

Workers' Perceptions of Occupational Safety and Health at Steam Power Plant Bolok Unit II, East Nusa Tenggara

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Abstract. Workers' perceptions of Occupational Health and Safety (OHS) in a company are significant in preventing accidents and occupational diseases because perceptions affect workers' behavior. This research aims to know factors that affect workers' perceptions about occupational health and safety. This research is an observational study with a cross-sectional design. This research was done in Bolok Electric Steam Power Plant Unit II East Nusa Tenggara with 95 workers. The data analysis used is simple linear regression analysis with $\alpha = 0.05$ (5%). Based on the study results, the significance of t and the value of experience (5.329 and 0.000) and knowledge (7.034 and 0.000). It shows that experience and knowledge affect employees' perceptions.

Keywords: *Perceptions, Occupational Health, and Safety, Electric Steam Power Plant*

Abstrak. Persepsi pekerja tentang Kesehatan dan Keselamatan Kerja (K3) di sebuah perusahaan merupakan hal yang penting untuk mencegah terjadinya kecelakaan dan penyakit akibat kerja, karena persepsi pekerja berpengaruh terhadap perilaku pekerja tersebut. Penelitian ini bertujuan untuk menganalisis factor yang berpengaruh terhadap persepsi pekerja tentang K3 di PLTU Bolok Unit II NTT. Penelitian ini merupakan penelitian observasional dengan rancangan potong lintang. Penelitian ini dilakukan di PLTU Bolok Unit II NTT dengan sampel 95 pekerja. Analisis data menggunakan regresi linier sederhana dengan $\alpha = 0.05$. Hasil penelitian ini menunjukkan nilai t_{hitung} dan $p-value$ dari variabel pengalaman adalah 5.329 dan 0.000, sedangkan untuk variabel pengetahuan adalah 7.034 dan 0.000. Hasil ini menunjukkan adanya pengaruh antara pengalaman dan pengetahuan dengan persepsi pekerja tentang K3. Berdasarkan hasil tersebut, perlu dilakukan kegiatan yang dapat meningkatkan pengetahuan pekerja tentang K3 secara berulang. Hal ini diharapkan dapat meningkatkan persepsi pekerja PLTU Bolok Unit II NTT tentang K3.

Kata kunci: *Persepsi, Kesehatan dan Keselamatan Kerja, Pembangkit Listrik Tenaga Uap*

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Introduction

Occupational Health and Safety (OHS) is a protection measure proposed to all potentials that can cause danger (Suma'mur, 2014). This is intended so that workers and other people in the workplace are always safe and healthy and all production sources can be used safely and efficiently (Kuswana, 2014).

There are 3 domain factors (The Safety Triad) that are interconnected in the formation of a safety culture. The three factors are human, behavior, and environment (Sholihah, Qomariyatus & Kuncoro, 2013). The manifestation of OHS culture can be seen in the behavior of organizational members, the state of the environment in the workplace (tools, infrastructure, physical environment), management control systems (standard procedures, ceremonies, and company stories/experiences about safety in the company) (Gunawan, 2016).

A work accident is an accident that occurs when someone is doing work and is an unplanned event caused by an act that is not careful or an unsafe condition (Suma'mur, 2014). A 2012 report from the International Labor Organization (ILO) stated that 6,300 people died due to work accidents or occupational diseases (Social Security, 2012).

The number of work accidents in Indonesia is still high. This is supported by data from the Ministry of Manpower which notes an increasing trend in the number of job accidents in Indonesia which has continued to increase in recent years. In 2018 there were 157,313 cases of work accidents, or an increase compared to cases of work accidents that occurred in 2017 of 123 thousand cases. The main cause of work accidents is the low awareness of the importance of implementing OSH in industry and society.

