Analysis of the Influence of Occupational Safety and Health on Worker Motivation for the Pramita Lab Surabaya Building Construction Project

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Abstract

Construction projects are activities that are prone to work accidents and occupational diseases. Therefore, awareness of applying Occupational Health and Safety (OHS) is crucial. Basically, all humans want to complete work safely. These measures can motivate and drive workers' behavior to carry out their work safely and healthily. This study aims to determine whether or not a correlation or influence exists between Occupational Health and Safety (OHS) and the work motivation of construction workers in the Pramita Lab Surabaya project environment. The research method was descriptive-quantitative with multiple linear regression analysis. The analysis results indicated that: (1) Based on the results of the analysis of the T-test on the work safety variable, the t-value was -0.309 > critical t-value -2.042, and there was no significant effect between work safety and work motivation. (2) In the analysis of the T-test on occupational health, the value of the t-value was -4.345 > critical t-value -2.042, indicating that occupational health had a significant effect on work motivation. (3) In the F-test, the calculated F-value was 27,852 > F-table 3.35; Occupational Health and Safety influenced work motivation. This means that occupational safety and health is very important and affects the motivation of its workers.

Keywords: *Occupational Health and Safety, working motivation, linear regression*

1. Introduction

Article Construction projects are activities that are prone to work accidents and work-related diseases. This is why awareness of the implementation of occupational safety and health is important. With the implementation of good occupational safety and health as well as health insurance and work accident insurance, it is hoped that work motivation will increase. Because a worker who has high work motivation will have a positive impact on his performance and productivity in carrying out his work. Performance is the main indicator for the progress of a company, so improving performance in all parts of the system is a way to increase the economic growth rate of the company [1]. Every company always wants and tries to ensure that each employee has a high work performance. Therefore, the company must be able to maintain and improve the performance of its employees so that company goals can be achieved as optimally as possible.

In the Primata Lab building project, the company PT. Arta Karya always prioritizes the safety and health of project workers so that the project activity process is not disrupted. Supervision implemented by PT. Arta Karya regarding the use of personal protective equipment (PPE) in the project environment is very strict in order to prevent and minimize the occurrence of work accidents and work-related diseases so that workers can carry out their work optimally and the project activity process runs well. There have been many studies on Occupational Health and Safety on employee performance in various projects. In Jayaputra's research, it was stated that research was conducted with the main problems of occupational health and safety, work environment, and organizational

commitment which were then related to employee performance using multiple linear regression analysis [2].

The focus of this research is to analyze the influence of occupational safety and health on work motivation in the Pramita Lab building construction project environment. The aim of this research is to find out how occupational safety and health influences work motivation. This research uses several statistical analyses; data instrument tests, classical assumption tests, and statistical hypothesis analysis.

2. Literature Review

Occupational Health and Safety

According to PUPR Ministerial Decree No. 10 of 2021, construction work safety and health are all activities to guarantee and protect the safety and health of workers through efforts to prevent work accidents and work-related diseases on construction projects [3]. Occupational safety and health is an effort to prevent and minimize the occurrence of accidents in the work environment so as to create a workplace that is safe, healthy and free from work accidents which can increase work activity and productivity on projects. The work environment is the factor that most influences employee behavior, especially in the work environment that indirectly or directly affects employee performance [4]. Occupational health safety (K3) is closely related to efforts to prevent accidents and diseases, due to work having a range in the form of the creation of a safe, healthy society and work environment that is safe, healthy and prosperous [5]. Occupational Health and Safety is influenced by four things; the human factor, material/equipment factors, hazard factors, factors encountered (maintenance).

Work motivation

According to (Sedarmayanti, 2017) motivation is a force that encourages someone to take an action which is essentially positive or negative internally and externally [6]. According to (Suwanto, 2020) work motivation is a force that comes from either within or outside a person which causes a person to behave at work according to the rules, directions, intensity and time period that have been determined. In general, work motivation is psychological encouragement either from within oneself or from the work environment which will determine a person's direction and behavior in carrying out the tasks and obligations that have been given to him [7].

3. Method

The research location section is located in the Pramita Lab building construction project in the city of Surabaya, East Java. The type of research is quantitative descriptive with multiple linear regression data analysis. Data collection was carried out by distributing questionnaires which were later answered by respondents, for the required number of respondents of 30 people.

