- Decontamination
- Put out personal protective equipment
- Brief response team chief

#### 8. Reconstitution

- Repack all material to response vehicle
- Return material to storage location
- Plug batteries to recharge the equipment
- Order replacement supplies

#### 9. Reporting

- Complete the recovery plan
- Report within specified time
- Submit report to Emergency Coordinator

## **CHAPTER 3**

### **METHODOLOGY**

#### **3.1 Research Design**

This study will be conducted as a descriptive study. Descriptive study will be used as it takes little time to conduct, can assess many different variables at the same time and use survey for this study. This study is the easiest way to evaluate the effect of a naturally occurring event. Both of qualitative and quantitative approach for the data collection will be used in this study.

In this study, questionnaire for determine the level understanding and responsive action based on fire emergency scenario is being measured. The questionnaire will be distributed and the respondents need to answer it wisely based on what they are experienced. By using the questionnaire, we can detect the high or low level of fire safety awareness among the respondents. Data from the questionnaire will be transferred in the form of graphs, charts and tables.

### 3.2 Study Design

The flow of the study will be conducted as below

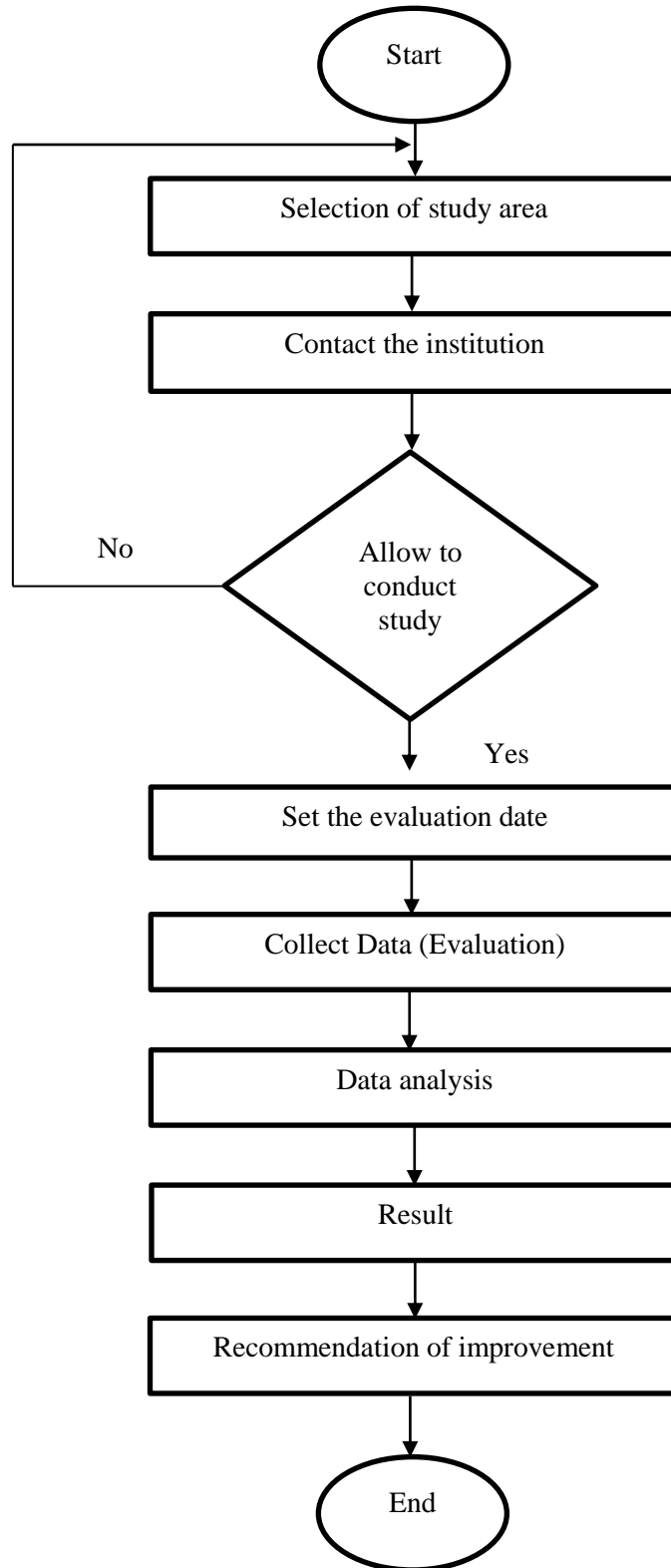


Figure 3.1: Study Design

Based on the Figure 3.1, selection of study area is the most important in this study. After have done with selection study area, contact the institution for approval to conduct study at his place. Next, set the evaluation date with the institution to collect data. Questionnaire will be given to the all respondents that in Emergency Response Team (ERT) in order to measure the level of understanding on fire safety and to determine the selection criteria for ERT in fire safety. After getting data, data collected need to be analyse to get the result. From the result, it can determine the recommendation of improvement.

### **3.3 Study Area**

This study conducted in Universiti Malaysia Pahang. Specifically, the focused area is at residential college which is hostel for students in UMP. So, there are three residential college has been selected to do this study which is Kolej Kediaman 1, Kolej Kediaman 3 and Kolej Kediaman 4. Zaque's Hotel, Sungai Petani Kedah also one of study area can refer to APPENDIX A. In Figure C, Figure D and Figure E.

### **3.4 Population of Study**

The respondents of this study are the occupants of the buildings which is Majlis Perwakilan Pelajar Kolej Kediaman for each residential college. They also students and staffs who in ERT members in their residential college. This study is focus more on the level of understanding based on fire emergency among ERT. So, there only a small group of people involve.

### **3.5 Sample Size**

Sample size for this study has been selected by followed method from Krejcie and Morgan, 1970. Table 3.1 show how to select sample size from population.

Sample Size Determination Table

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	60	52	120	92
15	14	65	56	130	97
20	19	70	59	140	103
25	24	75	63	150	108
30	28	80	66	160	113
35	32	85	70	170	118
40	36	90	73	180	123
45	40	95	76	190	127
50	44	100	80	200	132
55	48	110	86	210	136

Figure 3.2: Sample Size Determination Table (Krejcie and Morgan, 1970)

### 3.6 Data Collection Tools

The tools that will be used on this study named Questionnaire on Selection Criteria of Emergency Response Team (ERT) based on Fire Safety Perspective can refer to APPENDIX B. This questionnaire is designed by referring to doctor of philosophy study (Mohd Fadzil bin Mohd Idris, 1997).

The components for this questionnaire are followed on before, during and after action on emergency response plan. This questionnaire also will be divided into 2 criteria which is control safety and also honesty and responsible. These entire components will be evaluated by using random oral question to the occupants and observation to finish the check list.

### 3.7 Procedures for Data Analysis

The data that have been collected will be analysing using SPSS Software, each components of the check list will be calculated to the contribution values to get the score. The total score of the level understanding based on fire emergency among ERT will be analysing either the ERT members is under acceptable level of safety.

Based on the score of understanding and responsive action based on fire emergency scenario, we can recommend the improvement measure that may be taken by the organization by referring which part that scored less indicating and need improvement so that the criteria for ERT members are suitable for been selection.



### 3.8 Validity (Pilot Study)

The pilot study will be conducted at UMP Holding and Northport M Berhad. Some important improvement will be identify and noted so that the real evaluation process will be conducted smoothly.

### 3.9 Cronbach's Alpha ( $\alpha$ ) using SPSS

It is the common measure of internal consistency "reliability". It is used when there are multiple likely questions in survey or questionnaires that form a scale and determine to know either the scale is reliable. Figure 3.3 show the scale of reliability based on Cronbach's Alpha using SPSS.

<b>Cronbach's alpha</b>	<b>Internal consistency</b>
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

Figure 3.3: Rule of Thumb for Cronbach's Alpha Results (Statistic How To 2018)

### 3.10 Ethical Consideration

As educated student, there must be a proper way to conduct the study without any ethical issues. All the information that is used in the study will have permission from the founder, all important about the respondents also cannot being publish on public, proper permission will be held before entering the university or college.

## CHAPTER 4

### RESULTS AND DISCUSSION

#### 4.1 Introduction

This chapter is discussing about the findings from the assessment that have been conducted. Three Residential College at Universiti Malaysia Pahang have been chosen as a location of the study which is Kolej Kediaman 1, Kolej Kediaman 3 and Kolej Kediaman 4. The questionnaire on selection ERT Personnel have been used in order to complete the study.

The questionnaire that had been made was validated by industry people from Universiti Malaysia Pahang Holding and North Port Malaysia Berhad. Based on Table 4.1, it shows the reliability statistic from questionnaire. Cronbach's Alpha for the questionnaire is 0.72, by referring to Figure 3.3 from page 44 it means that 0.72 is acceptable and the questionnaire is valid to continue for data collection.

Cronbach's Alpha	N of items
0.72	26

Table 4.1: Reliability Statistics

## 4.2 Background of Respondents

Total number of respondent from three Residential College in UMP was 60. All 60 respondents were ERT members for their residential college. 31.7% of respondents were male and 68.3% were female respondents. Figure 4.1 show pie chart sex of respondents in three residential colleges.

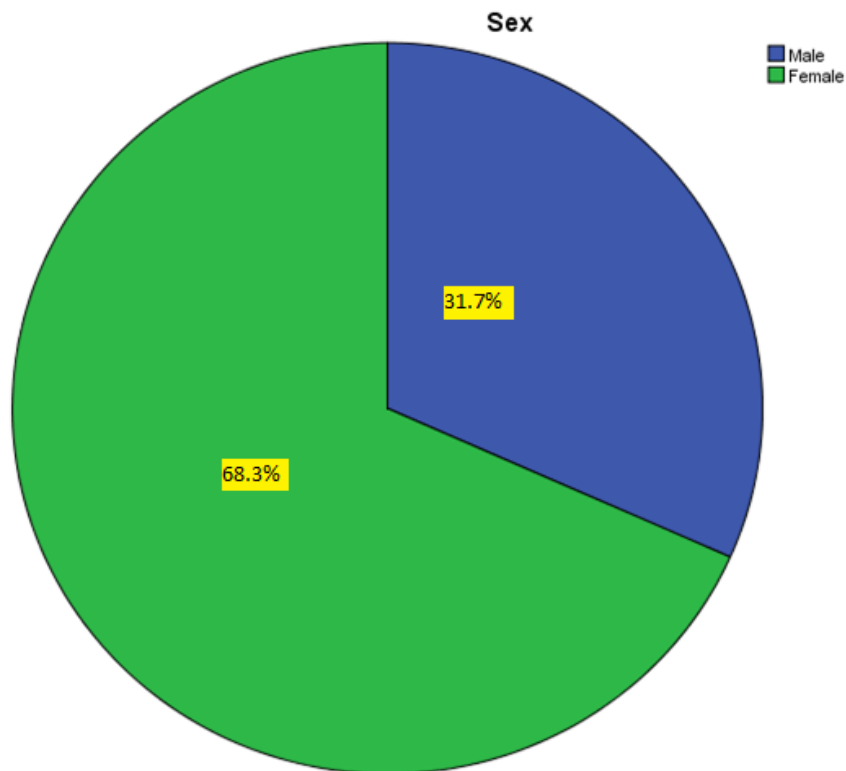


Figure 4.1: Sex of Respondents

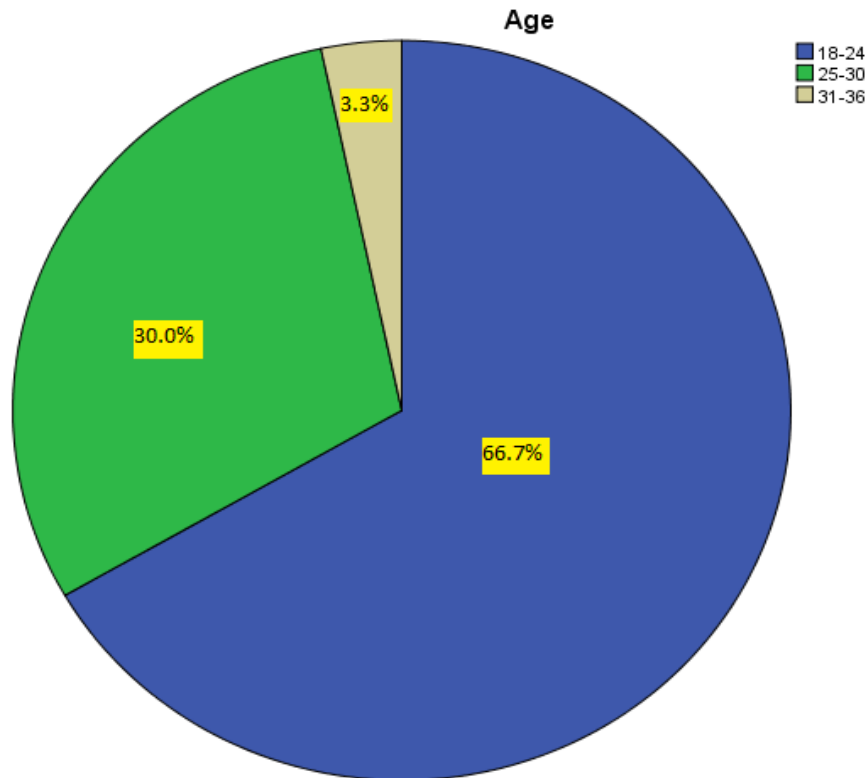


Figure 4.2: Age of Respondents

Age of every respondent is different and had been categorised to three parts which is age in range (18 to 24) years old, (25-30) years old and (31 to 36) years old as shown in Figure 4.2. There are 66.7% of respondents were age in range (18 to 24) years old. Next, 30.0% of respondents were age in range (25 to 30) years old. While, only 3.3% of respondents age range in (31 to 36) years old. This is because all respondents from residential college were different position in the organization.