BPJS of employment data from NTT Province reported that the number of work accident cases in 2017 had increased by 4 times compared to the previous year. In 2016, there were 19 cases. This number has increased significantly in 2017 to 76 cases. In 2018 the number of work accident cases decreased to 71 cases (BPJS Ketenagakerjaan Provinsi NTT, 2019).

The high number of accidents is one of the causes is workers who do not understand about OHS, do not know clearly about OHS even though they have heard about it, there are still many companies that have not provided safety and security tools for their workers, and there are still many companies that ignore OHS for both workers and companies (Endriastuty et al., 2018). For workers, accidents that occur can result in suffering such as minor or serious injuries, even death (Waruwu & Yuamita, 2016). Given the importance of OHS, the company has begun to expect an Occupational Health and Safety program in its operation. Workers 'and companies' knowledge of OHS is sometimes still low, both knowledge about OHS, etc (Yuliandi & Ahman, 2019).

Research by the National Safety Council in 2011 stated that the causes of work accidents were 88% due to unsafe behavior, 10% due to dangerous conditions, and 2% other unknown causes. The biggest causes of work accidents are unsafe behavior (80-95%). This behavior occurs, because of the perceptions and beliefs of workers who feel they are experts in their fields and are supported until now, there have been no work accidents as long as they work according to the rules and procedures (National Safety Council, 2011).

Behavior is all human activities or activities that can be observed directly or that cannot be observed by outsiders (Budiharto, 2013). Behavior is a person's reaction to external stimuli or stimuli. Therefore, behavior occurs through the presence of a stimulus to the organism (Notoatmodjo, 2012). The World Health Organization theory explains that there are 4 main reasons people behave, namely understanding and consideration, namely in the form of knowledge, perceptions, attitudes, beliefs, and one's assessment of an object, important people as references, resources, and culture (Notoatmodjo, 2012). A person's behavior is based on their perceptions. Perception is very important because a person's perception can change that person's behavior (Robbins, 2015).

Perception is a process that is preceded by sense, that is, the receipt of a stimulus through the senses is also called a sensory process (Akbar, 2015).

Perception is a process of organizing and interpreting the impressions received by the human senses in order to give a certain meaning (Robbins, 2015). In terms of OHS, perception also plays an important role in determining the occurrence of accidents, especially perceptions of occupational hazards (Susetyo & Ratnaningsih, 2016).

Perceptions of OHS are employees' views of what is provided by the company which aims to ensure the safety and health of employees. Perception in this case cannot be separated from the cognitive response, which is a form of effort to understand the changes that occur in the environment as a stimulus (Maula et al., 2019). Perceptions of OHS affect the occurrence of work accidents. Every worker has different perceptions of OSH, so workers tend to work in accordance with their personal views on OHS that is applied in their workplace. This condition creates an unsafe act that can lead to an accident. Therefore, perception and understanding of OHS is essential factor for the successful implementation of OHS in the workplace. Positive perception and correct understanding of OHS among employees is a determining element of progress in implementing normative OHS according to the provisions of the prevailing laws and regulations (Rahman, 2015).

Law No. 1 of 1970 concerning work safety, in article 13 states "whoever will enter a workplace, is required to obey all work safety instructions and use the required personal protective equipment". The realization of this is also influenced by the perception of people or workers who enter the area or workplace. One of the risky workplaces and is required to comply with all regulations is the Steam Power Plant (UU No 1 Tahun 1970 tentang Keselamatan Kerja, 1970).

A steam power plant is a generator that uses kinetic energy from steam to produce electrical energy. The main form of this type of power generation uses a generator connected to a turbine where to turn the turbine, kinetic energy from hot or dry steam is needed. Steam power plants use a variety of fuels such as coal and fuel oil and Marine Fuel Oil (MFO) for initial start. Generally, the Steam Power

Plant system uses the main components in the form of a boiler, turbine, generator, and condenser (Abbas & Arif, 2019).