Data analysis goes through several stages of testing. These tests include instrument tests which consist of validity tests and reliability tests. The instrument testing aims to find out whether the questionnaire distributed is able to measure consistently and produce good data. Next, there is the classic assumption test which aims to find out whether the data that has been obtained can produce a regression model that meets good criteria. This test consists of the normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test. The final stage is statistical hypothesis analysis consisting of the T test, F test, coefficient of determination test, and multiple linear regression [8][9].

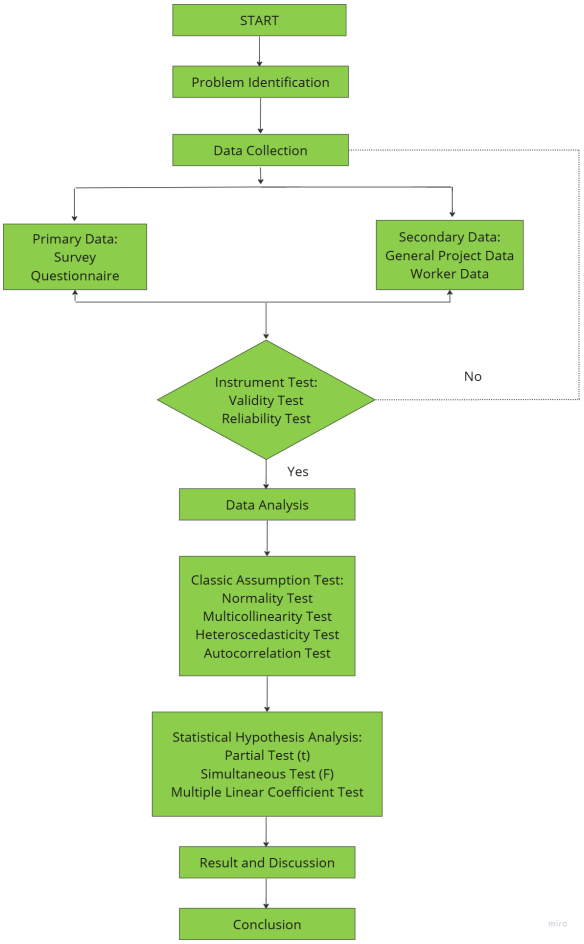

Figure 1. Research Flow Chart

4. Result and Discussion

Instrument Test

Table 1. Validity test

Variable		Question Items	r count	r table	Validity
Occupational (X1)	Health	1	0.481	0.374	Valid
		2	0.548	0.374	Valid
		3	0.702	0.374	Valid
		4	0.621	0.374	Valid
		5	0.405	0.374	Valid
		6	0.665	0.374	Valid
		7	0.298	0.374	Invalid
		8	0.422	0.374	Valid
		9	0.474	0.374	Valid
		10	0.500	0.374	Valid
		11	0.322	0.374	Invalid

Variable	Question Items	r count	r table	Validity
	12	0.780	0.374	Valid
	13	0.696	0.374	Valid
	14	0.559	0.374	Valid
	15	0.429	0.374	Valid
	16	0.669	0.374	Valid
	17	0.647	0.374	Valid
	18	0.510	0.374	Valid
Occupational Health (X2)	1	0.651	0.374	Valid
	2	0.585	0.374	Valid
	3	0.732	0.374	Valid
	4	0.443	0.374	Valid
	5	0.765	0.374	Valid
	6	0.528	0.374	Valid
	7	0.565	0.374	Valid
	8	0.497	0.374	Valid
	9	0.460	0.374	Valid
	10	0.386	0.374	Valid
Motivation (Y)	1	0.484	0.374	Valid
	2	0.795	0.374	Valid
	3	0.466	0.374	Valid
	4	0.634	0.374	Valid
	5	0.382	0.374	Valid
	6	0.485	0.374	Valid
	7	0.556	0.374	Valid
	8	0.636	0.374	Valid
	9	0.547	0.374	Valid
	10	0.546	0.374	Valid
	11	0.549	0.374	Valid
	12	0.511	0.374	Valid
	13	0.468	0.374	Valid
	14	0.697	0.374	Valid

In the validity test there were 2 data that were invalid and the rest were valid. Invalid data is not included in further analysis calculations.