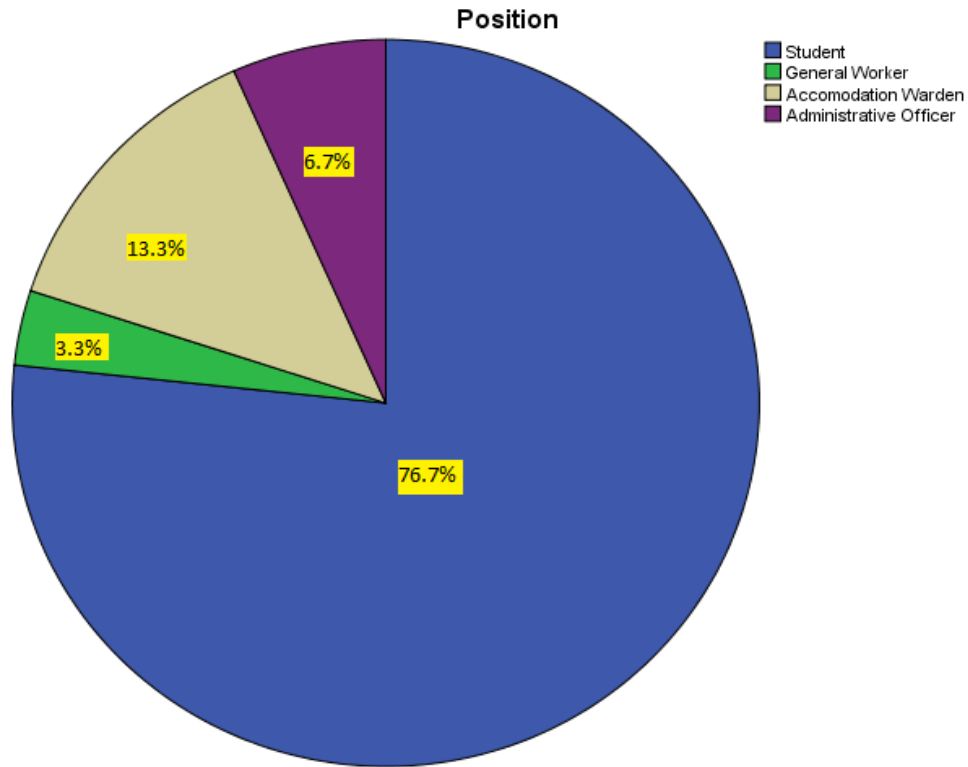


Figure 4.3: Position of Respondents in Organization

Figure 4.3 show position of respondents in the organization. From the result, all 60 respondents were from different position in their organization. Pie chart in Figure 4.2 shows that 76.7% are Students, 13.3% Accommodation Warden, 6.7% Administrative Officer and 3.3% of respondents were General Worker such as Maintenance, Technician and Cleaner from the organization.

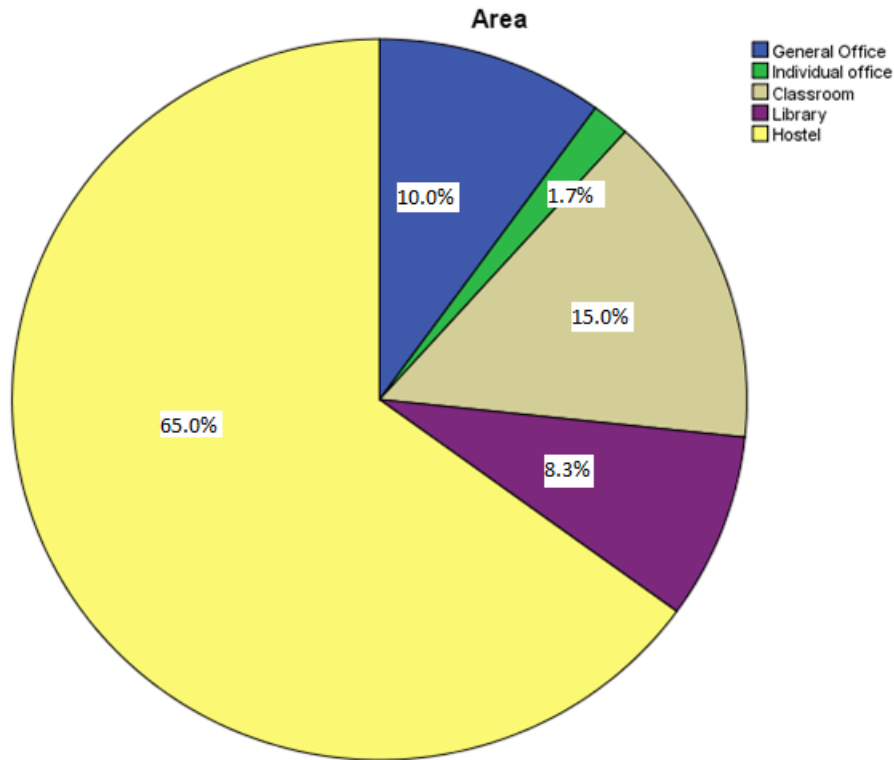


Figure 4.4: Most Time Area Spent in Organization

Figure 4.4 show that area the most time respondents spent in their organization. From the pie chart in Figure 4.4, 65% of respondents spent their time in Hostel and 15% in classroom in UMP. 10% spent their time in General Office, 8.3% in Library and only 1.7% of respondents spent their time in Individual Office. All respondents have different area spent time because they have different position in the organization that has been explained at Figure 4.3.



Figure 4.5: Respondents Undergone ERT Training

Figure 4.5 show pie chart of respondents that have undergone any ERT training. From the Figure 4.5, 95% of respondents have join the ERT training and only 5% of them that does not join any ERT training.

### 4.3 Criteria as ERT Members

In the questionnaire that had been provided for respondents, there is one question that had been asked about criteria that need to be in every personnel as ERT members. The question want to identify either respondent agree with the criteria listed or not. In the question, it has been stated that importance criteria for ERT members are:

- Honesty and responsible to safe guard.
- Safety control to ensure a good working environment.
- Non-violence (to avoid any mischief action)
- Drug avoidance to ensure all workers is healthy and behaviour by any workers.

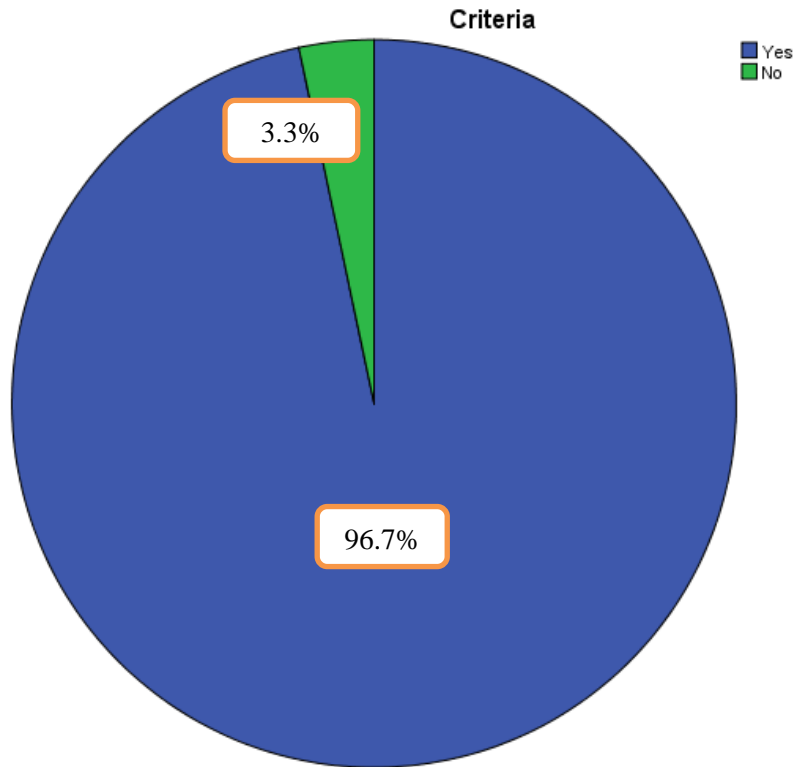


Figure 4.6: Respondents Reaction Based on 4 Criteria

As a result in Figure 4.6, there are 96.7% of respondents are agree that all 4 criteria that have been list is importance to be in ERT members. Only 3.3% are not agreeing with the list stated. This is because in their opinion, to be in ERT members, they do not need to do drug test before join the team. This reason had been show in Table 4.2, which is 3.3% are not agree in drug test as one of criteria to be in ERT members. This result had been collected from questionnaire, which 3.3% respondents thought drug test are not importance to be selected as ERT members. Therefore, ERT members need to comply all 4 criteria that have been listed in page 51.

Table 4.2: Drug Test before Join ERT

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	58	96.7	96.7	96.7
No	2	3.3	3.3	100.0
Total	60	100.0	100.0	



#### 4.4 Level of Understanding ERT on Fire Safety

Table 4.3: Result of Percentage Correct Answers

	Frequency	Percent	Valid Percent	Cumulative Percent
41%-50%	6	10.0	10.0	10.0
51%-60%	6	10.0	10.0	20.0
61%-70%	18	30.0	30.0	50.0
81%-90%	14	23.3	23.3	73.3
91%-100%	16	26.7	26.7	100.0
Total	60	100.0	100.0	

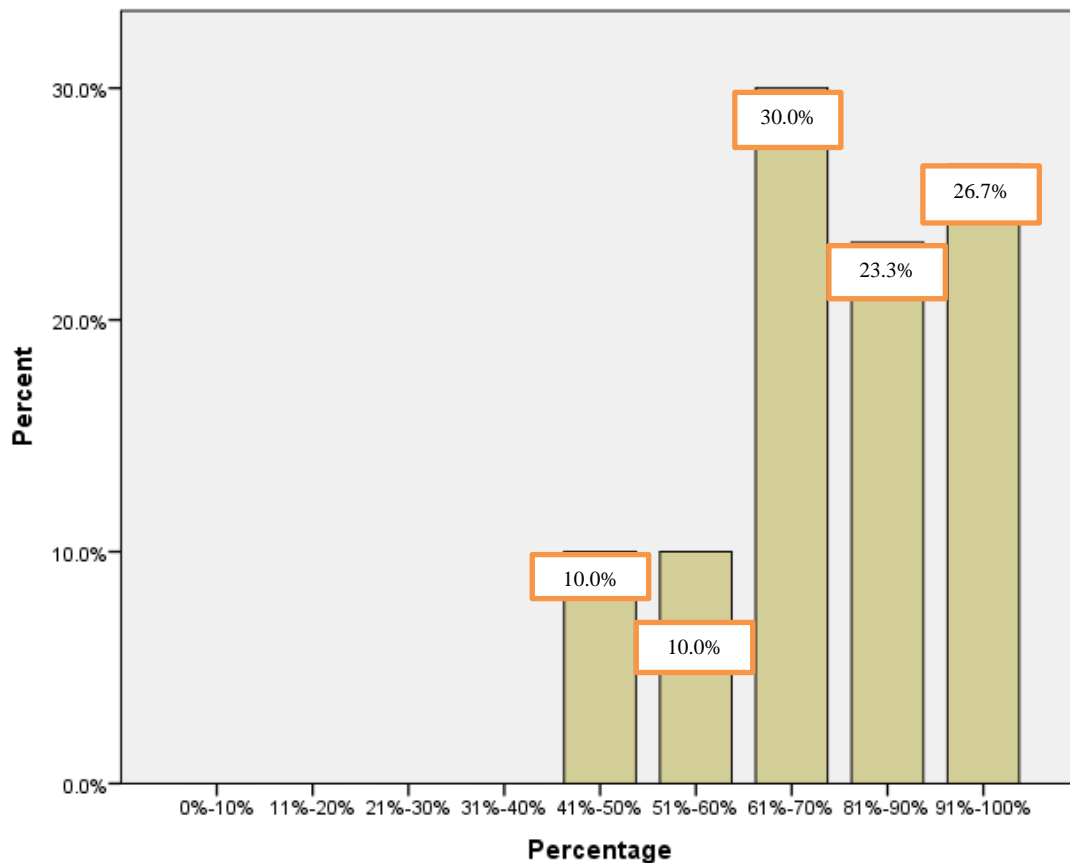


Figure 4.7: Percentage of Correct Question

The Table 4.3 and Figure 4.7 show that the percentages of correct questions that 60 respondents have been answering the question on knowledge ERT based on fire safety. All respondents have answering the questionnaire that have been prepared and been validate by staff from Universiti Malaysia Pahang Holding (UMPH) and from Northport (Malaysia) Bhd which is expert in ERP.

X-axis of the graph means that percentage of correct questions that sample size got from the questionnaire. While Y-axis means that percent of sample size. There are 23 questions on questionnaire that are been used to identify the knowledge of ERT based on fire safety.

Table 4.4: Determine Scale of Percentage

Percentage (%)	Scale
0-10	FAIL (Low)
11-20	FAIL (Low)
21-30	FAIL (Low)
31-40	FAIL (Low)
41-50	FAIL (Low)
51-60	FAIL (Low)
61-70	PASS (Medium)
71-80	PASS (Good)
81-90	PASS (Good)
91-100	PASS (Excellent)

Table 4.4 shows on how to determine scale by percentage of correct questions. All correct questions that had been asked were used to identify the knowledge of ERT based on fire safety are being calculated to get percentage of correct questions. Calculation for percentage of correct questions is total of correct questions ( $x$ ) divide by 23 and times by 100 to get percentage of correct questions. Equation 4.1 shows the equation on calculation of percentage of correct questions.

$$\frac{x}{23} \times 100 = Percentage \quad 4.1$$

Every ERT needs to get 61% and above to be select as ERT members, this has been confirmed by expert on ERP who have been validating the questions. From the Figure 4.7 we can see that 80% of respondents are worthy to be select as ERT

members. However, respondents that get 61%- 90% need to improve their knowledge on ERP to achieve 91%-100% so that they are competent to be in ERT. This improvement can be done by doing the attending class or talk on ERP, training on ERP and re-answer the questionnaire. This improvement had been suggested by respondents from questionnaire collected.

There are 20% of respondents who get 60% and below. All this respondents cannot be selected as ERT members since they fail on questions and are not familiar with ERP and also never attending training as ERT. They can be in ERT members when they achieve the result 61% and above. They can improve the result by attending class on ERP, training on ERP, simulation ERP and re-answer the question.

#### **4.5 Selection Criteria for ERT in Fire Safety**

In this part, 20 respondents from Universiti Malaysia Pahang and 5 respondents from Zaque's Hotel, Sungai Petani were chosen randomly for being analyse. By picking randomly of respondents, it can reduce result of human bias in the selection in the sample. By doing this method, it can provides sample with highly representative for population that being studied.

The selection criteria for ERT were determined by analysing the result from random respondents that has been chosen. There are 2 type of criteria that will be analyse which is safety control and also honesty and responsible toward their responsibility.

20 respondents for UMP that have been chosen has been name as A1, A2, A3, ... and A20. While, 5 respondents from the hotel were named as H1, H2, ... and H5. The table from the result has been divided to determine their knowledge based on the criteria by differentiate the colour of understanding. The colour, determined their understanding whether their get the answer right or wrong. Figure 4.8 show the color coding for selection criteria ERT.

	Right answer
	Wrong answer

Figure 4.8: Code colour for answers

#### 4.5.1 Result Selection Criteria for ERT in Part of Safety Control

In part of safety control, there are eleven questions that have been set in the questionnaire. There are number 2, 5, 7, 8, 9, 10, 12, 16, 17, 18 and 19. To be in ERT members, respondents need to get seven and above correct answers in this part. Table below shows result from Universiti Malaysia Pahang.