The results of the initial survey conducted were in the form of an interview with one of the Bolok Electric Steam Power Plan Unit II East Nusa Tenggara officers who said that in their workplace, there were 2 major divisions, namely the operations division and the maintenance division. In the operations division, there are potential hazards that can threaten the safety of workers, such as an explosion, getting caught in a moving part of a steam turbine, and indirect contact with electricity. Whereas in the maintenance division, the potential hazards that threaten safety are falling from a height, being hit by welding sparks, being hit by falling equipment, being exposed to chemicals.

Based on the statement of the interviewed officer, accidents that usually occur are minor accidents such as a pinched fingers and nails/broken bones in the course of work activities, such as limited movement of workers due to injuries to limbs, loss of concentration of workers and even companies having to pay maintenance costs for work. workers who have an accident. In addition to humans who are victims, accidents that occur also have an impact on equipment damage. Even though the victim is not a human being, it will cause economic loss to the company because they have to repair the damaged equipment or replace it if the damage makes the equipment impossible to use again. Because of this, a study was conducted with the auto analyzet of knowledge and experience on OHS perceptions of workers in electric Bolok Electric Steam Power Plan Unit II East Nusa Tenggara.

Method

This research is an observational study with a cross-sectional design namely research that aims to determine the relationship or influence between 2 or more variables at the same time. This research was conducted at Bolok Electric Steam Power Plan Unit II East Nusa Tenggara. The variables of this study include knowledge and experience which are thought to affect workers' OHS

perceptions. The population in this study were all workers of the Bolok Electric Steam Power Plan Unit II East Nusa Tenggara, totaling 261 people. The sample in this study amounted to 95 people who were determined using a sample size formula according to SK Lwang and S. Lameshow (2014) as follows:

$$n = \frac{\{Z_{1-\alpha/2}\sqrt{P_0(1-P_0)} + Z_{1-\beta}\sqrt{P_a(1-P_a)}\}^2}{(P_a - P_0)^2}$$

Information:

N = Sample size

P₀ = Value of population proportion according to previous research, which is 70%

P_a = Estimated population proportion value 80%

Z_{1- α /2} = Z value 5%= 1.96

Z_{1- β} = Z value at 95% test power = 1.28

The instrument used in this study is a questionnaire adopted from Masriyah's research in 2012 and has been modified. The questionnaire used contains 51 questions and the Likert scale is used to measure it. In the Likert scale, quantification is done by calculating the response of agreement or disagreement (on a continuum) to a particular attitude object. The response category consists of 4, starting from strongly agree (SS), agree (S), disagree (TS), and strongly disagree (STS), if the statement is favorable or positive, it is given a score of SS = 4, S = 3, TS=2, STS=1, and if the statement is unfavorable or negative, it is given a score of SS=1, S=2, TS=3, STS=4. Data analysis using simple linear regression analysis. After the data were analyzed, the data were presented in tables and narration.

Result

1. Descriptive Analysis

Table 1 shows the analysis of the effect that begins with the assumption test, which consists of tests for normality, linearity, and multicollinearity. The results of this test indicate that. The data in this study have met the requirements and can be continued in hypothesis testing with linear regression testing.

Table 1.
Descriptive statistics

No.	Variable	Minimum	Maximum	Average	Standard Deviation
1	Knowledge	58	79	68.39	5.884
2	Experience	23	32	27.55	2.801
3	Perception of K3	35	52	42.23	3.929

2. Regression Analysis

Table 2.
Linear Regression Test

Model	Unstandardized Coefficients		Standardized Coefficients	t	Significance
	B	SE	Beta		
(Constant)	19.948	4.148		4.809	0.000
Knowledge	0.326	0.060	0.488	5.392	0.000
(Constant)	18.740	3.197		5.861	0.000
Experience	0.853	0.115	0.608	7.385	0.000

