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The Effect of Occupational Safety and Health on Work Productivity of Field Workers of Access Network Maintenance at Pt. Telkom Kandatel Jember

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Abstract

Work productivity of workers in a company is affected by several factors, one of which is occupational safety and health program. This research aimed to determine the effect of occupational safety and health program on the productivity of field workers of Access Network Mmaintenance at PT. Telkom Kandatel Jember. The research used observational analytic design with cross sectional study. Data collection was by observation, interviews and questionnaires. Samples were taken from all field workers of Access Network Maintenance at PT. Telkom Kandatel Jember in total of 20 workers using total sampling technique. Analysis technique used multiple linear regression with F and T tests. The results concluded that the implementation of occupational safety and health program of Access Network Maintenance at PT. Telkom Jember Kandatel is good. Work productivity is high, and there is a significant effect of safety and health program on work productivity of workers either simultaneously or partially.

Keywords: Safety & Occupational Health; Productivity.

1. Introduction

One of very strategic aspects in the efforts of achieving workers welfare in industrial sector is maximum attention on safety and health issues.

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As pointed out by Barthos [1], one of the aspects of human well-being is occupational safety and health, especially in industrialization era. Labor Law of 2003 (Article 86 paragraph 1) states that every worker is entitled to the protection of health and safety, morals, ethics and treatment in accordance with human dignity and religious values. Study by [2] says that occupational health and safety is a management tool to improve work productivity.

Workplace accident is the major cause of workers' deaths and injury in workplace in the United States in the industrial sector [3]. The cases of workplace accidents cause an economic impact of 845.6 billion dollars in 2010 [4]. The number of cases of occupational accidents in industrial sector in Indonesia shows an increasing, worrying trend where there were 96,314 cases in 2009, 98,711 cases in 2010, 99,491 cases in 2011, 103,074 cases in 2012 [5]. This is due to the failure to apply provision of occupational safety regulations consistently [6]. Issues on occupational safety are considered actual to be discussed only in the incidence of an accident at construction industry location [7]. Furthermore, study by [6] argue that occupational safety and health program (K3) in Indonesia in general is still often neglected, indicated by the high number of workplace accidents. Although there is an obligation to implement occupational safety and health management system in large enterprises through labor law, empirical conditions show that only 2.1% of 15,000 large-scale enterprises in Indonesia have already implemented occupational safety and health management system (SMK3) [8].

In today's era of information globalization, PT. Telkom as one of the companies in the field of telecommunication operates a number of telecommunication systems such as central telephone, cable and non-cable networks [9, 10]. PT. Telkom Kandatel Jember has seven divisions, one of which is Access Network Maintenance division that specifically handles problems with telephone network and field operation, where one of the tasks is to deal with the improvement of troubles or damages to the phone cord tissue on the surface or underground which can lead to work accidents for workers.

2. Materials and Methods

2.1 Research Design

The subjects of this research were workers of Access Network Maintenance division at PT. Telkom Kandatel Jember in total of 20 workers using total sampling. The research used analytical, obervational design with cross sectional study. Data collection was by observation, interviews and questionnaires. Analysis technique used multiple linear regression with F and T tests [11].

2.2 Hypothesis

a. Occupational safety program affects work productivity of workers of Access Network Maintenance Division at PT. Telkom Kandatel Jember.

b. Occupational health program affects work productivity of workers of Access Network Maintenance Division at PT. Telkom Kandatel Jember.

c. Occupational safety and health program simultaneously affects work productivity of workers of Access Network Maintenance Division at PT. Telkom Kandatel Jember.

Concept Framework Research
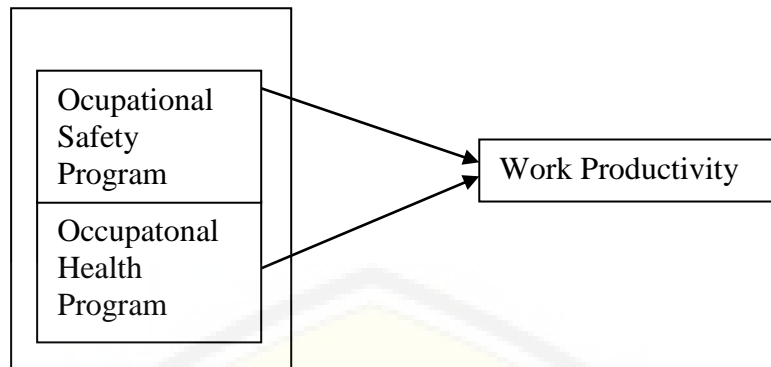
2.3 Data Processing

Data analysis used multiple linear regression with the formula

$$Y = a + b_1X_1 + b_2X_2$$

(Usman & Akbar, 2005)

It was followed by significance test with α = 0.05 and two-party test with the following steps: calculating correlation coefficient (R) and coefficient of determination (R2), followed by F test and ended with t test.