Table 4.5: Selection Criteria for ERT in Part of Safety Control

Marks	Respondents	Total Number Respondents
4	A9	1
5	A13	1
6	A7	1
7	A8, A16, A18	3
8	A3, A4, A6, A15, A17	5
9	A1, A5, A10, A11, A12, A19	6
10	A20	1
11	A2, A14	2

R	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20
2	Blue	Blue	Blue	Blue	Orange	Blue	Blue	Orange	Blue	Blue	Blue	Orange	Blue	Blue	Blue	Blue	Blue	Orange	Blue	Blue
5	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Orange	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
7	Blue	Blue	Blue	Orange	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Orange	Blue	Blue	Blue	Orange	Blue	Blue	Blue	Orange
8	Blue	Blue	Orange	Blue	Blue	Blue	Orange	Blue	Blue	Blue	Orange	Blue	Orange	Blue	Blue	Blue	Blue	Blue	Blue	Blue
9	Blue	Blue	Orange	Blue	Blue	Orange	Blue	Blue	Orange	Orange	Orange	Blue	Orange	Blue	Blue	Orange	Blue	Orange	Blue	Blue
10	Blue	Blue	Blue	Orange	Blue	Orange	Orange	Blue	Orange	Blue	Blue	Blue	Orange	Blue	Blue	Blue	Orange	Orange	Orange	Blue
12	Blue	Blue	Blue	Blue	Blue	Blue	Orange	Blue	Orange	Blue	Blue	Blue	Blue	Blue	Blue	Orange	Blue	Blue	Blue	Blue
16	Orange	Blue	Blue	Blue	Blue	Orange	Blue	Orange	Orange	Blue	Blue	Blue	Orange	Blue	Orange	Blue	Orange	Blue	Blue	Blue
17	Blue	Blue	Blue	Blue	Blue	Blue	Orange	Orange	Orange	Blue	Blue	Blue	Orange	Blue	Orange	Orange	Blue	Orange	Orange	Blue
18	Blue	Blue	Orange	Orange	Orange	Blue	Blue	Orange	Orange	Blue	Blue	Blue	Orange	Blue	Orange	Blue	Orange	Blue	Blue	Blue
19	Orange	Blue	Blue	Blue	Blue	Blue	Orange	Blue	Blue	Orange	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue

Table 4.6: Result of Correct and Wrong answer based on Safety Control Part (Universiti Malaysia Pahang)

From the Table 4.5, there are seventeen respondents that got correct answer from seven and above. This means that all this seventeen respondents are fulfil the criteria for part safety control. Three of them which are A8, A16 and A18 got seven correct answers. Five of them are A3, A4, A6, A15 and A17 got eight correct answers in the questionnaire. While, six of them got nine correct answers which is A1, A5, A10, A11, A12 and A19. Only one respondent only got ten correct answers which is A20. Only A2 and A14 are answers all questions correctly about knowledge on safety control of ERP based on fire safety perspective.

Meanwhile, there also have 3 respondents are not fulfil the criteria as ERT members. This is because 3 of them only got six and below of correct answers. To be in ERT all respondents required to get correct answer seven and above. A7, A9 and A13 needs to attend class that give knowledge and expose to them about ERP especially ERP based on fire safety. Besides attending class, all of them need to attend ERP training and give simulation based on fire emergency. After all of them have attended class and training, 3 of them need to retest the questionnaire to make sure that they have improving their knowledge on ERP.

Next, table below shows the result required from Zaque’s Hotel. There are five respondents that answer the questionnaire.

Table 4.7: Selection Criteria For ERT in Part of Safety Control (Zaque’s Hotel)

<b>Marks</b>	<b>Respondents</b>	<b>Total Number Respondents</b>
2	H4	1
3	H2, H3	2
4	H1, H5	2

R	H1	H2	H3	H4	H5
2	Orange	Orange	Orange	Orange	Blue
5	Blue	Blue	Orange	Orange	Blue
7	Blue	Orange	Orange	Orange	Orange
8	Blue	Blue	Blue	Orange	Blue
9	Orange	Orange	Blue	Orange	Orange
10	Orange	Blue	Blue	Orange	Orange
12	Orange	Orange	Orange	Blue	Orange
16	Blue	Orange	Orange	Orange	Blue
17	Orange	Orange	Orange	Orange	Orange
18	Orange	Orange	Orange	Orange	Orange
19	Orange	Orange	Orange	Blue	Orange

Table 4.8: Result of Correct and Wrong answer based on Safety Control Part (Zaque’s Hotel)

From the Table 4.8, there are no respondents from Zaque’s Hotel that got correct answer from seven and above. This means that all five respondents are not fulfil the criteria for part safety control. One respondent only get two marks out of eleven questions. H2 and H3 get three marks and finally H1 and H5 get four correct questions. After a short interview between the respondents, all of them do not know what is ERT since all of them just get hired to the job. Besides, they never had been exposed on fires safety and ERP before. Zaque’s Hotel is been launched on 22<sup>nd</sup> April 2018. Therefore, all the staff are new to the organization.

As a result, Zaque’s Hotel management needs to provide knowledge on fire safety class and training on ERP based on fire emergency for all staff.

#### 4.5.2 Result Selection Criteria for ERT in Part of Honesty and Responsible

In part of honesty and responsible, there are twelve questions that have been set in the questionnaire. There are 1, 3, 4, 6, 11, 13, 14, 15, 20, 21, 22 and 23. To be in ERT members, respondents need to get seven and above correct answers in this part.

Table 4.9: Selection Criteria For ERT in Part of Honesty and Responsible

<b>Marks</b>	<b>Respondents</b>	<b>Total Number Respondents</b>
6	A9, A11, A16	3
7	A6, A12	2
8	A10, A13, A15, A17, A19	5
9	A3, A4, A7, A14, A18	5
12	A1, A2, A5, A8, A20	5



R	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20
1																				
3																				
4																				
6																				
11																				
13																				
14																				
15																				
20																				
21																				
22																				
23																				

Table 4.10: Result of Correct and Wrong answer based on Honesty and Responsible Part( Universiti Malaysia Pahang)

From the Table 4.10, there are seventeen respondents that got correct answer from seven and above. This means that all this seventeen respondents are fulfil the criteria for honesty and responsible. Two of them which are A6 and A12 got seven correct answers. Five of them are A10, A13, A15, A17 and A19 got eight correct answers in the questionnaire. While, five of them got nine correct answers which is A3, A4, A7, A14 and A18. However, there are five respondents that got all correct answers which is A1, A2, A5, A8 and A20.

Meanwhile there also have 3 respondents are not fulfil the criteria as ERT members. This is because 3 of them only got six and below of correct answers. To be in ERT all respondents required to get correct answer seven and above. A9, A11 and A16 needs to attend class that give knowledge and expose to them about ERP especially ERP based on fire safety. Besides attending class, all of them need to attend ERP training and give simulation based on fire emergency. After all of them have attended class and training, 3 of them need to retest the questionnaire to make sure that they have improving their knowledge on ERP.

Next, table below shows the result required from Zaque’s Hotel. There are five respondents that answer the questionnaire.

Table 4.11: Selection Criteria For ERT in Part of Honesty and Responsible (Zaque’s Hotel)

<b>Marks</b>	<b>Respondents</b>	<b>Total Number Respondents</b>
1	H5	1
3	H4	1
4	H3	1
5	H2	1
6	H1	1

R	H1	H2	H3	H4	H5
1	Blue	Blue	Blue	Orange	Orange
3	Blue	Blue	Blue	Orange	Orange
4	Blue	Orange	Orange	Blue	Orange
5	Blue	Orange	Blue	Orange	Orange
11	Orange	Orange	Blue	Orange	Orange
13	Orange	Orange	Orange	Orange	Blue
14	Orange	Orange	Orange	Orange	Orange
15	Blue	Orange	Orange	Orange	Orange
20	Orange	Orange	Orange	Orange	Orange
21	Blue	Blue	Orange	Blue	Orange
22	Orange	Blue	Orange	Orange	Orange
23	Orange	Blue	Orange	Blue	Orange

Table 4.12: Result of Correct and Wrong answer based on Honesty and Responsible (Zaque’s Hotel)

From the Table 4.12, there are no respondents from Zaque’s Hotel that got correct answer from seven and above. This means that all five respondents are not fulfil the criteria for part honesty and responsible. One respondent only get one marks out of eleven questions. H4 get three marks, H3 get four marks, H2 get five marks and finally H1 get six correct questions. After a short interview between the respondents, all of them do not know what is ERT since all of them just get hired to the job. Besides, they never had been exposed on fires safety and ERP before. As a result, Zaque’s Hotel management needs to provide knowledge on fire safety class and training on ERP based on fire emergency for all staff in the organization

#### 4.6 Knowledge of ERT Based on Fire Safety

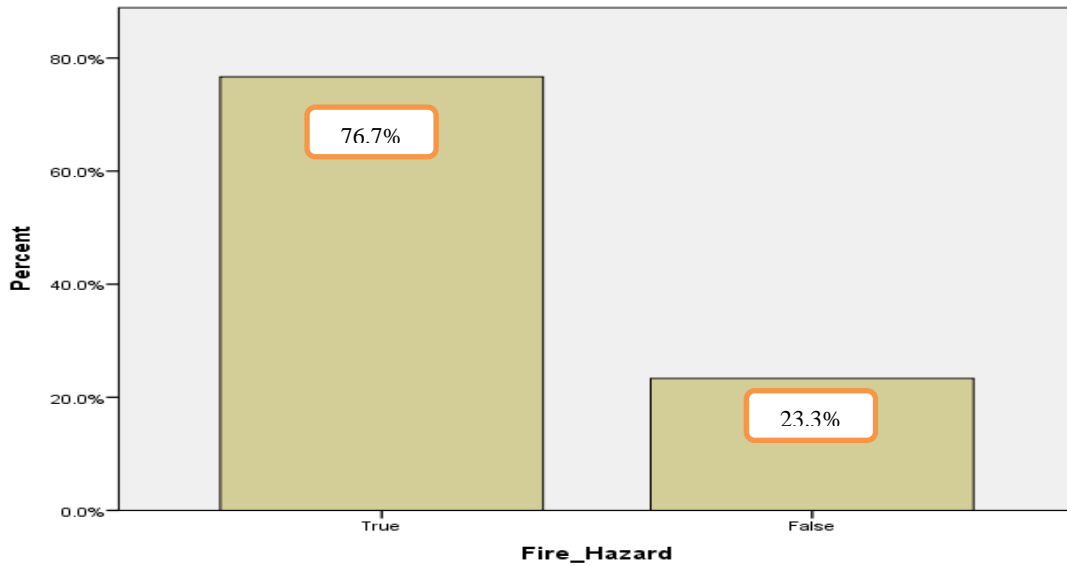


Figure 4.9: Knowledge of ERT Based on Fire Hazard

The Figure 4.9 shows that knowledge of respondents on fire hazard. This question is Question Number 1 and been asked about type of fire hazard. 76.7% of respondents have been answer correctly which is live flames, sparks and hot objects are type of fire hazard. While 23.3% respondents answer wrongly. This is because; the respondents that had answers wrongly do not know the type of fire hazard. Respondents also had never been exposed on fire safety. This matter can be improving by conducting the class on fire safety or make sure they attending training on fire safety. This suggestion on improving of knowledge ERT based on fire safety had been suggested by respondents itself on Question number 24 in part on improving quality ERT personnel criteria.

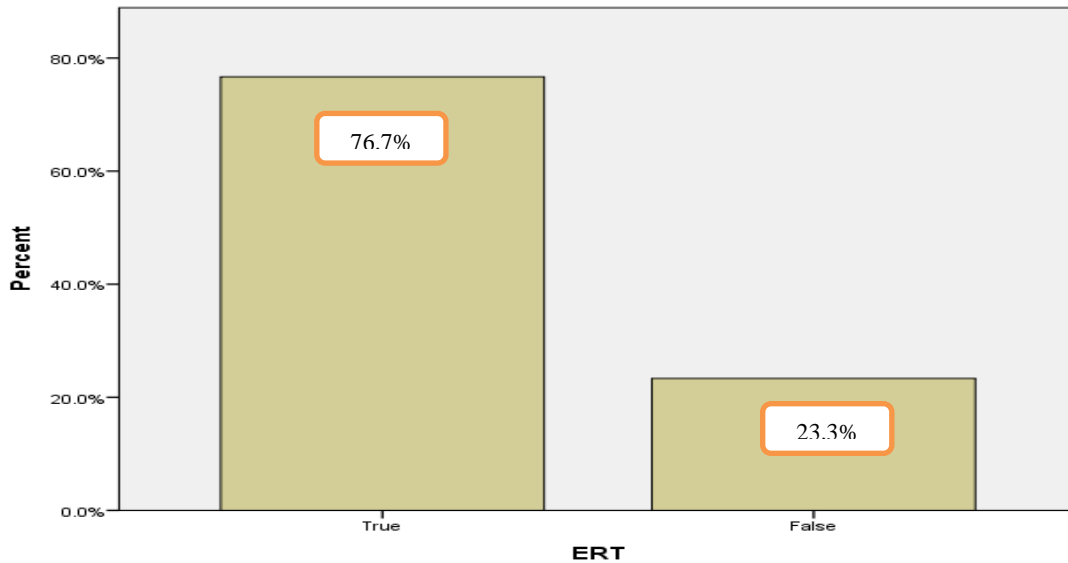


Figure 4.10: Knowledge of ERT Based on Importance of ERT

The Figure 4.10 shows that knowledge of respondents on importance of ERT members in organization. This question is Question Number 2 and been asked about importance of ERT members in organization. 76.7% of respondents have been answer correctly which is importance of ERT members in organization are:

1. Provide quick and effective assistance during emergency,
2. Notifying supervisory personnel or Incident Commander of the incident
3. Prevent fatalities and injuries.

While 23.3% of respondents answer wrongly which is ERT members are ineffective organizational structure as importance of ERT members in any organization. Respondents also have said that, ERT members actually are not effective structure in organization because ERT are not function since their organization have never experienced fire emergency. They never know importance of ERT members in organization since they have never been exposed on fire safety and ERT structure. This matter can be improving by prepare the class on fire safety or make sure they attending training on fire safety. This suggestion on improving of knowledge ERT based on fire safety had been suggested by respondents itself on Question number 24 in part on improving quality ERT personnel criteria.

