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FIRE SAFETY AT SHOPPING COMPLEX'S FOOD COURT

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Abstract:

Fire accident in a food court at a shopping mall is getting more heard and serious all over the world. Fire safety is very important to manage and improve fire accidents from back again. Therefore, this research is conducted to analyse the causes of fire in, the knowledge of fire safety among the food court workers and to suggest the effective ways to improve fire safety in the food court at the shopping complex. In order to achieve the objectives of the research, the data and information are collected using primary and secondary data. The secondary data are written and published sources collected through books, articles, newspaper, websites and journals. The primary data for this research is using questionnaire in order to obtain a quantitative data. The data gathered through questionnaire is distributed to 100 respondents. The scope of this research only focuses on food court workers at the shopping complex. The respondents answered the questionnaire on a Likert's Scale and their answers are analysed using SPSS Version 25.0. For objective one (1) it was found that the respondents agreed that there are a lot of factors that can cause fire. For second (2) objectives, it was found that most of the food court workers know the fire safety equipment in the food court but not most of them know how to use that fire safety equipment in case of fire. For third (3) objectives, it is found that improvement on the various aspect of the fire safety is necessary to improve the efficiency of the fire safety equipment.

Keyword: *Fire Safety, Food Court, Shopping Complex*

1.0 INTRODUCTION

The occupancy level and usage of the buildings may be changed. Converting the open space in a shopping mall into a food court is a typical example. Malls like any retail centre face exposure to a variety of threats, including fire, which is no stranger to shopping malls. Fires in closed malls, 43 patronised by many individuals, can cause many deaths among frightened individuals who run and push to get out of these burning places and great harm to the property itself (A. Albis, 2015). In order to ensure life protection, minimise property risks, and reduce environmental harm, the widespread use of performance-based codes and design methods for buildings and facilities requires estimation of the effects and probability of fire. Such prediction includes accurate information on the growth and spread of fire, the setting in which fire occurs, and the interactive response to people's fire, fire protection systems, and the structure or design object in general. In order to predict the impact of fire on people, fire protection systems, structure and the environment, information on ignition, fire spread and fire development, heat fluxes and combustion products and their dispersion is needed. Interaction with fire safety systems requires awareness of the functioning and reliability of the systems within the specified context, along with the consistency and reliability of any process or human intervention.

1.1 Problem Statement

A fire broke out at a food stall at the Food Republic food court in 1 Utama Shopping Centre in Bandar Utama, and it was confirmed by the Fire and Rescue Department. The fire in the stall's kitchen involved a 2x3 metre vent. Because of that, the incident had caused a traffic crawl on the Damansara - Puchong Highway (LDP) when road users slowed down their vehicles to take a quick look at the smoke coming out of the building. Reported by (Astro Awani, 2014).

1.2 Aim of Research

To determine the level of knowledge on fire safety equipment among workers and to suggest the effective way to reduce fire in the food court at shopping complex

1.3 Research Objective

- i. To determine the factors that caused fire in the food court at the shopping complex.
- ii. To determine the level of knowledge on fire safety equipment among workers at the food court in the shopping complex.
- iii. To suggest the effective way to reduce fire in the food court at a shopping complex.

1.4 Scope of Research

The scope of research will focus on the staff and workers at the food court in the shopping complex. The questionnaire will be distributed to them which are chef, assistant chef, waiters and others parties involved. The location of this research is in Melaka around the shopping complex nearby that has a food court there.

2.0 LITERATURE REVIEW

2.1 Fire Protection System

2.1.1. Fire Detector

Fire detectors are signals via fire detection wires. If the fire detection line or one of its related fire detectors fails in the fire chamber, the fire detection signal will not be forwarded further. The signal may then be transmitted via a fire alarm detector which is plugged directly into the main fire alarm panel or further passed between the fire alarm detector and the main fire alarm panel via one or two subsidiary fire alarms. If one of those fire alarms (if any) or the detector drawer fails, the signal will stop. (Forell *et al.*, 2016).

2.1.2. Fire Dampers

Fire dampers are designed to be closed in case of fire. A lot of the mare attached to the ventilation duct. It is designed as an overflow opening between two rooms in the walls or ceilings. In contrast, smoke detection equipment applies to dampers and vents designed to open fire cases (Forell *et al.*, 2016).

2.1.3. Water Sprinkler System

Active devices, such as automatic sprinkler systems, are widely used to protect process plants and buildings in industry around the world from fire. These include a fire protection pump, a geometry pipe to carry an extinguishing agent such as water, an alarm device, and sprinkler heads to spray an extinguishing agent into rooms when a fire is detected (Ahrens, 2017).

2.1.4. Fire Extinguisher

When working with extinguishers in an environment that you might not have used before, it is recommended that a test unit be obtained, even in a group setting, so that the area of impact, range limits, and period of use can be explored (Stroberger, 2010).

2.1.5. Mean of Escape

Mean of escape means that it offers one or more secure routes for people to go from any part of the building to a safe place, which can also be defined as a final exit where the final exit allows direct access to the street, the passageway, the walkway or the open place. According to (Tavares, 2010), this is the main source of knowledge when determining exit locations; which uses as a key factor the average distance of travel to establish exit routes.

