

Analysis Of Occupational Health and Safety Firefighters in Makassar City

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ABSTRACT

The problems discussed in this study relate to the number of employee work accidents that tend to increase each year significantly due to aspects of the work environment, work equipment and materials, and how to do work. Therefore, this study's purpose of identifying and analyzing employees' occupational health and safety at the Makassar City Fire Department. The research method used is descriptive-quantitative. The population in this study were all firefighters in the Makassar City Fire Department, with a total sample of 214 people. Data collection techniques used in this study were questionnaires, observations, interviews, and document review using a Likert's Summated Rating (Likert's) scale analysis and SPSS 17 program assistance. The results showed that the occupational health and safety of the Makassar City firefighter department is a positive category. In addition, 196 respondents or 91,5% positive outlook and 18 respondents or 8,41% have a very positive outlook in environment work, 133 respondents or 37,9% positive outlook and 81 respondents or 37,9% positive outlooks about work equipment and materials. The last aspect shows 135 respondents or 63,1% positive outlooks and 79 respondents or 36,9% positive outlook on how to do the work.

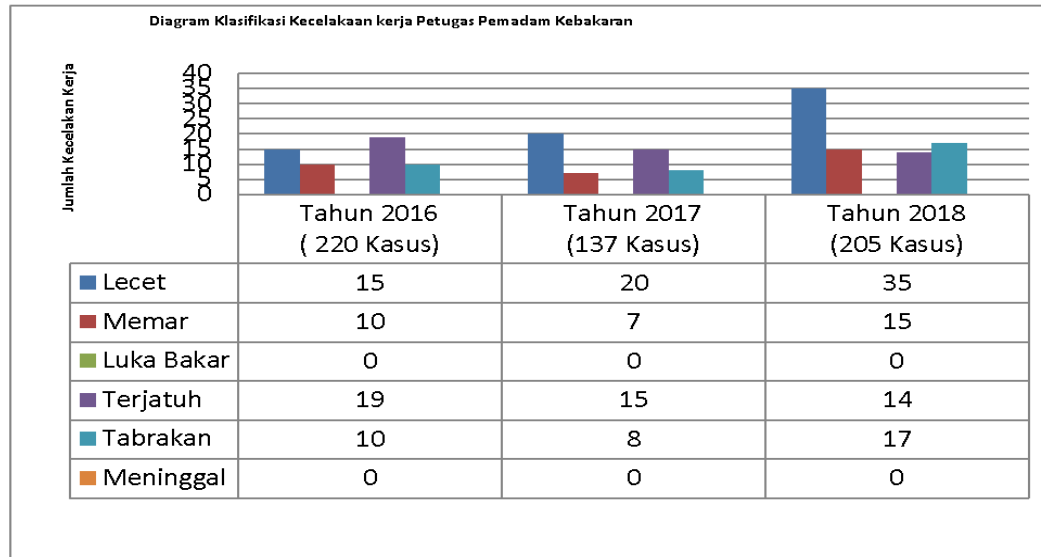
Keywords: Occupational Health, Safety Analysis, Employees, Work Environment, Work equipment and Materials.

INTRODUCTION

At the beginning of handling occupational health and safety, firefighters were still limited to inspecting only the work environment. In 1930, Heinrich, who make the domino theory, researched accident causes in occupational health and safety firefighters. In his view explains that unsafe acts and unsafe conditions are causes of accidents in firefighters' scope. Therefore, the alleviation of managing occupational health and safety favor creating a standard system (OHSAS) 18001 (Ramli 2010:5).

The firefighter's department has worked as a team to extinguish the fire which threatens life, rescue people, and sometimes helping animals from the dangerous condition. 16th February 2017 at 21.40 CBT is the worst case which fires two hundred stands. The source of the accident is an electrical short circuit. According to this case, firefighters' crews are the most prone to accidents in physical or mental. Besides that, personal car accidents often occur when

the crew in a way to save people. 15th Mei, 2017, at 14.03 CBT in Urip Sumoharjo street, the firefighter's car hit public cars transportation at high speed.



Picture. 1 Work Accident Case at Makassar City Firefighter Department in December 2018
Source: Data of Firefighters Department of South Sulawesi in 2018

Pict.1 explained the number of firefighters' accidents when they did their jobs in Makassar city. The picture shows the fluctuation in the last three years. In 2018, the number of works accidents was 81 crew or 43,78%, higher than in 2017 and 2016 with 50 staff or 27,2% and 54 staff or 29,1%. It is caused by less proficiency or trifles about firefighters' work safety standards, for example, a little bit of the function of PPE (Personal Protective Equipment). The writer was fascinated to understand and investigate "how the Occupational Health and Safety Firefighters in Makassar City works" based on the previous description.