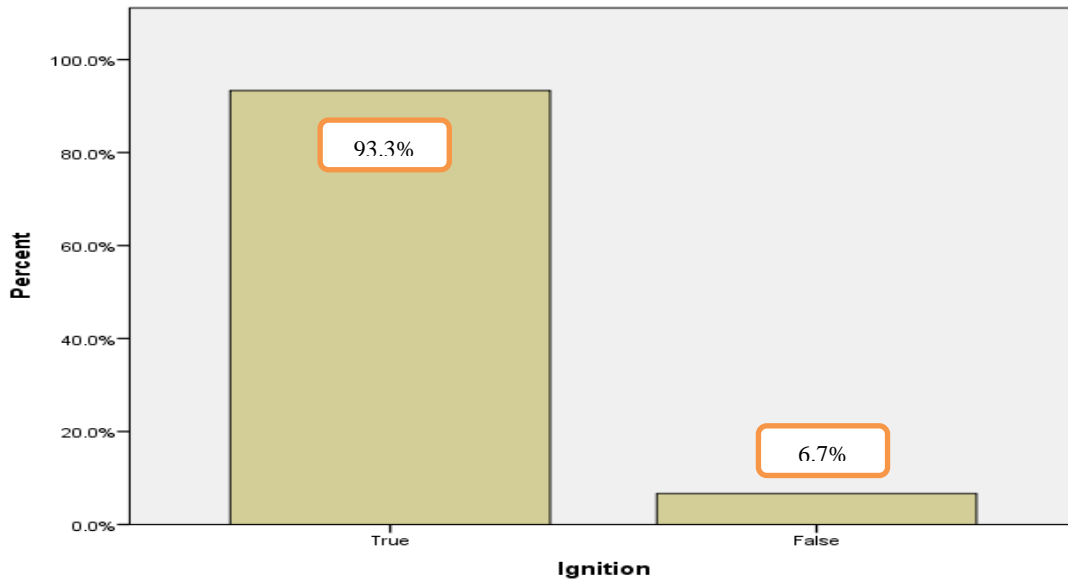


Figure 4.11: Knowledge of ERT Based on Ignition of Fire

The Figure 4.11 shows that knowledge of respondents on component that needed to start the ignition of fire. This question is Question Number 3 and are been asked about on component that needed to start the ignition of fire. 93.3% of respondents have been answer correctly which is fuel, oxygen and heat are components that needed to start the ignition of fire. While 6.7% of respondents answer wrongly and been confusing that fuel, oxygen and heat are not component that needed to start the ignition of fire. They also have mention that, they never know component that needed to start the ignition of fire since they have never been exposed on fire safety education. This matter can be improving by prepare the class on fire safety or make sure they attending training on fire safety. This suggestion on improving of knowledge ERT based on fire safety had been suggested by respondents itself on Question number 24 in part on improving quality ERT personnel criteria.

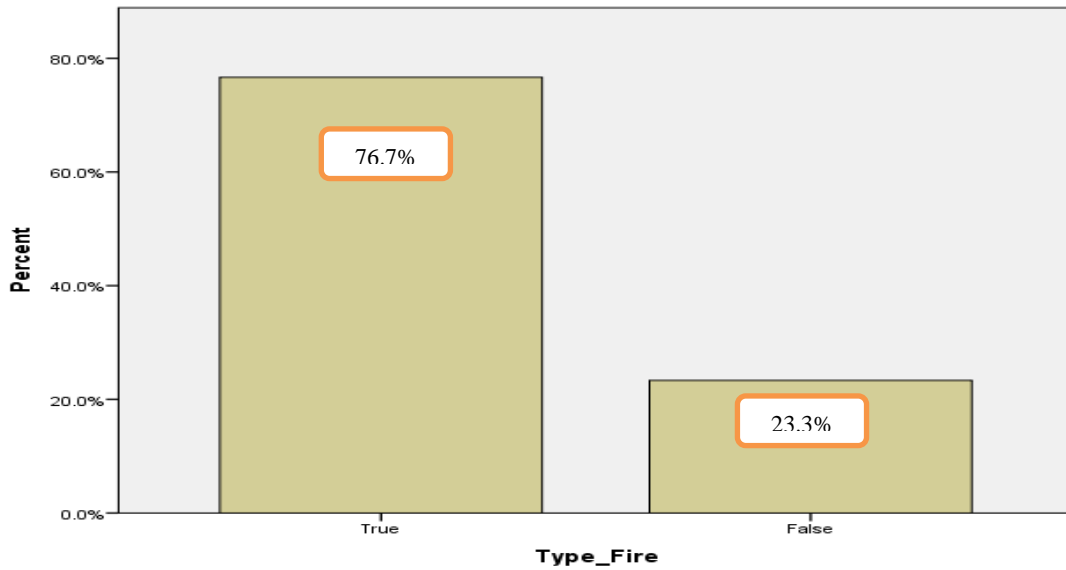


Figure 4.12: Knowledge of ERT Based on Type of Fire

The Figure 4.12 shows that knowledge of respondents on type of fire. This question is Question Number 4 and are been asked about on type of fire. 76.7% of respondents have been answer correctly which is Class A of fire are fire that involving solid materials such as wood, paper or textiles. While 23.3% of respondents answer wrongly and does not know that type of fire have been differentiate by using Alphabets to determine type of fire. This is because they have never been exposed on fire safety education. This matter can be improving by prepare the class on fire safety or make sure they attending training on fire safety. This suggestion on improving of knowledge ERT based on fire safety had been suggested by respondents itself on Question number 24 in part on improving quality ERT personnel criteria.

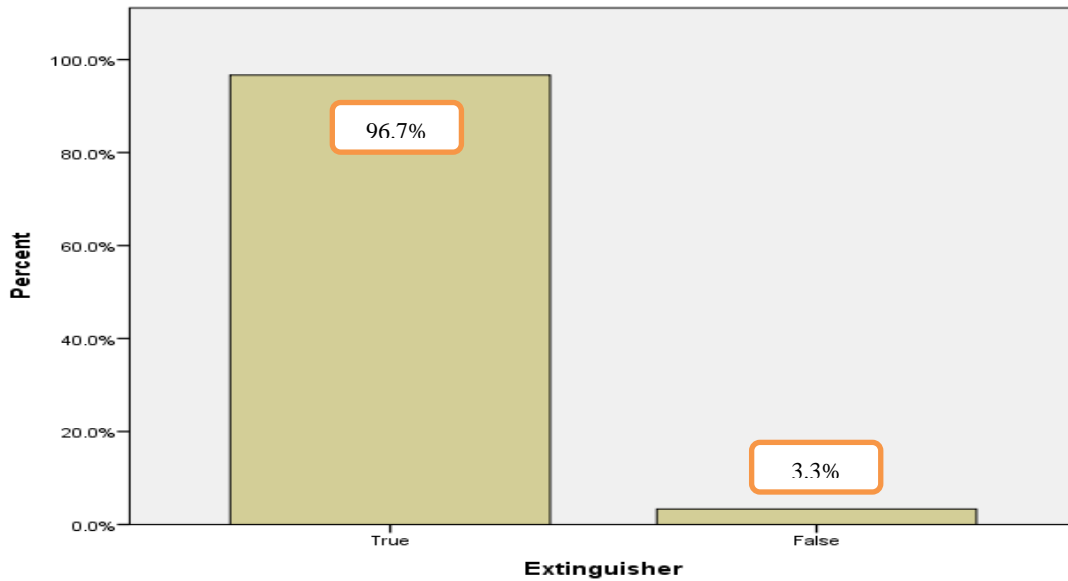


Figure 4.13: Knowledge of ERT Based on Using Fire Extinguisher

The Figure 4.13 shows that knowledge of respondents about the sequence on the using of fire extinguisher. This question is Question Number 5 and are been asked about the correct sequence on the using of fire extinguisher. 96.7% of respondents have been answer correctly. The right sequences on using fire extinguisher are:

1. Pull the pin in the handle.
2. Aim the nozzle at the base of the fire.
3. Squeeze the lever slowly.
4. Sweep from side to side.

While 3.3% respondents answer wrongly and confusing the steps between step number 3 and number 4. This is because they have never using fire extinguisher before and does not involve in fire safety training. This matter can be improving by prepare the class on fire safety or make sure they attending training on fire safety. This suggestion on improving of knowledge ERT based on fire safety had been suggested by respondents itself on Question number 24 in part on improving quality ERT personnel criteria.



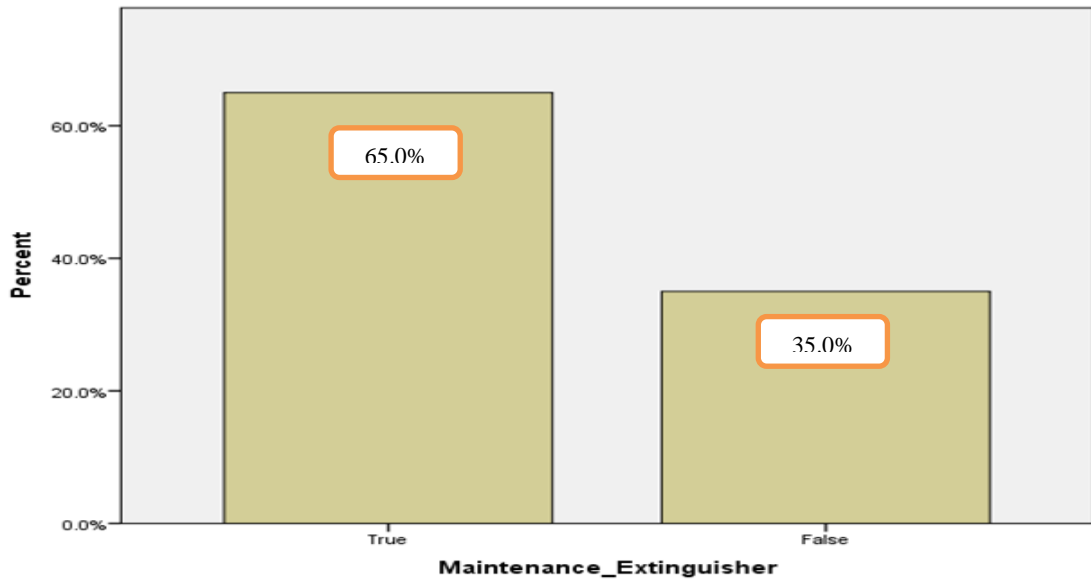


Figure 4.14: Knowledge of ERT Based on Maintenance of Fire Extinguisher

The Figure 4.14 shows that knowledge of respondents on maintenance of fire extinguisher check. This question is Question Number 6 and are been asked about the right time to do fire extinguisher maintenance check. 65% of respondents have been answer correctly which is the fire extinguisher need to do maintenance check annually. While 35% of respondents answer wrongly and mistaken between fire extinguisher maintenance check and fire extinguisher check-up which is required monthly check. This is because they have never been exposed on fire extinguisher education. This matter can be improving by prepare the class on fire safety or make sure they attending training on fire safety. This suggestion on improving of knowledge ERT based on fire safety had been suggested by respondents itself on Question number 24 in part on improving quality ERT personnel criteria.

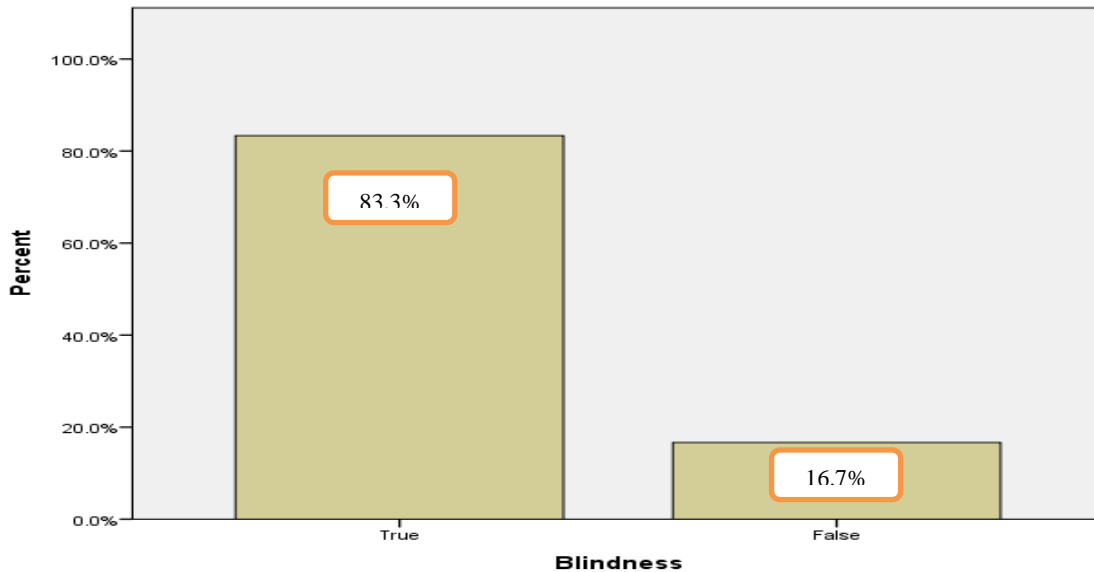


Figure 4.15: Knowledge of ERT Based on Assessing People With Blindness

The Figure 4.15 shows that knowledge of respondents on assessing people with low vision or blindness to evacuate when fire accident happen. This question is Question Number 7 and are been asked about how to help people with vision impairment or blindness to evacuate from fire emergency. 83.3% of respondents have been answer correctly which is:

1. Tell the person the nature of the emergency and offer your arm for guidance. This is the preferred method when acting as a "sighted guide."
2. Give verbal instructions to advice about the safest route or direction, using estimated distances and directional terms.
3. As you walk, tell the person where you are and where obstacles are located.
4. When you reach safety, orient the person to their surroundings and ask if they need further assistance.

While 16.7% of respondents answer wrongly. This is because the respondents do not know the responsibilities of ERT. This matter can be improving by make sure they attending training on ERP. This suggestion on improving of knowledge ERT based on fire safety had been suggested by respondents itself on QQuestion number 24 in part on improving quality ERT personnel criteria.

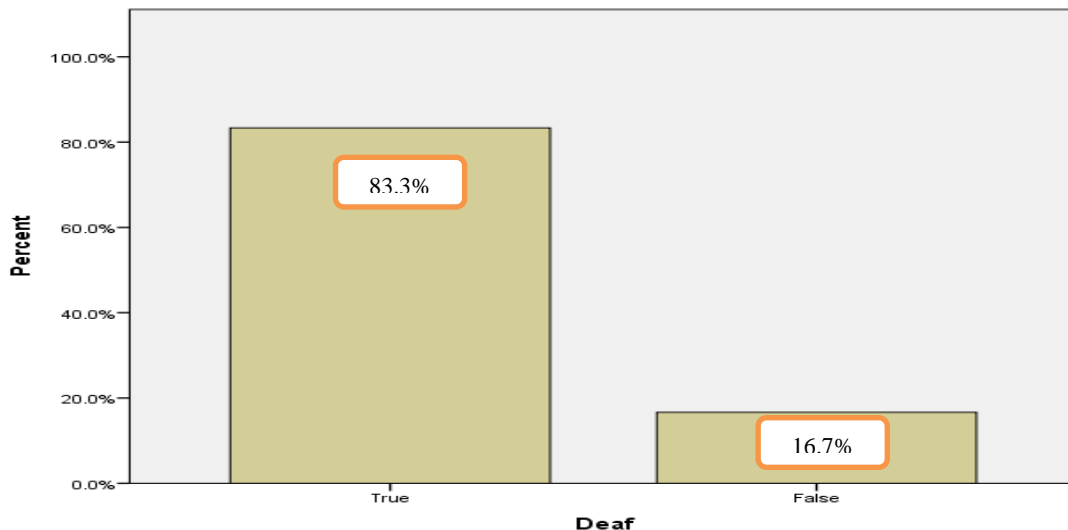


Figure 4.16: Knowledge of ERT Based on Assessing people with Deaf

The Figure 4.16 shows that knowledge of respondents on assessing people with hard of hearing or deaf to evacuate when fire accident happen. This question is Question Number 8 and are been asked about how to help people hard of hearing or deaf to evacuate from fire emergency. 83.3% of respondents have been answer correctly which is give visual instructions to advice about the safest route or direction by pointing toward exits or evacuation maps. While 16.7% of respondents answer wrongly such as:

1. As you walk, tell the person where you are and where obstacles are located.
2. Give verbal instructions to advice about the safest route or direction.
3. Read about Evacuation chairs.