3. Results and Discussion

The results of multiple linear regression analysis (SPSS) are as follows:

1)   Descriptive statistic, correlations and variables entered showed:

a) In average work productivity of workers was 20.85 with a standard deviation of 0.36635.

b) In average occupational safety of workers was 22.7, and standard deviation was 1.26074.

c) In average, occupational health of workers was 28.1, with standard deviation of 0.64072

d) The size of relationship between work productivity variable and occupational safety calculated with correlation coefficient was 0.695, while that between work productivity and occupational health was 0.74, so occupational health variable had higher effect on work productivity than work productivity.

e) There was a moderate correlation between occupational safety and occupational health equal to 0.56.

2)   Models of Summary, ANOVA and Coefficient

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Table 1: Summary of Results of Linear Regression Analysis between Occupational Safety and Health and Work Productivity of Workers

Model	Unstandardized Coefficients		Standardized Coefficients			Partial Determination
Coffecient						
	B	Std. Error	Beta	t	Sig	(r^2)
(Constant)	9.946	2.302		4.320	.000	
X1	.119	.049	.409	1.078	.028	0.284
X2	.292	.097	.511	2.011	.008	0.378

R = .814   F Statistic = 16.663

R^2 = .662   Sig F Statistic = .000

R Adjusted = .622   F table = 3.59

Based on Table 1 above, it can be concluded that:

a. The number R^2 or coefficient of determination is 0.662. This means that 62% of work productivity of field workers of Access Network Maintenance division at PT. Telkom Jember Kandatel is included in high category; it is caused by the success of occupational safety and health program, while 33.8% is caused by other variables outside the mentioned variable.

b. Regression equation model: $Y = 9.946 + 0.119X_1 + 0.292X_2$ based on regression equation analysis includes the following:

1) The value of the regression constant is 9.946, meaning that if the independent variable has a value equal to zero, then Y is 9.946.

2) The regression coefficient value of occupational safety (X_1) variable is 0.119, meaning that if X_1 changes into 1, then Y turns to be 0.119 assuming hthat other independent variables are constant.

3) The regression coefficient value of occupational health (X_2) variable is 0.292, meaning that if X_2 changes into1, then Y turns to be 0.292 assuming that other independent variables are constant.

c. F-test (simultaneous testing): ANOVA test (F test) obtained F statistic = 16.663 with significance level of 0.000 higher than F table = 3.59 at significance level of 0.05; it is concluded there is simultaneous, significant effect of occupational safety and health program on work productivity of workers of Access Network Maintenance division at PT. Telkom Kandatel Jember.

d. T-test (Partial Testing).

Table 2: Results of t test

Variable	t-statistic	t-table	Sig	Notes
X_1	2.402	2.11	0.028	Significant
X_2	3.002	2.11	0.008	Significant

Table 2 shows that the value of t statistic of the variables of occupational safety and occupational health is higher than that of t table, so that Ho is rejected and Ha is accepted. It is concluded that occupational safety and occupational health variables partially has a significant effect on work productivity variable.

e. Partial coefficient of determination (r^2) of occupational safety variable (X_1) of 0.284 (28.4%) means that the contribution of variable X_1 to work productivity variable (Y) is 28.4% and other independent variables are constant. Partial coefficient of determination (r^2) of occupational health variable (X_2) of 0.378 (37.8%) means that the contribution of variable X_2 to variable Y is 37.8% while other independent variables are constant.

4. Conclusion

Work productivity of field workers of Access Network Maintenance division at PT. Telkom Kandatel Jember is included in high category; there is a significant effect of occupational safety and health program of Access Network Maintenance division at PT. Telkom Kandatel Jember either partially or simultaneously.

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