The management concept of Human Resources

Management is a science and art which control the utilization of human resources and so on, efficiently and effectively to achieve specific goals (Hasibuan, 2001). Management is a distinct process consisting of planning, organizing, actuating, and controlling, utilizing both science and art, followed to accomplish the predetermined objective.

Management human resources are understood as processes within the organization and can also be interpreted as a policy (Priyono & Darma, 2016). Also, the Management of human resources can understand as part of the process that helps the organization achieve its objectives (Cushway, 1994). Another definition, Management of human resources, known as the recognition of the importance of organization's workforce as vital human resources contributing to the goals of the organization, and utilization of several functions and activities to ensure that they are used effectively and fairly for the benefit of the individual, the organization, and society.

Management of human resources as policy means as a facility to maximize the organization to conquer their goals. This context comprises a set of policies designed to maximize organizational integration, employee commitment, flexibility, and quality of work (Guest, 1987).

Occupational Health Concept

In general, the occupational health concept is a condition that includes stability of emotions, physical and mental condition. The definition of a healthy individual is a person without any disease and does daily activities without nuisance (Mathis & Jackson, 2002). Besides that, Occupation health can be divided into two parts; 1) physical health 2) Mental health (Panggabean, 2012). In personal mental health, it has five characteristic 1) physic 2) psychic 3) Social 4) Religious morals 5) unhealthy personal characteristic includes inadequacy and insecurity (Tayibnapis, 2000).

Moreover, there are for intention of occupational health:

- 1) Improving and maintaining the highest level of occupational health physically, mentally, and socially in all occupations;
- 2) Preventing the onset of health issues caused by working environment conditions;
- 3) Protect the workforce from health hazards caused by work;
- 4) Set down the workforce in a work environment that corresponds to the workforce's physical, body, psychological, mental condition (Tarwaka, 2014).

Occupational Safety Concept

The occupational safety concept contains the risk of safety and health (Prabu, 2005). It is steps to make a safe and peaceful working atmosphere in every employee workspace (Suma'mur, 1996). On the other side, it is defined as protecting employees from injuries caused by work-related accidents (Wayne, 2008). And newly definition, occupational safety is known as a condition that frees suffering, damage, and loss in the workplace (Prabu, 2005). Occupation safety is consisting of:

- 1) Hygiene aspect includes the health and personal hygiene of food, beverages, and cloting.
- 2) Sanitation aspect includes the procurement of clean water, trash container, the maintenance and storage of equipment, and the arrangement of the environment.
- 3) Aspects of the work environment include anticipating the causes of disease and physical conditions in the work environment, chemical conditions, biological conditions, and working psychology conditions (Sutrisno, 2007).

The goals and rules of Occupational health and safety work

The purpose of occupational health and safety work is comprised:

- 1) Protects from bad possibilities that may occur due to carelessness;
- 2) Maintaining health to obtain optimal work results;
- 3) Reduce morbidity or mortality rates among workers;
- 4) Preventing infectious diseases and other diseases caused by fellow workers;
- 5) Fostering and improving physical and mental health;
- 6) Ensure the safety of everyone in the workplace;

- 7) Production resources are maintained and used safely and efficiently (Ernawati & Nelmira, 2008).

The indicators of occupational health and safety works consist of:

- 1) The workplace is a location where employees carry out their work activities
- 2) machinery and equipment are part of operational activities in the production process, usually in heavy and light equipment (Suma'mur, 1996).

The aspects of occupational health contain:

- 1) The work environment is a place where a person or employee is engaged in work activities.
- 2) Work equipment and materials are the main things needed by the company to produce goods.
- 3) The way of doing work is that each production department has different ways of doing work owned by employees (Anoraga, 2005).

Relevant to the previously stated, there are three reasons occupational health and safety work must implement: 1) Morals, 2) law and 3) Economics.

Fire Disaster Concept

Fire disaster occurs due to several factors and is broadly divided into three parts, 1) Human factors such as neglect, envy, revenge, lack of knowledge of the dangers of fire, intentional, insurance motives, robbery, mental illness, and so on. 2) Animal factors. And 3) natural factors (Hasibuan, 2001).