This is because the respondents do not know the responsibilities of ERT on how to help people with hard of hearing or deaf. This matter can be improving by make sure they attending training on ERP. This suggestion on improving of knowledge ERT based on fire safety had been suggested by respondents itself on Question number 24 in part on improving quality ERT personnel criteria.

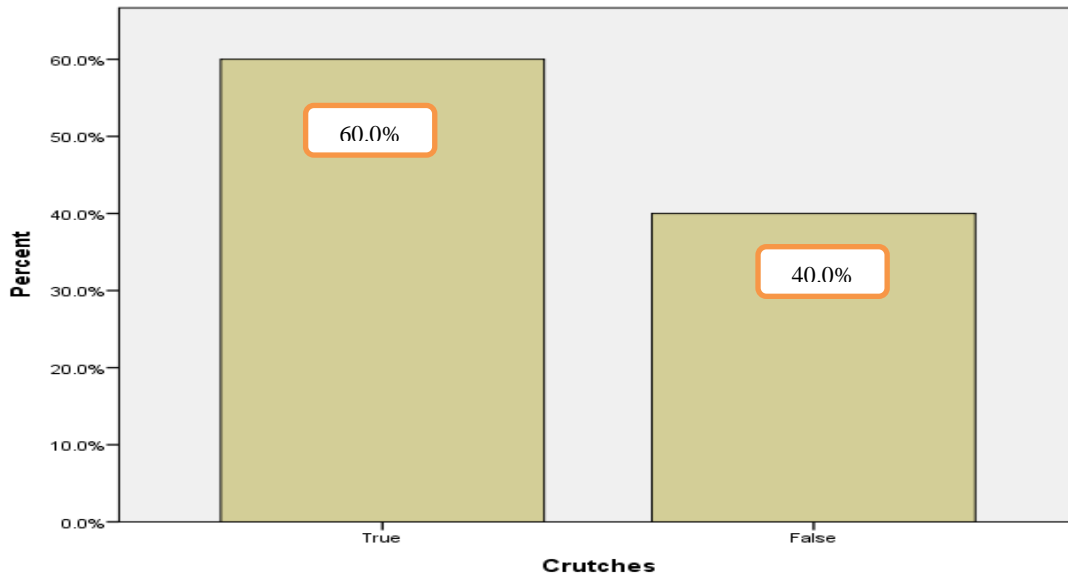


Figure 4.17: Knowledge of ERT Based on Assessing people with using Crutches

The Figure 4.17 shows that knowledge of respondents on assessing people with people using crutches, canes or walkers to evacuate when fire accident happen. This question is Question Number 9 and are been asked about how to help people using crutches, canes or walkers to evacuate from fire emergency. 60% of respondents have been answer correctly which is:

1. Using a 2-person, lock-arm position
2. Having the individual sit on a sturdy chair (preferably with arms) that is then lifted and carried
3. Assist mobility-restricted people to an area of refuge or out of the building.

While 40% of respondents answer wrongly. This is because the respondents do not know the responsibilities of ERT on how to help people using crutches, canes or walkers. This matter can be improving by make sure they attending training on ERP. This suggestion on improving of knowledge ERT based on fire safety had been suggested by respondents itself on Question number 24 in part on improving quality ERT personnel criteria.

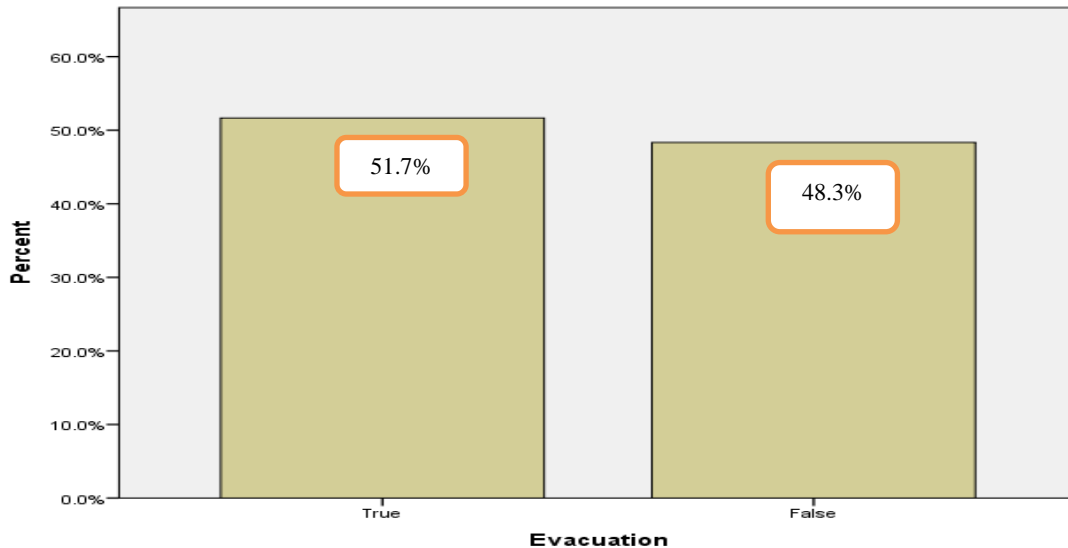


Figure 4.18: Knowledge of ERT Based on Evacuation

The Figure 4.18 shows that knowledge of respondents on important things need to do during evacuation when fire accident happen. This question is Question Number 10 are been asked about what to do during evacuation. 51.7% of respondents have been answer correctly which is:

1. Check the intended evacuation route for obstacles, if possible
2. Move people who are unable to leave the building to an area of refuge
3. Report to your designated assembly area for a head count.

While 48.3% of respondents answer wrongly. This is because the respondents do not know the responsibilities of ERT on important part during evacuation. This matter can be improving by make sure they attending training on ERP. This suggestion on improving of knowledge ERT based on fire safety had been suggested by respondents itself on Question number 24 in part on improving quality ERT personnel criteria.

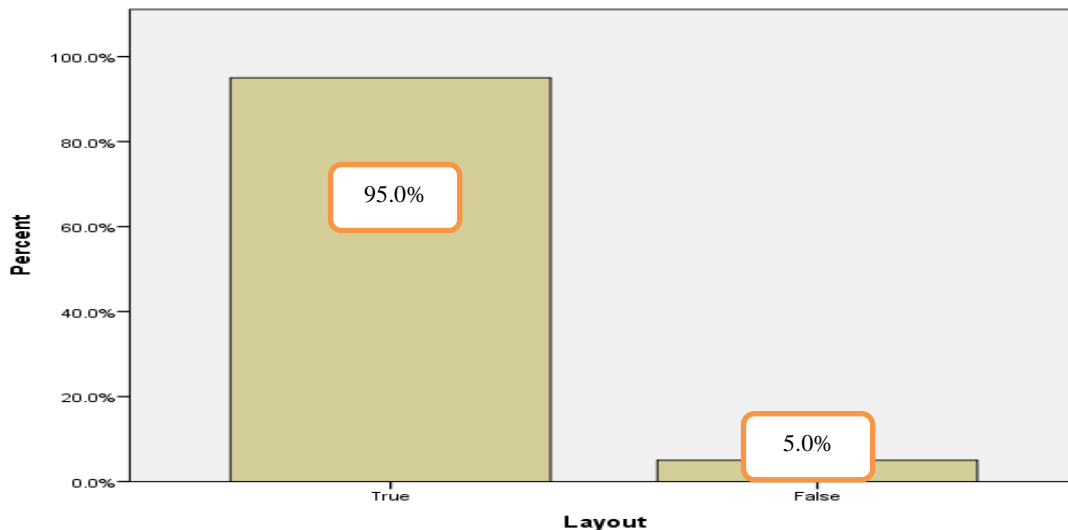


Figure 4.19: Knowledge of ERT Based on Building Layout

The Figure 4.19 shows that knowledge of respondents on importance of building layout in organization. This question is Question Number 11 and are been asked about either ERT members need to know the building layout or not. 95% of respondents have been answering correctly which is it very important as ERT members need to know the building layout. While 5% of respondents answer wrongly which they think that ERT members do not need to know the building layout. This is because they thought that building layout are useless and not accurate. This matter can be improving by prepare the class on fire safety or make sure they attending training on fire safety and give detail causes that ERT members need to know the building layout. This suggestion on improving of knowledge ERT based on fire safety had been suggested by respondents itself on Question number 24 in part on improving quality ERT personnel criteria.

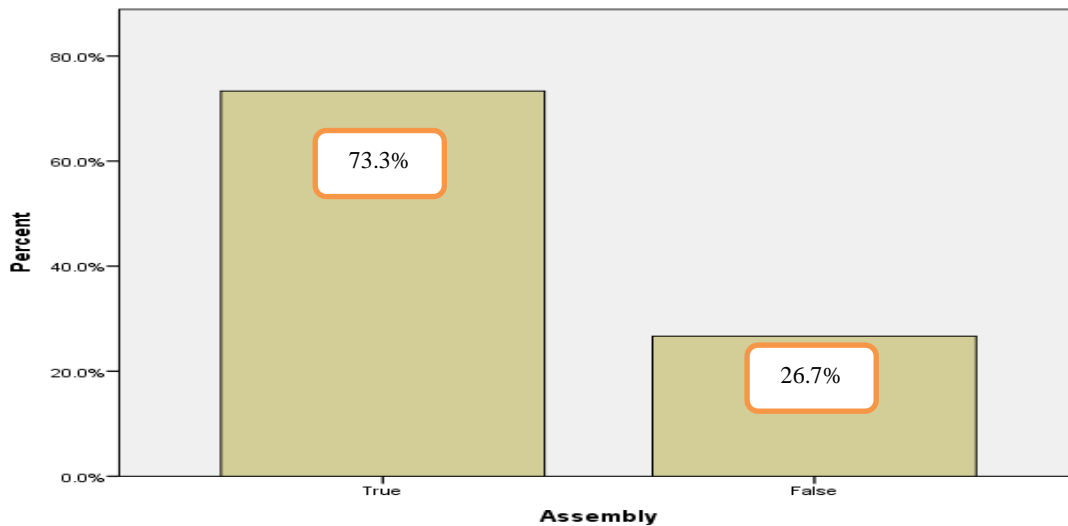


Figure 4.20: Knowledge of ERT Based on Assembly Point

The 4.20 shows that knowledge of respondents on importance about fire assembly points to keep your staff safe in the event of a fire. This question is Question Number 12 and are been asked about what do you need to remember about fire assembly points to keep your staff safe in the event of a fire? 73.3% of respondents have been answering correctly which is:

1. Assembly points outside of the building should be clearly indicated.
2. Procedure should be in place to handle the evacuation.
3. Providing a sheltered, illuminated assembly point can be a good idea
4. Employees and other persons visiting the building are advised which assembly area they must use in the event of evacuation.

While 26.7% of respondents answer wrongly which they think employees and other persons visiting the building are advised which assembly area they must use in the event of evacuation. This is because they thought other persons that visiting do not need to know the assembly point. This matter can be improving by make sure they attending training on fire safety and give detail causes that ERT members need to know the building layout.

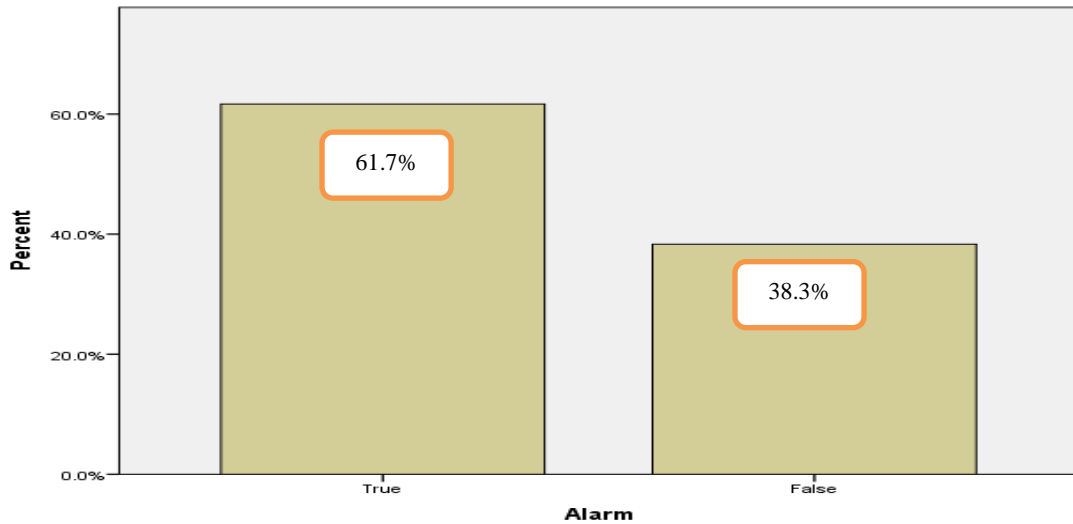


Figure 4.21: Knowledge of ERT Based on Alarm System

The 4.21 shows that knowledge of respondents on maintenance check on alarm system. This question is Question Number 13 and are been asked about the right time to do alarm system maintenance check. 61.7% of respondents have been answer correctly which is alarm system need to do maintenance check annually. While 38.3% of respondents answer wrongly. This is because they have never knows that alarm system need to do maintenance check. This matter can be improving by prepare the class on fire safety or make sure they attending training on fire safety. This suggestion on improving of knowledge ERT based on fire safety had been suggested by respondents itself on Question number 24 in part on improving quality ERT personnel criteria.