Table 2 shows that after the statistical test was carried out with a simple linear regression test, the results were obtained, namely the value of $t = 7.385$ (greater than the value of t -table) and the significance value of t is 0.000 (less than $\alpha = 0.05$). It can be concluded that experience has a significant influence on workers' perceptions of OHS, with the causality relationship regression model as follows:

$$\text{Perception} = 18.740 + 0.853 \text{ Experience}$$

The experience of a worker about OHS will increase the perception of OHS of the worker by 0.853 times. The results of the analysis with a simple regression test obtained the results $t_{count} > t_{table}$ ($5.329 > 1.98609$) and the significance value $t < \alpha$

(0.000 < 0.05), so it can be concluded that knowledge has a significant influence on workers' perceptions of OSH. Based on the results of simple linear regression, the causal relationship regression model is obtained as follows:

$$\text{Perception} = 19.948 + 0.326 \text{ Knowledge}$$

The above results indicate knowledge will increase workers' perceptions of OHS by 0.326 times.

Discussion

The Effect of Experience on Perceptions of OHS

Experience is a factor that greatly influences the interpretation of the stimulus obtained. The things we have known or learned can influence our perception of what we see or experience (Notoatmodjo, 2012). Experience is one of the factors that can affect a person's perception (Robbins, 2015). Perception is also influenced by experiences that a person has experienced that cannot be separated from the surrounding environment (Susetyo & Ratnaningsih, 2016).

The results showed that the experience of workers influences workers' perceptions of OHS at electric Bolok Electric Steam Power Plan Unit II East Nusa Tenggara. The results of this study are by the theory put forward by Robbins that experience can affect a person's perception (Robbins, 2015).

Zainal explained that the factor that determines a person's experience in working is the length of service that person has worked in a company (Zainal, 2016). The longer a person works, the more experience they have. The experience gained is good and bad experiences at work under OHS regulations, where workers who work following the applicable OHS provisions will feel a good impact, and workers who work not by OHS provisions will feel the bad impact from working not following OHS.

Workers' experience while working with OHS provisions in the form of good and bad experiences will greatly affect workers' perceptions of OHS applied to the company (Afianto et al., 2016). If workers feel the benefits and avoid accidents while working with the provisions of OHS, then this will form the workers' perception that the OHS applied is good and it is important to be obeyed during work.

From the primary data obtained at the time of conducting the research, the average working period of the respondents was 3.5 years. With a working period of 3.5 years, workers gain a lot of experience in working, both good and bad experiences, so that workers already know the benefits of working with OHS provisions and the impact of working without OHS provisions. So that the experience of workers can influence workers' perceptions of applied OHS Bolok Electric Steam Power Plan Unit II East Nusa Tenggara.

The coefficient of determination obtained is 0.853, which means that experience can affect workers' perceptions and has a positive influence. The more experience the workers have, the better the perception of workers about OHS applied at Bolok Electric Steam Power Plan Unit II East Nusa Tenggara. Workers who have a good experience at work can be useful in increasing the perception of other workers towards OHS, namely by sharing their work experience with other workers, especially new workers so that they can help workers understand the importance of OHS in their work.

The results of the analysis of the answers to the experience questionnaire on perceptions found 14 negative responses from respondents to several statements on the questionnaire. One of the statements that were given a negative response was the statement "working with Personal Protective Equipment (PPE) or not using PPE, I am still safe from an accident". This means that experience can have a negative or negative impact on workers' perceptions because during their work they have never had work accidents even though they work without wearing PPE. Therefore, there are several things they ignore at work, namely personal safety, regulations on the use of PPE, and a high risk of work accidents.

The results of this study are in line with research conducted by Prasetyo in 2016 about factors that influence the perceptions of medical personnel and paramedics on OHS at Tugurejo Semarang Hospital. The results of the study show that experience has a significant influence on perception. If the employee's experience is getting better at work, the employee's perception of hospital OHS will be better. In line with this research, experience has a positive effect on workers' perceptions of OHS, namely the better the experience of workers, the better their perception of OHS is applied (Prasetyo, 2016). This research is also in line with Budiarti's research on the effect of education level and work experience on perceptions of job placement at PT. Tiga Serangkai, namely work experience has a significant influence on workers' perceptions of work placement, where the more work experience of employees, the better their perception of work placement (Budiarti, 2014).