The work equipment includes a Fire extinguisher; it is one of the types of equipment that contains fire extinguishing materials and has pressure both in the form of cartridges and store pressure (Harahap, 2009).

Analysis Concept

The analysis is about organizing and assessing facts, then interpreting views and formulating supporting conclusions (Tayibnapis, 2000). In line with the previous opinion, analysis is a thinking activity to use a whole into components to recognize the signs of the components, their relationship to each other, and their respective functions as a whole (Sastradipoera, 1994).

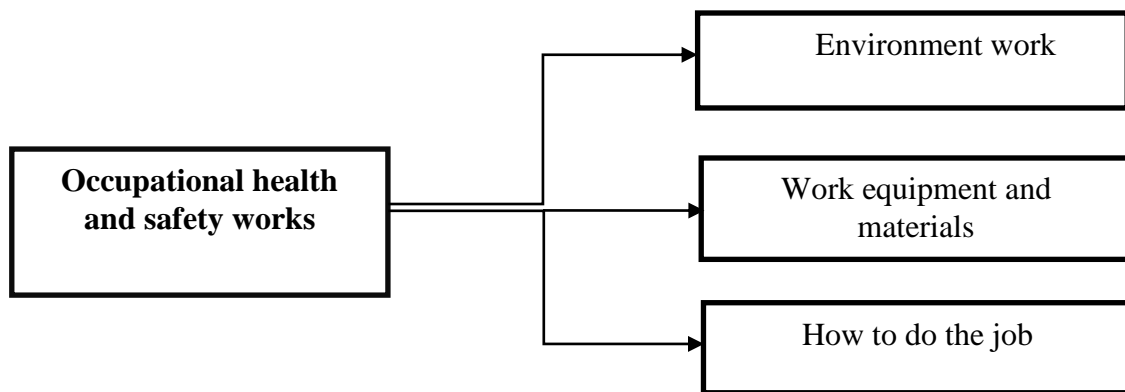
The National Occupational Safety Association (NOSA) explains that Job Safety Analysis (JSA) is an effort to analyze the jobs and procedural in an industry. JSA is defined as a method that relates to every step with goals improving the solution to eradicate and control the accidents (Maisyaroh, 2010). The scope of JSA are :

- a. Jobs that have frequent accidents or that have a high accident rate;
- b. Jobs that are high risk and can be fatal;
- c. Work that is rarely done so that the same hazards that exist are not yet known; and
- d. Complicated works where slight negligence could result in an accident or injury.

Variable Operational Definition

Occupational health and safety are an instrument that protects workers, companies, the environment and the surrounding community from the dangers of work accidents. The

operational definition of a variable is a definition that describes a phenomenon. Based on the background and existing theoretical concepts, the operational definitions of variables in this study are as follows:



Picture.2. Minds Framework
Source: (Anoraga, 2005)

METHOD

The researcher used the quantitative method with descriptive analysis to analyze the occupational health and safety firefighters in Makassar City.

Population and Sample

The population of this research is 460 firefighter crews in the Makassar firefighter department. The sample takes from the 460-population using the Issac and Michael formula with a 5% error.

$$S = \frac{\lambda^2 \cdot N \cdot P \cdot Q}{d^2(N-1) + \lambda^2 \cdot P \cdot Q}$$

$$S = \frac{441,715}{2,10775}$$

$$S = 209,567 \text{ or } 210.$$

Data collection techniques and instruments

All the data sources consist of primary and secondary data. The data collection techniques and instruments through questioner, observation, interview, and documentation studies. As for sources of information in data collection using interview techniques as follows:

<i>Head of firefighter department</i>	= 1 person
<i>Head of firefighter operations</i>	= 1 person
<i>Head of operational division</i>	= 1 person
<i>Operations coordinator</i>	= 1 person
<hr/> Totals	<hr/> = 4 People

1. Data Processing Techniques

Data analysis about the sum of frequencies and percentages can be formulated as follows:

- a. Likert's summated rating is a procedure that researcher used to count the score of respondent's score (Simamora, 2002).
- b. The steps in determining all respondents' outlook to quality of the X Company are as follow:
 - 1) Determine the maximum score, namely the maximum score obtained by each respondent multiplied by the number of respondents.
 - 2) Determine the minimum score, namely the maximum score obtained by each respondent multiplied by the number of respondents.
 - 3) Determine the median value, which is the sum of the total scores at least divided by two.
 - 4) Determine the value of the first quartile, which is the sum of the minimum total scores with the median divided by two.
 - 5) Determine the value 3rd quartile, which results from the sum of the maximum scores with the median divided by two.
 - 6) Make a scale that describes the minimum total score, the 1 quartile value, the median, the 3rd quartile, and the maximum score.
 - 7) Find the score limits for each attitude category.
 - 8) Determine the total score obtained by all respondents. Based on each respondent's score distribution, the distribution table of respondents' data collection results.
 - 9) Interpret the total score of respondents with a scale of points.
- c. Determine the percentage of respondent's answer

$$P = \frac{F}{N} \times 100\%$$

P: Percentage
F: Frequency
N: Total of respondent

- d. Determine the value score
Totals value score = total x Frequency score (F)
Note:
 - Total is a categorical score (Likert's 5,4,3,2,1)
 - Frequency score is respondents' responses

- e. Determine the percentage of value score

$$\text{Mean Score (\%)} = \frac{\sum \text{Score percentage (\%)}}{\sum \text{Question}}$$

- $\sum \text{Score percentage (\%)} = \text{totals percentage of all questions;}$
- $\sum \text{questions equal to all the number of questions.}$

f. Determine the Mean Score

$$\text{Score Percentage (\%)} = \frac{\text{Achieved score}}{\text{Maximum Score}} \times 100$$

Note:

- \sum Score percentage (%) = totals percentage of all questions.
- Maximum score is the highest score in Likert's scale, example; 5 x total respondents = 5 x 210 = 1.050.

Data from the questioner, interview, and documentation studies are collects to conclude. Besides that, data from the interview also complete the questioner data—the percentage of using the Likert's scale in table 3.

Table 3. Likert's Scale

Order	Respondent's Respons	Score
1	Strongly agree	5
2	agree	4
3	Quite agree	3
4	disagree	2
5	Strongly disagree	1

2. Data Analysis

The analysis of this data uses a descriptive method with frequency distribution to provide an overview of the occupational health and safety firefighters in Makassar city.

RESULTS AND DISCUSSION

This research is based on the environment work aspect, work equipment aspect, and how the firefighter did their job in the Makassar city firefighter department.

a. Environment work aspect

The total score from respondents' answers is 8.293; or other words, it means positive response. It is indicated by the total score of respondents, which lies between a score of 6955 (median) and 9897.5 (quartile 3), which is the limit score in the positive response category. Overall, the respondents view that the Occupational Health and Safety applied to the Makassar City Fire Department has met the standard requirements and procedures regarding work safety regulated in the Indonesian government regulation on occupational safety (Law No. 1 Tahun 1970).

b. Work equipment and materials aspect

The respondents' overall answers to employees at the Makassar City Fire Department regarding work equipment and materials obtained the overall score of respondents was 13,541. In other words, they were in the category of positive responses. It is indicated by the total score of respondents, which lies between a score of 6955 (median) and 9897.5 (quartile 3), which means the limit score in the positive response category. It means that overall, respondents are of the view that the work equipment and materials available at the Makassar City Fire Department are adequate and adequate so that they have a positive and significant correlation with the occupational health and safety of employees in the office.

c. How to do the job aspect

The respondents' overall answers to Makassar City Firefighters in terms of how to do the work, the overall score of respondents was 7,786, or in other words, they were in the very positive response category. It is indicated by the total score of respondents, which lies between a score of 7,704 (Quartile 3) and 9,630 (Maximum), which is the limit score in the very positive response category

Based on three indicators that have been researched, all the indicators have a positive correlation and significance with (Dewi, 2008) "the effect of occupational health and safety on employee performance at PT. Eco green Oleochemicals Medan Plant." Rijuana Dewi's study explains that positive and significant occupational health and safety effects work about 52,5% directly and partially. But, on the other hand, the indicators of occupational health and safety work mean feeling safe and free from suffering during work and physically and mentally healthy.

The research is also relevant to studies (Prabu, 2005), which explain that occupational safety works correspond to environment works, work equipment, and physical-mental condition of staff. Mangkunegara favors the main focus that must be considered for improving the quality of work by a department head are these three indicators.

CONCLUSION

Based on the analysis result, the environment work aspect, work equipment-materials aspect, and how to do the job positively correlate significantly with occupational health and safety Makassar firefighter's crew. Meanwhile, the staff who do not understand correctly and properly about occupational health and safety in carrying out fire disaster management tasks must be given job training to support implementing fire disaster management tasks in Makassar city according to operational standards.

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