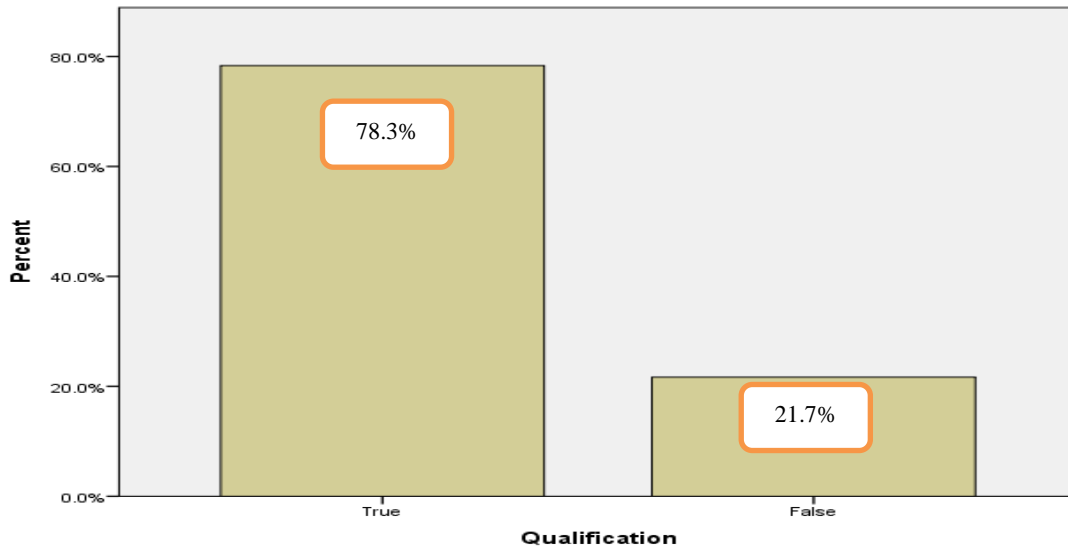


Figure 4.22: Knowledge of ERT Based on Qualification Persons

The Figure 4.22 shows that knowledge of respondents on qualification needed for those who inspect, test and maintain fire alarm systems. This question is Question Number 14 and are been asked about what qualification needed for those who inspect, test and maintain fire alarm systems. 78.3% of respondents have been answer correctly which is all persons who want inspect, test and maintain fire alarm systems need to comply with:

1. Trained and certified by the system manufacturer.
2. Certified by a nationally recognized organization.
3. Affiliated with an organization that is registered, licensed or certified by a state or local authority.

While 21.7% of respondents answer wrongly. This is because they have never knows that alarm system need to do maintenance check and it is need qualifications to inspect, test and maintain fire alarm systems. This matter can be improving by prepare the class on fire safety or make sure they attending training on fire safety. This suggestion on improving of knowledge ERT based on fire safety had been suggested by respondents itself on Question number 24 in part on improving quality ERT personnel criteria.

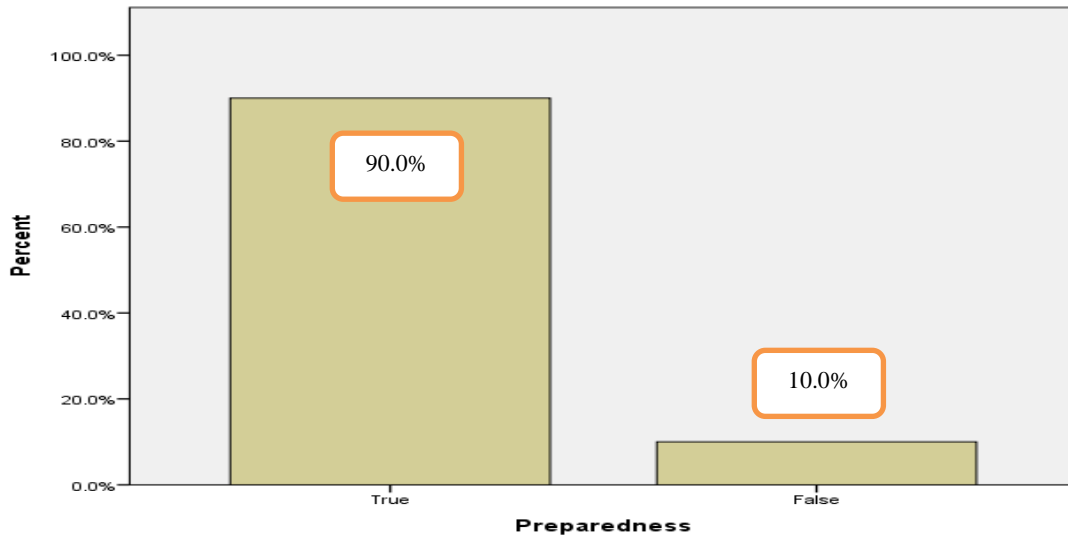


Figure 4.23: Knowledge of ERT Based on Preparedness on Fire Emergency

The Figure 4.23 shows that knowledge of respondents on importance in preparedness on fire emergency. This question is Question Number 15 and are been asked about the most importance in preparedness on fire emergency. 90% of respondents have been answer correctly which is fire suppression systems, active dynamic signage system and building fire exit are the most importance in preparedness on fire emergency. While 10% of respondents answer wrongly, respondents thought that fire suppression systems are not important. Besides, the respondents that answer wrongly do not know the function of fire suppression system. This matter can be improving by prepare the class on fire safety or make sure they attending training on fire safety. This suggestion on improving of knowledge ERT based on fire safety had been suggested by respondents itself on Question number 24 in part on improving quality ERT personnel criteria.

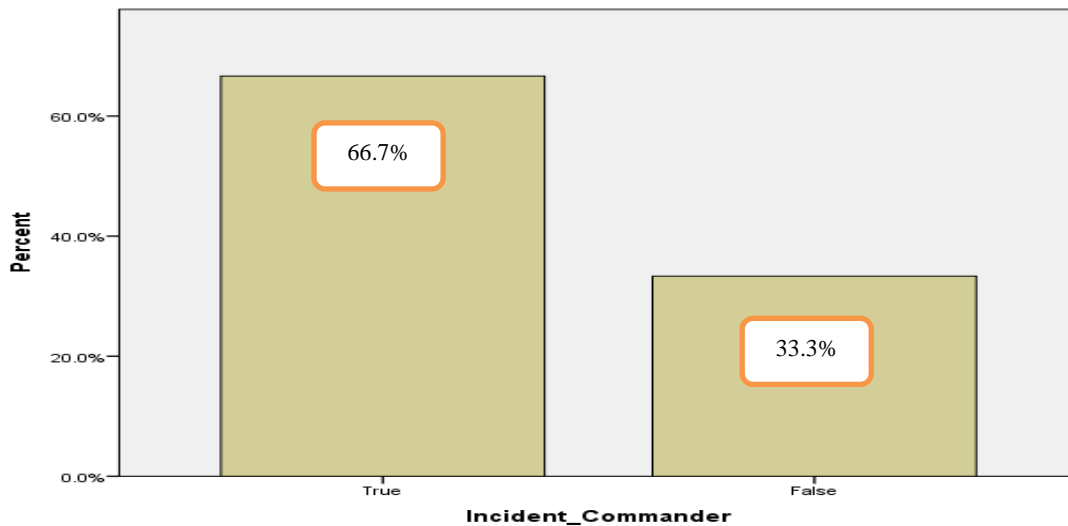


Figure 4.24: Knowledge of ERT Based on Incident Commander

The Figure 4.24 shows that knowledge of respondents on responsibility of Incident Commander. This question is Question Number 16 been asked about who are responsible to this responsibility:

1. Activate ERT
2. Instruct the emergency response to ERT.

66.7% respondents have been answer correctly which is Incident Commander are be responsible to the responsibility of the task above. While 33.3% respondents answer wrongly, respondents thought that neither Emergency Commander, Building Marshall nor Floor Marshall being responsible to the responsibility. Besides, the respondents that answer wrongly do not know the function of Incident Commander since they do not attend any ERP training. This matter can be improving by prepare the class on responsible of ERT members in organization or make sure they attending training on ERP. This suggestion on improving of knowledge ERT based on fire safety had been suggested by respondents itself on Question number 24 in part on improving quality ERT personnel criteria.

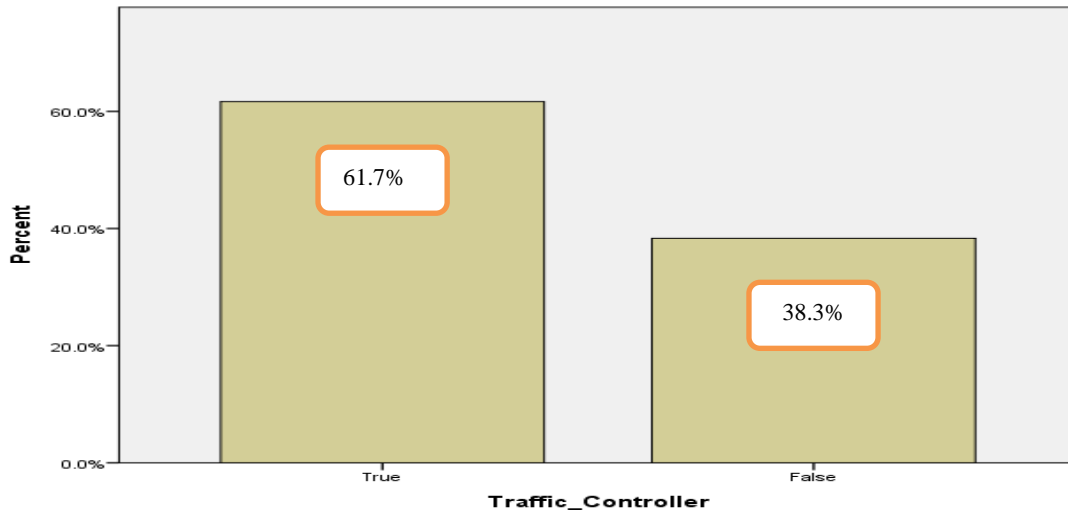


Figure 4.25: Knowledge of ERT Based on Traffic Controller

The Figure 4.25 shows that knowledge of respondents on responsibility of Traffic Controller. This question is Question Number 17 and been asked about who are responsible to this responsibility:

1. Ensure there are no obstacles along the emergency lane
2. Demonstrate the correct location of the gathering place for the residents of the building

61.7% respondents have been answer correctly which is Traffic Controller are be responsible to the responsibility of the task above. While 38.3% respondents answer wrongly, respondents thought Floor Marshall being responsible to the responsibility. Besides, the respondents that answer wrongly do not know the function of Traffic Controller since they do not attend any ERP training. This matter can be improving by prepare the class on responsible of ERT members in organization or make sure they attending training on ERP. This suggestion on improving of knowledge ERT based on fire safety had been suggested by respondents itself on Question number 24 in part on improving quality ERT personnel criteria.

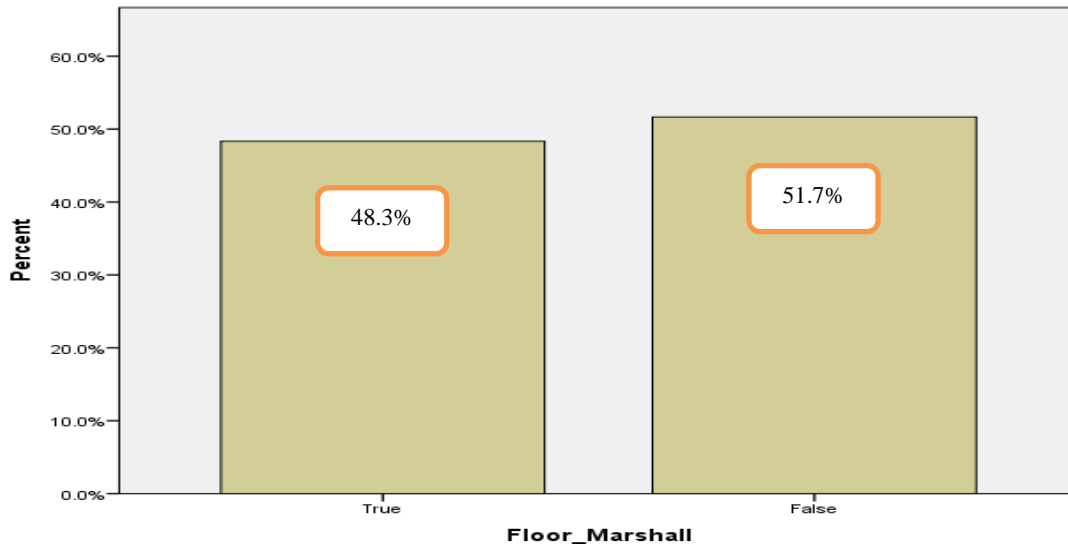


Figure 4.26: Knowledge of ERT Based on Floor Marshall

The Figure 4.26 shows that knowledge of respondents on responsibility of Floor Marshall. This question is Question Number 18 been asked about who are responsible to this responsibility:

1. Collect data on the number of occupants of the building
2. Conduct a head count at the rally (AP) and inform the Building Marshall

48.3% respondents have been answer correctly which is Floor Marshall are be responsible to the responsibility of the task above. While 51.7% respondents answer wrongly, respondents thought Floor Marshall being responsible to the responsibility. Besides, the respondents that answer wrongly do not know the function of Floor Marshall since they do not attend any ERP training. This matter can be improving by prepare the class on responsible of ERT members in organization or make sure they attending training on ERP. This suggestion on improving of knowledge ERT based on fire safety had been suggested by respondents itself on Question number 24 in part on improving quality ERT personnel criteria.

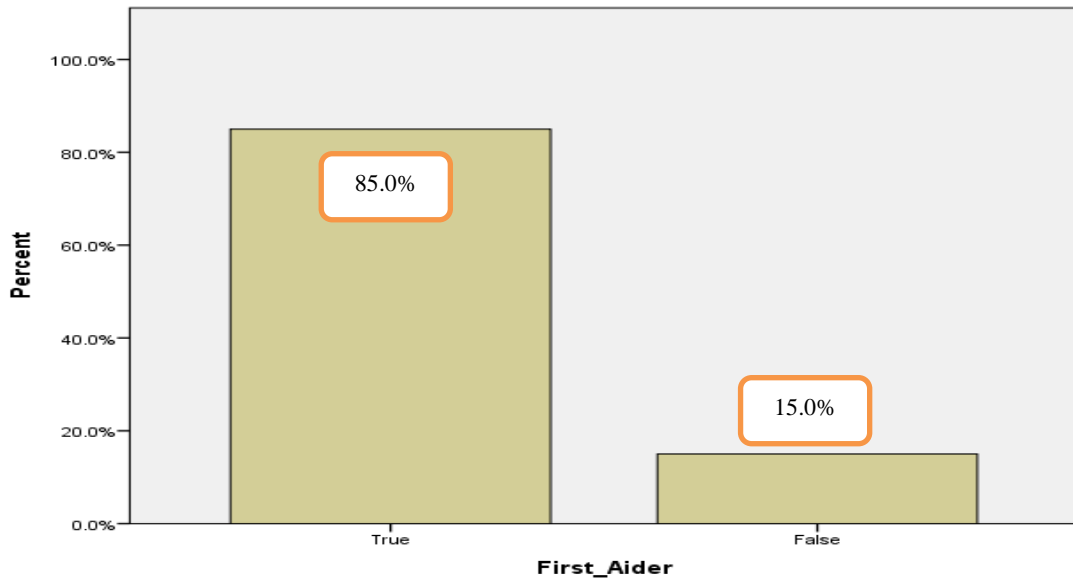


Figure 4.27: Knowledge of ERT Based on First Aider

The Figure 4.27 shows that knowledge of respondents on responsibility of First Aider. This question is Question Number 19 and been asked about what are responsible of First Aider?. 85% respondents have been answer correctly. Responsibility for First Aider is by helping victims that need early assistance appropriate to the process and procedure. While 15% respondents answer wrongly, respondents thought Firs Aider being responsible by helping to prevent fire from spreading over large. Besides, the respondents that answer wrongly because they do not know the function of First Aider since they do not attend any ERP training. This matter can be improving by prepare the class on responsible of ERT members in organization or make sure they attending training on ERP. This suggestion on improving of knowledge ERT based on fire safety had been suggested by respondents itself on Question number 24 in part on improving quality ERT personnel criteria.