The Effect of Knowledge on Perceptions of OHS

Knowledge is the result of human sensing of an object through the senses it has (eyes, nose, ears, etc) (Notoatmodjo, 2012). One of the factors that influence perception is the frame of reference, which is the knowledge framework that is acquired through education, reading, research, or other means (Notoatmodjo, 2013). One factor that influences a person's perception is knowledge (Robbins, 2015).

The results of the statistical test obtained indicate that knowledge influences workers' perceptions of K3. This is following the theory put forward by Robbins in 2015 that knowledge influences perception. A person's knowledge can be influenced by the level of education, where the higher a person's education the better his knowledge (Robbins, 2015).

A person's knowledge can be influenced by the level of education. The higher the education level of a person, the better his knowledge. The education level of the respondents in this study was senior high school, vocational high school, and undergraduate students. Looking at the education level of the respondents, it can be said that the respondents have good thinking power so that the educational efforts

provided by the company in the form of OHS training, socialization, or other forms of activities can be well accepted and understood, to increase their knowledge of OHS. Knowledge of workers about OHS that is good will form a good perception of workers about the OHS that is applied so that workers can work safely and avoid work accidents by the rules and regulations applied. With sufficient knowledge (Hartono & Sutopo, 2018).

Respondents' responses to the questionnaire on the effect of knowledge on perceptions, most of the respondents gave positive responses to the statements on the questionnaire. However, some respondents gave negative responses to several statements that describe that workers feel that training and orientation or introduction to work have not been adequate. The coefficient of determination obtained means that the knowledge of workers about OHS has an influence on workers' perceptions of OHS and has a positive effect, namely the higher the knowledge of workers about OHS, the better the perception of OHS.

The results of this study are in line with research conducted by Prasetyo in 2016 about factors that influence the perceptions of medical personnel and paramedics on OHS at Tugurejo Hospital Semarang, namely having the same education level of respondents, namely senior high school, vocational high school, and undergraduate students and where the level of education affects knowledge by (Prasetyo, 2016).

Good knowledge will increase the perceptions of workers (Hanifa et al., 2017). Therefore, the material that will be given to increase workers' knowledge about OHS must be considered properly. Someone will show a positive attitude towards something if they know how much economic benefit they will get if they do so. Thus, the material that is important to provide in OHS training for workers in the calculation of the economic advantages and disadvantages that workers will get if they apply OHS in their work (Notoatmodjo, 2014).

Conclusion

This study shows the influence of experience and knowledge on workers' perceptions of OHS. Knowledge provides a greater influence when compared to worker experience. It is hoped that Bolok Electric Steam Power Plan Unit II East Nusa Tenggara, especially the OHS division, will carry out activities that can increase workers' knowledge of OHS repeatedly, such as training, socialization, and worker assistance. This needs to be done repeatedly to form a good worker perception of OHS which is applied in Bolok Electric Steam Power Plan Unit II East Nusa Tenggara. Workers' perceptions of OHS can be improved by providing workers with an understanding of the economic losses experienced in the event of a work accident so that workers understand the importance of OHS at work.

Suggestion

It is hoped that Bolok Electric Steam Power Plan Unit II East Nusa Tenggara, especially the OHS division, will carry out activities that can increase workers' knowledge of OHS repeatedly, such as training, socialization, and worker assistance. This needs to be done repeatedly to form a good worker perception of OHS which is applied in Bolok Electric Steam Power Plan Unit II East Nusa Tenggara. Workers' perceptions of OHS can be improved by providing workers with an understanding of the economic losses experienced in the event of a work accident so that workers understand the importance of OHS at work.

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