2.3 Cause of Fire

2.3.1. Gas Leakage

The key causes of kitchen fire are fire and explosion accidents caused by kitchen gas leakage, accumulated soot dirt in the smoke hood or exhaust pipe, electrical fire caused by improper use of different electrical appliances in the kitchen, burning of cooking oil after reaching the spontaneous combustion point caused by continuous heating of the gas stove (Xu *et al.*, 2019).

2.3.2. Short Circuit

As stated by (McGrath E., 2020), short circuit refers to a specific circumstance in which electricity travels outside the specified path of the electrical circuit. As the electrical current completes its circuit path over a shorter distance than is present in the stated wiring, a short circuit occurs.

2.3.3. Negligence

Kitchen fires are mostly caused by human negligence, such as the ignition of oil or other dried food by burning gas (Gao *et al.*, 2014). There are a lot types of negligence occur in the kitchen that is related to the fire such careless when handling the kitchen equipment is the cause of fire.

2.3.4. Exhaust Hood

Exhaust is used to absorb all the dirt and smoke from the kitchen. According to (Xu *et al.*, 2019), fire is caused by accumulated soot dirt in smoke hood or exhaust pipe and when the range hood is open.

3.0 METHODOLOGY

Research methodology can be defined as the study of methods by which knowledge is gained, to get the data collection and information and its aim is to give the work plan of research to make sure the process is buttery smooth. This study would apply a quantitative approach. Quantitative is a process that relies on the numerical data used to interpret the result. Convenience or simple random sampling will be used in order to collect the data. Tools will be provided to the samples to get the data that we need from them. This type of research is most suitable for small samples, while its outcomes are not measurable and quantifiable. The questionnaire is used as a research method for collecting primary data. A total of 100 questionnaires will be provided to the respondent in order to achieve the study objectives. The questionnaire will be distributed randomly to members of the community who are the food court employees who are the cook, assistance chef, waiters and others in the food court at the Melaka shopping complex.

4.0 ANALYSIS/ FINDINGS

A total of 60% of questionnaires were successfully returned and reliable for further analysis. Non-respondents were either not at home or refused to participate during the data collection process. The study found that, there were more than 80% of respondent's aged 18 to 25 years old and there were about 60% of them involved in food court accidents before. This can be inferred that the majority of the respondents were highly matured to provide valid opinions on the problem of the study and reliable to provide information for this analysis.

4.1 Cause of Fire in the Food Court at the Shopping Complex

The first objective was caused by a fire in the food court at the shopping complex. For this research, there are a few characteristics or factors that are selected to determine the causes of fire. Based on the data collected from 60 respondents in two food courts which include Tesco Cheng Melaka and Aeon Bandaraya Melaka, it was found that gas leakage, negligence and exhaust hood at the kitchen were the most causes of fire. But, through this study it can be said that there are many types of fire in the kitchen at the food court. Sometimes the cause of fire depends on the situation, for example the ventilation condition at the kitchen. From this analysis, it can be concluded that most of the respondents strongly agree and agree about the cause of fire that had been stated in the questionnaire and some of the respondents did not agree and had mixed feelings.

4.2 To Determine The Level of Knowledge on Fire Safety Equipment Among Workers In The Food Court At Shopping Complex.

The second (2) objective was to determine the level of knowledge on fire safety equipment among workers in the food court at the shopping complex. Based on the result from the survey, most of the respondent know and understand the active fire safety equipment in the food court such as portable fire extinguisher, fire hose reel, fire damper, fire alarm detector, water deluge system and passive fire protection which mean of escape but there are several of the respondents less understood and less know about the fire safety equipment. Therefore, through this study it can be concluded that the second objective has achieved the target because the majority of the respondents know and understand the fire safety equipment used in the food court at the shopping complex. This is due to results based on the survey method made during the data collection.

4.3 To Suggest the Effective Ways to Reduce Fire in the Food Court at the Shopping Complex

The third objective is to suggest the effective ways to reduce fire in the food court at the shopping complex. This objective has been accomplished with the reference of the survey from Section C where the respondents were asked on the level of agreement on some suggestions to reduce the fire in the food court at the shopping complex. Based on the analysis done in the previous chapter by several suggestions by the researcher, the respondents have given feedback to help researchers suggest the effective ways to reduce fire in the food court at the shopping complex. The researcher also ranked the components of fire safety that need to be improved in terms of location, size, number and speed according to the respondent's opinions. From the survey achieved, it can be concluded that, most of the respondents also highly agree on the suggestion for the improvement of the fire safety equipment in the food court at the shopping complex. As usual, some of the respondents have mixed feelings and not agree with the suggestion on improvement of the fire safety equipment to reduce fire in the food court at the shopping complex. In conclusion, food should be the safe place for workers to cook and work and safe for customers who come to the food court to eat too. Safety needs to be considered and applied every time to avoid bad incidents happening. Thus, fire safety at the food court is vital and very important is safety users.

5.0 CONCLUSION

It can be summarized that there are a lot of causes of fire in the food court. Besides, the results show most of the respondents know and understand the fire safety equipment in the food court and they know how to use the fire safety equipment in case of fire. Moreover, results for suggestions on improvement on the fire safety indicate that most of the fire safety equipment need to be improved in terms of location, size, number, sensitivity, instruction of using the equipment and some more need to be improved so the fire safety equipment gets better and efficient over time.

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