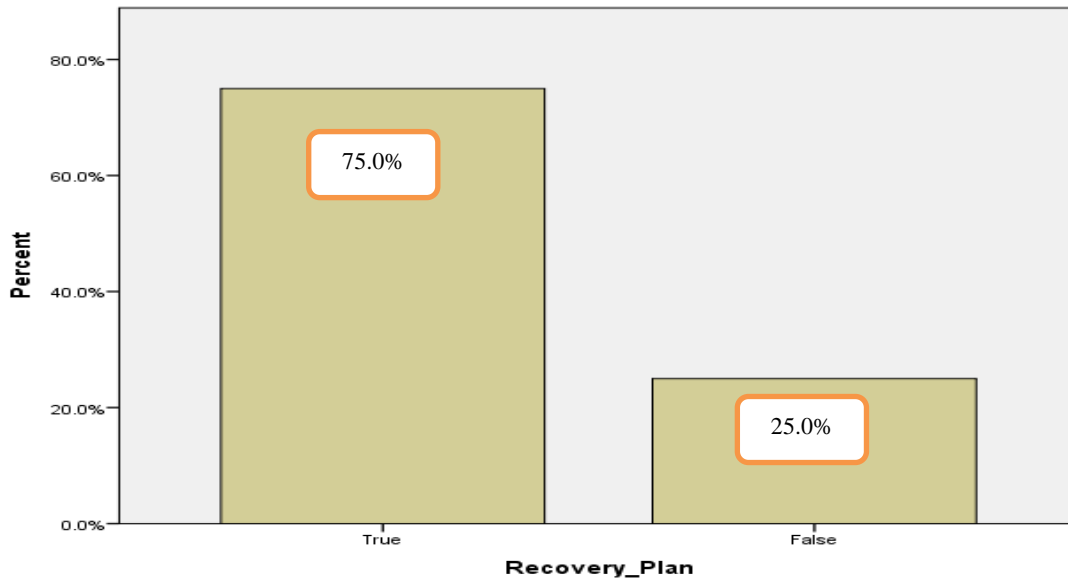


Figure 4.28: Knowledge of ERT Based on Recovery Plan

The Figure 4.28 shows that knowledge of respondents on recovery plan. This question is Question Number 20 and been asked about the most importance action that need to be taken after emergency. 75% respondents have been answer correctly. The most importance action that need to be taken after emergency are post-mortem session, incident reporting and submission of report. While 25% respondents answer wrongly, respondents do not know the function of recovery plan after emergency. Besides, the respondents answer wrongly because they do not attend any ERP training. This matter can be improving by prepare the class on responsible of ERT members in organization or make sure they attending training on ERP. This suggestion on improving of knowledge ERT based on fire safety had been suggested by respondents itself on Question number 24 in part on improving quality ERT personnel criteria.

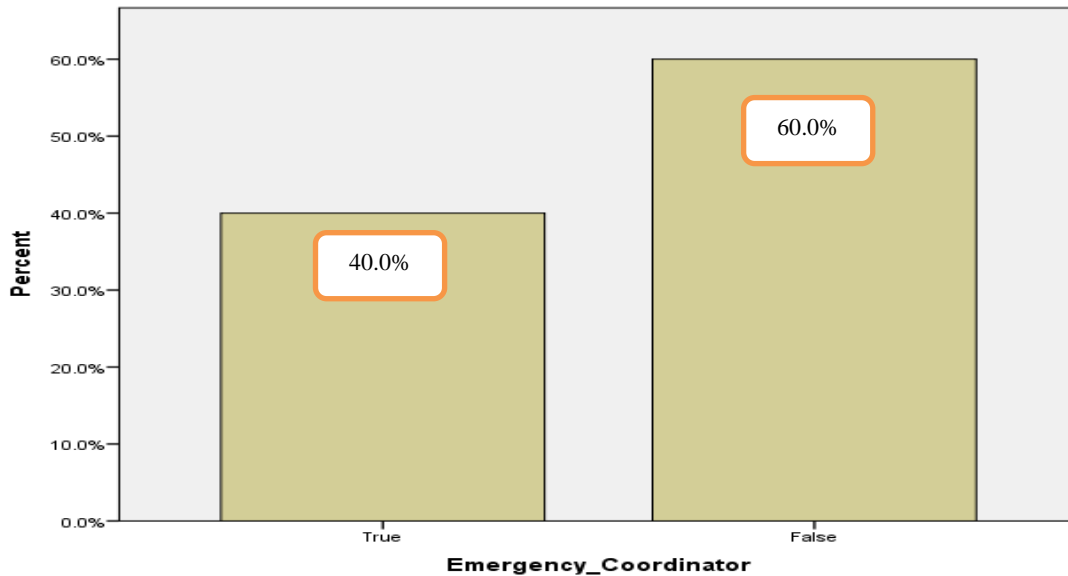


Figure 4.29: Knowledge of ERT Based on Emergency Coordinator

The Figure 4.29 shows that knowledge of respondents on emergency coordinator. This question is Question Number 21 and been asked about the report after emergency need to be submit to. 40% respondents have been answer correctly. The report should be sent Emergency Coordinator. While 60% respondents answer wrongly, respondents do not know who are responsible to get the report and analyse the report. Respondents mostly answer Emergency Commander needs to get the report. Besides, the respondents answer wrongly because they do not attend any ERP training. This matter can be improving by prepare the class on responsible of ERT members in organization or make sure they attending training on ERP. This suggestion on improving of knowledge ERT based on fire safety had been suggested by respondents itself on Question number 24 in part on improving quality ERT personnel criteria.



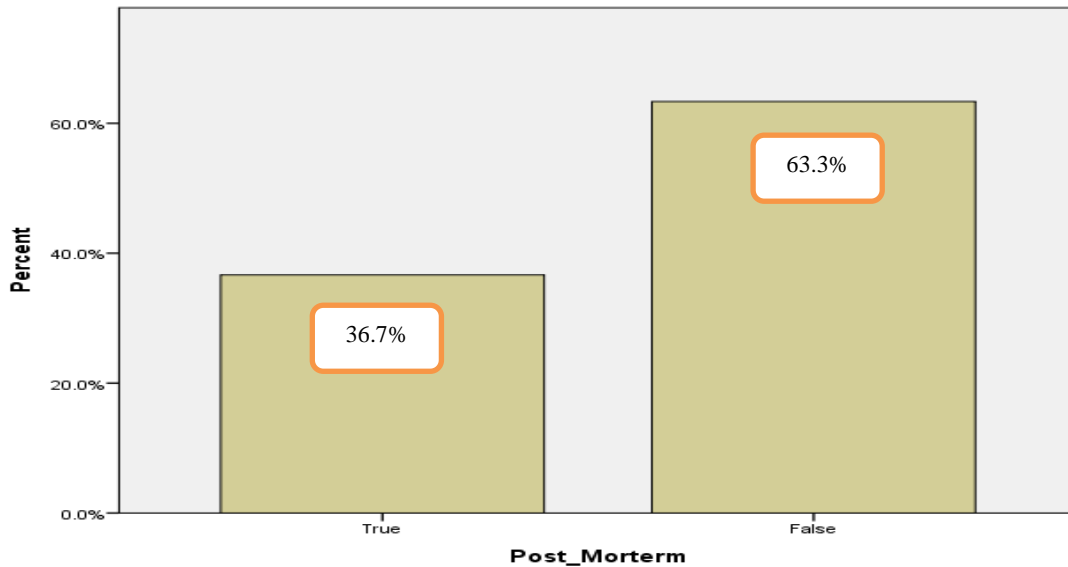


Figure 4.30: Knowledge of ERT Based on Post-Mortem

The Figure 4.30 shows that knowledge of respondents on post-mortem session. The question is Question Number 22 and had been asked about the activity that ERT need to complete in post-mortem session. 36.7% respondents have been answer correctly. Activity that ERT need to complete in post-mortem session is meeting to review their respective areas of responsibility for each building. While 63.3% respondents answer wrongly, most of them answered that activity that need to be complete in post-mortem session are:

1. Report for any injuries and accident that occur during the emergencies.
2. To evaluate the effectiveness of the implementation of each recommendation.

This is because they do not know the function and importance of post-mortem session. Besides, the respondents answer wrongly because they do not attend any ERP training. This matter can be improving by prepare the class on responsible of ERT members in organization or make sure they attending training on ERP. This suggestion on improving of knowledge ERT based on fire safety had been suggested by respondents itself on Question number 24 in part on improving quality ERT personnel criteria.

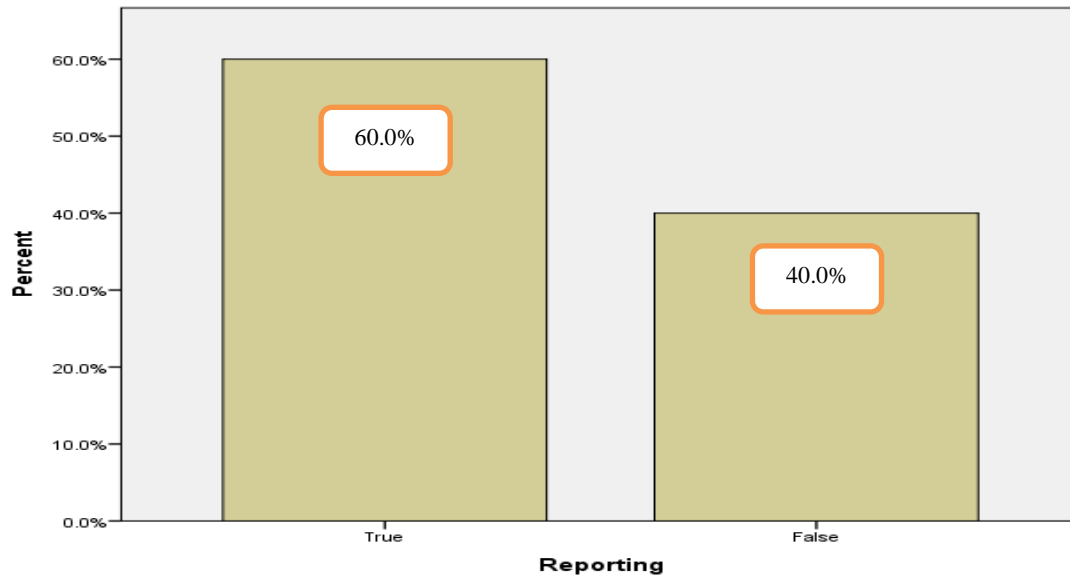


Figure 4.31: Knowledge of ERT Based on Reporting

The Figure 4.31 shows that knowledge of respondents on incident reporting. The question is Question Number 23 and had been asked about the activity that ERT need to complete in incident reporting. 60% respondents have been answer correctly. Activity that ERT need to complete in incident reporting is report for any injuries and accident that occur during emergencies. While 40% respondents answer wrongly, most of them answered that activity that need to be complete in incident reporting are:

1. Meeting to review their respective areas of responsibility for each building.
2. To evaluate the effectiveness of the implementation of each recommendation.

This is because they do not know the function and importance of incident reporting. Besides, the respondents answer wrongly because they do not attend any ERP training. This matter can be improving by prepare the class on responsible of ERT members in organization or make sure they attending training on ERP. This suggestion on improving of knowledge ERT based on fire safety had been suggested by respondents itself on Question number 24 in part on improving quality ERT personnel criteria.

Table 4.13: Suggestion on Improve Quality ERT

	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
No Suggestion	41	68.3	68.3	68.3
ERT and ERP Training	14	23.3	23.3	91.7
Class on Fire Safety	3	5.0	5.0	96.7
Communication Skill	2	3.3	3.3	100.0
Total	60	100.0	100.0	

In Table 4.13, it shows suggestions from respondents to improve the quality of ERT personnel. The question is Question Number 24 and been asked about respondent's suggestion on improving the quality of ERT personnel. It is open question and respondents can suggest any idea. After analysed the data, all suggestion from respondents had been classified into 4 suggestion. Which is no suggestion, provide ERT and ERP training, provide class on fire safety and lastly is communication skill between ERT members. From the table, 68.3% of respondents does not had any suggestion to improve quality of ERT personnel. 23.3% of respondents suggested that organization need to provide ERP and ERT training to all employee. Besides ERP and ERT training, 5.0% of respondents suggested that ERT members need to attend class on fire safety to improve their knowledge about fire safety awareness. Finally, there are 3.3% of respondents suggested that every ERT members need to improve their communication skill between members. By doing this, it will help ERT members to do their responsibility easy to planning if any fire accident happen in the future.

## **CHAPTER 5**

### **CONCLUSION**

#### **5.1 Conclusion**

This study is to determine the ERT members selection criteria and knowledge based on fire safety perspective at Universiti Malaysia Pahang and Zaque's Hotel. These study objectives have been achieved.

The first objective of this study is to measure the level of understanding and responsive action based on fire emergency scenario. This objective had been met through interview and questionnaire. In total, 60 respondents had answered the questionnaire. 30% of respondents get medium range of level understanding on ERT based on fire safety. Next, 23.3% respondents get good range and 26.7% respondents get excellent of level understanding on ERT based on fire safety perspective. As a conclusion, there are 80% of respondents that are worthy to be in ERT members in organization. Meanwhile, there are 20% of respondents are get low of level understanding ERT based on fire safety. Therefore, all 20% of respondents that get low level understanding ERT needs to retest the questionnaire and attending class that provide knowledge on ERP based on fire safety perspective. This suggestion on improving of knowledge ERT based on fire safety had been suggested by respondents itself on Question number 24 in part on improving quality ERT personnel criteria.

The second objective is to determine the selection criteria for Emergency Response Team based on fire safety perspective. This objective had been through analyse the questionnaire based on 2 criteria to be in ERT members that is safety control and also honesty and responsible. 20 respondents from Universiti Malaysia Pahang and 5 respondents from Zaque's Hotel, Sungai Petani were chosen randomly for the studies. From the data analysis, there are 85% of respondents from UMP that

are worthy to be selected as ERT in the organization. On the other hand, there are three respondents which are A9, A13 and A16 need to improve their knowledge by attending class and training on ERP. Meanwhile, all respondents from Zaque's hotel need to attend class and training to improve their knowledge on ERP since all of them get marks below the limit to be in ERT at their organization.

The third objective is to assist the Human Resource department of an organization to select ERT. This objective can be done by refer to result that obtain from objective number 2. There are 17 respondents were the best selection to be as ERT. All 17 respondents that worthy to be in ERT were being suggested to the organization by referring to the colour coding results. This result, can be view at Table 4.6 and Table 4.10 for Universiti Malaysia Pahang. Table 4.10 and Table 4.12 result for Zaque's Hotel.

## **5.2 Recommendation**

Even though this study was able to achieve all the objectives that acquired, improvement is still needed to ensure there is more detail information can get in order to improve the selection of ERT in the organization.

As for recommendation, in order to improve selection criteria for ERT, every organization must have better understanding and knowledge in Occupational Safety and Health Management System to ensure the management and choose the right team for ERT. For example, every top management in organization need to provide all their employees class on fire safety knowledge, training on education and also response team exercise. They need to plan and executes the response of team exercise. It is the best decision to do table top exercise on one week and the other week make field exercise based on fire emergency at the organization. This suggestion on improving of knowledge ERT based on fire safety had been suggested by respondents itself on Question number 24 in part on improving quality ERT personnel criteria.

All of this recommendation can be start with training objectives and create the right scenario and also evaluate the criteria accordingly (Adedeji B. and Lee Ann, 2014).

For improvement in the future study, to improve the selection criteria personnel based on fire safety it can be improve by using computational system to ease the process of getting the right ERT members.

### **5.3 Limitation of Study**

Limitation of study is sample size. Total number of respondents of this study was too small. Since the sample size too small, it was difficult to find significant of relationship from the data. As statistical test, the data normally require larger sample size to ensure that data from respondents will be easy generalized.

Next is sample profile. In this study, profile of respondents was too many from student background. It is advantages because it is easy to access and required low cost for data collection. However, using students as sample, it is extremely limiting the population of study is comprised of respondents with different profiles.

Besides, time to complete this Final Year Project also one of limitation in this study. This is because, this study required to validate questionnaire that had been create and take a long time to prepare the perfect a set of questionnaire.

In this study, only 2 criteria can be analysed which is safety control and also honesty and responsible. Non-violence and drug avoidance cannot be done since these criteria need be measure by expert from Health Department.

Finally, this study only in manual calculation on percentage of correct question of knowledge ERT based on fire safety. It is easy if this study can complete by using computational system. In the future, the study should come out the system to select ERT by using colour coding system.

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## APPENDIX A



Figure A: Briefing for staff before answering questionnaire



Figure B: Staff answering the questionnaire



Figure C: Zaque's Hotel in Sungai Petani Kedah



Figure D: Kolrij Kediaman 1 and Kolej Kediaman 3 UMP



Figure E: Kolej Kediaman 4 UMP

## APPENDIX B

# Questionnaire on Selection Criteria of Emergency Response Team (ERT) based on Fire Safety Perspective

By: MOHAMMAD FARHAN BIN NADZRI  
BACHELOR OF OCCUPATIONAL SAFETY AND HEALTH  
UNIVERSITI MALAYSIA PAHANG

Purpose
<p>This survey is being conducted in order to measure the level of understanding and responsive action based on fire emergency scenario.</p> <p>Please complete this questionnaire voluntarily and your assistance would be greatly appreciated to improve the most suitable selection criteria for personnel of Emergency Response Team based on fire safety perspective. All information given will be treated confidential and for the purpose of Final Year Project, Bachelor of Occupational Safety and Health at Universiti Malaysia Pahang.</p> <p>The questions are set with multiple choice answers, yet you are able to choose more than one answer to the questions. Please give your own views where appropriate. Please tick ( / ) the box or boxes, which best fit your answer.</p>

### 1. Age:

18 – 24 years	
25 – 30 years	
31 – 36 years	
37 – 42 years	
More than 43 years	

### 2. Sex:

Male	
Female	

### 3. What is your position in the organization?

Student	
Lecturer	
General worker (eg: Cleaner, Maintenance or Technician)	
Accommodation Warden	
Administrative Officer	
Security	
Other, please specify	

**4. Which area are the most time you spent in the organization?**

General office	
Staff room	
Individual office	
Classroom	
Laboratory	
Library	
Hostel	
Others, please specify	

**5. Have you undergone any ERT training?**

YES	
NO	

**6. Do you agree that this criteria's are importance as ERT? :**

<ul style="list-style-type: none"><li>• Honesty and responsible to safe guard</li><li>• Safety control to ensure a good working environment</li><li>• Non-violence (to avoid any mischief action)</li><li>• Drug avoidance to ensure all worker is healthy and behaviour by any workers</li></ul>
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YES	
NO	

**7. As ERT members, do we need to do drug test before join the team?**

YES	
NO	

**8. Do ERT members need to avoid any mischief action?**

YES	
NO	

**EVALUATION ON KNOWLEDGE OF EMERGENCY RESPONSE PLAN (ERP)  
BASED ON FIRE SAFETY PERSPECTIVE**

The questions are set with multiple choice answers, **choose one** answer only.

**Answer Scheme**

**1. Which of the following is type of fire hazard?**

<b>A</b>	Live flames
<b>B</b>	Sparks
<b>C</b>	Hot objects
<b>D</b>	All the above

**2. What was the reason that ERT members are importance for every organization?**

- I** Provide quick and effective assistance during emergency
- II** Notifying Supervisory Personnel/Incident Commander of the incident
- III** Ineffective organizational structure
- IV** Prevent fatalities and injuries.

<b>A</b>	I, II
<b>B</b>	I, II, III
<b>C</b>	I, II, IV
<b>D</b>	I, III, IV

**3. What is the component that needed to start the ignition of fire?**

- I** Fuel
- II** Hydrogen
- III** Oxygen
- IV** Heat

<b>A</b>	I, II
<b>B</b>	I, II, III
<b>C</b>	I, III, IV
<b>D</b>	II, III, IV

**4. Choose ONE type of fire and it classification.**

<b>A</b>	Class A - fires involving solid materials such as wood, paper or textiles.
<b>B</b>	Class B - fires involving gases.
<b>C</b>	Class C - fires involving flammable liquids such as petrol, diesel or oils.
<b>D</b>	Class D - fires involving cooking oils such as in deep-fat fryers.

**5. Choose the right sequence on the using of fire extinguisher:**

**I** Aim the nozzle at the base of the fire

**II** Sweep from side to side

**III** Pull the pin in the handle

**IV** Squeeze the lever slowly

<b>A</b>	II, III, I, IV
<b>B</b>	III, I, IV, II
<b>C</b>	I, II, III, IV
<b>D</b>	IV, II, I, III

**6. When the fire extinguisher need to do maintenance check?**

<b>A</b>	Monthly
<b>B</b>	Once in 2 year
<b>C</b>	Once in 3 month
<b>D</b>	Annually

**7. How to help people with low vision or blindness?**

**I** Tell the person the nature of the emergency and offer your arm for guidance. This is the preferred method when acting as a "sighted guide."

**II** Give verbal instructions to advise about the safest route or direction, using estimated distances and directional terms.

**III** As you walk, tell the person where you are and where obstacles are located.

**IV** When you reach safety, orient the person to their surroundings and ask if they need further assistance.

<b>A</b>	All the above
<b>B</b>	I, II, III
<b>C</b>	II, III, IV
<b>D</b>	I, II, IV

**8. How to help people who are deaf or hard of hearing?**

<b>A</b>	As you walk, tell the person where you are and where obstacles are located.
<b>B</b>	Give visual instructions to advise about the safest route or direction by pointing toward exits or evacuation maps.
<b>C</b>	Give verbal instructions to advise about the safest route or direction
<b>D</b>	Read about Evacuation chairs



**9. How to help people using crutches, canes or walkers?**

**I** Using a 2-person, lock-arm position

**II** Having the individual sit on a sturdy chair (preferably with arms) that is then lifted and carried

**III** Read about Evacuation chairs below for more information on safely transporting non-ambulatory individuals during an evacuation.

**IV** Assist mobility-restricted people to an area of refuge or out of the building

<b>A</b>	All the above
<b>B</b>	I, II, III
<b>C</b>	II, III, IV
<b>D</b>	I, II, IV

**10. What to do during evacuation?**

**I** Check the intended evacuation route for obstacles, if possible

**II** Move people who are unable to leave the building to an area of refuge

**III** Report to your designated assembly area for a head count.

**IV** Ensure that a service animal is not separated from its master

<b>A</b>	All the above
<b>B</b>	I, II, III
<b>C</b>	II, III, IV
<b>D</b>	I, II, IV

**11. As ERT member, do we need to know building layout in our organization?**

<b>A</b>	Yes
<b>B</b>	No
<b>C</b>	Don't know

**12. What do you need to remember about fire assembly points to keep your staff safe in the event of a fire?**

**I** Assembly points outside of the building should be clearly indicated.

**II** procedure should be in place to handle the evacuation

**III** Providing a sheltered, illuminated assembly point can be a good idea

**IV** employees and other persons visiting the building are advised which assembly area they must use in the event of evacuation

<b>A</b>	All the above
<b>B</b>	I, II, III
<b>C</b>	II, III, IV
<b>D</b>	I, II, IV

**13. When the alarm system need to do maintenance check?**

<b>A</b>	Monthly
<b>B</b>	Once in 2 year
<b>C</b>	Once in 3 month
<b>D</b>	Annually

**14. What qualifications of those persons who inspect, test and maintain fire alarm systems.**

<b>A</b>	Trained and certified by the system manufacturer
<b>B</b>	Certified by a nationally recognized organization
<b>C</b>	Affiliated with an organization that is registered, licensed or certified by a state or local authority
<b>D</b>	All the above

**15. What is the most importance in preparedness on fire emergency?**

<b>A</b>	Fire suppression system
<b>B</b>	Active dynamic signage system
<b>C</b>	Building fire exit
<b>D</b>	All the above

**16. Who is responsible to this following responsibility:**

- **Activate ERT**
- **Instruct the emergency response to ERT**

<b>A</b>	Emergency commander
<b>B</b>	Incident commander
<b>C</b>	Building marshall
<b>D</b>	Floor marshall

**17. Who is responsible to this following responsibility:**

- **Ensure there are no obstacles along the emergency lane**
- **Demonstrate the correct location of the gathering place for the residents of the building.**

<b>A</b>	Historian
<b>B</b>	Incident commander
<b>C</b>	Traffic controller
<b>D</b>	Floor marshall

**18. Who is responsible to this following responsibility:**

- **Collect data on the number of occupants of the building**
- **Conduct a head count at the rally (AP) and inform the Building Marshall**

<b>A</b>	Emergency commander
<b>B</b>	Incident commander
<b>C</b>	Building marshall
<b>D</b>	Floor marshall

**19. What is the responsibility as FIRST AIDER during fire emergency?**

<b>A</b>	Helping victims need early assistance appropriate to the process and procedure
<b>B</b>	Instruct the emergency response to ERT
<b>C</b>	Ensure that all occupants of the building was declared out when the evacuation of the building and residents headed to the place of assembly set.
<b>D</b>	help prevent the fire from spreading over large

**20. In recovery plan, which one is the most importance action that need to be taken after emergency?**

<b>A</b>	Post-mortem session
<b>B</b>	Incident reporting
<b>C</b>	Submission of report
<b>D</b>	All the above

**21. All the report should be sent to:**

<b>A</b>	Historian
<b>B</b>	Emergency coordinator
<b>C</b>	Emergency commander
<b>D</b>	Incident commander

**22. In post-mortem session, what is the activity that ERT need to complete?**

<b>A</b>	Meeting to review their respective areas of responsibility for each building.
<b>B</b>	Report for any injuries and accident that occur during the emergencies.
<b>C</b>	To evaluate the effectiveness of the implementation of each recommendation.
<b>D</b>	All the above

**23. In incident reporting, what is the activity that ERT need to complete?**

<b>A</b>	Meeting to review their respective areas of responsibility for each building.
<b>B</b>	Report for any injuries and accident that occur during the emergencies.
<b>C</b>	To evaluate the effectiveness of the implementation of each recommendation.
<b>D</b>	All the above

**24. Please write any suggestions to improve the quality of ERT personnel criteria:**

.....  
.....  
.....  
.....

## APPENDIX C

Appendix 4

### EXAMPLE FIRE SAFETY TRAINING RECORD

Date: \_\_\_\_\_ Duration: \_\_\_\_\_  
Given By: \_\_\_\_\_ Session For: \_\_\_\_\_

#### Subjects Covered

- The significant findings from the fire risk assessment and fire safety policies
- What to do on discovering a fire
- How to raising the alarm, including the locations of fire break glass points
- The action to take upon hearing the fire alarm
- The evacuation procedure for alerting guests, residents and visitors including, where appropriate, directing them to exits and assembly points at a place of total safety
- The arrangements for calling the fire and rescue service
- The location and, where appropriate, the correct use of portable fire extinguishers and fire-fighting equipment
- Knowledge of escape routes including stairways and especially those not in regular use
- How to open all emergency exit doors
- The appreciation of the importance of fire doors, keeping them closed and not wedged open to prevent the spread of smoke and heat, keeping escape routes unobstructed
- Where appropriate, isolating electrical power, gas supplies, stopping machines and processes
- The reasons for not using lifts (except those specifically constructed as evacuation lifts)
- The safe use, risks from storing and working with highly flammable/ explosive substances
- General fire precautions, fire awareness and good housekeeping practices
- The no smoking policy (where applicable)
- Special provisions for assisting disabled people and any training needed
- Identifying fire hazards and fire incidents reporting procedures; and
- Equipment fault reporting procedures.



Figure F: Checklist on Emergency Response Plan (Russel Kabir, 2017)

## APPENDIX D

TASK	SEMESTER 1													SEMESTER 2																		
	WEEK																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27					
Project's Introduction	→																															
Discussion with Supervisor	→																															
Problem Statement			→																													
Objectives	→																															
Scope Study	→																															
Writing Proposal	→																															
Literature Review		→																														
Develop Methodology					→																											
Presentation FYP 1													→																			
Data Collection															→																	
Data Analysis																			→													
Discussion																				→												
Final Report Writing															→																	
Submission of Final Report and Presentation																											→					