Table 2. Reliability Test

Reliability Statistics x1		**Reliability Statistics x2**		**Reliability Statistics y**	
Cronbach's Alpha	N of Items	Cronbach's Alpha	N of Items	Cronbach's Alpha	N of Items
.863	16	.757	10	.827	14

In the reliability test, the questionnaire distributed was declared reliable because the alpha value was > 0.6

Classic assumption test

Table 3. Normality Test

One-Sample Kolmogorov-Smirnov Test		
		Standardized Residual
N		30
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	.96490128
Most Extreme Differences	Absolute	.142
	Positive	.089
	Negative	-.142
Test Statistic		.142
Asymp. Sig. (2-tailed)		.127[c]

The data is normally seen from the Asymp value. Sig. (2-tailed) 0.127 > 0.05

Table 4. Multicollinearity Test

Coefficients[a]								
		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	8.445	.121		69.546	.000		
	Tran_X1	-.015	.049	-.055	-.309	.759	.379	2.641
	Tran_X2	-.281	.065	-.776	-4.345	.000	.379	2.641

tolerance value = 0.379 > 0.1 and VIF value = 2.641 < 10 it can be concluded that there are no symptoms of multicollinearity in the two independent variables.

Table 5. Heteroscedasticity Test

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	.512	.388		1.318	.199
	Tran_X1	.260	.158	.490	1.644	.112
	Tran_X2	-.254	.207	-.366	-1.229	.230

From the results obtained, it can be said that there are no symptoms of heteroscedasticity in the research data because the significance value of the two variables is more than 0.05.

Table 6. Autocorrelation Test

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.821[a]	.674	.649	.19673	2.283

DW value = 2.283, so dW (1.5666) < DW (2.283) < 4 – dI (2.4334). It can be concluded that the data in this study did not occur autocorrelation.

Statistical Hypothesis Analysis

Table 7. Partial Test (t)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	8.445	.121		69.546	.000		
	Tran_X1	-.015	.049	-.055	-.309	.759	.379	2.641
	Tran_X2	-.281	.065	-.776	-4.345	.000	.379	2.641

For variable X1 the significance value is more than 0.05 (5%) and t = -0.309 > t table = -2.042, so that variable 5%) and t = -4.345 < t table = -2.042, so that variable X2 has a significant influence on variable Y.

Table 8. Simultaneous Test (F)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.156	2	1.078	27.852	.000[b]
	Residual	1.045	27	.039		
	Total	3.201	29			

significance value 0.000b < 0.05 and calculated F value = 27.852 > F table = 3.35. It was concluded that variables X1 and X2 simultaneously had a significant effect on variable Y.

Table 9. Determinant Coefficient

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.821[a]	.674	.649	.19673	2.283

R Square coefficient value = 0.674 or 67%. The conclusion is that the influence on variable Y (work motivation) is 67% which is influenced by variables X1 (work safety) and employment relations and others.

Table 10. Multiple Linear Regression Analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	8.445	.121		69.546	.000		
	Tran_X1	-.015	.049	-.055	-.309	.759	.379	2.641
	Tran_X2	-.281	.065	-.776	-4.345	.000	.379	2.641

depicted in the regression equation as follows:

$Y = a + b_1 . X1 + b_2 . X2$

$Y = 8.445 - 0.015\ X1 - 0.281\ X2$

or

Motivation = 8.445 − 0.015 (Safety) − 0.281 (Healthy)

The interpretation of the coefficients of the regression equation above can be explained as follows:

a. A constant value of 8.445 indicates that if the independent variable is considered to have a value of 0 and does not change, then motivation is 8.445. This means that if a construction project does not consider safety and health factors, the motivation value is 8,445.
b. The safety regression coefficient value of ( ) 0.015 indicates that for every decrease in the safety factor of 1 unit assuming the other independent variables are constant, motivation will also decrease by 0.015.
c. The health regression coefficient value of ( ) 0.281 states that if the health level decreases by 1 unit assuming the other independent variables are constant, then motivation will decrease by 0.281.

5. Conclusion

Work Safety and Motivation:

The T-test analysis for work safety revealed a significance value of 0.759, which is greater than the threshold of 0.05, and a t-value of -0.309, which is greater than the critical t-value of -2.042. These results indicate that the first hypothesis (H1), suggesting a significant influence of work safety on work motivation, was not supported. Therefore, work safety does not significantly impact workers' motivation.

Occupational Health and Motivation:

The T-test analysis for occupational health yielded a significant value of 0.000, which is less than 0.05, and a t-value of -4.345, which is less than the critical t-value of -2.042. These findings support the second hypothesis (H2), indicating that occupational health significantly influences work motivation. The provision of health insurance by PT. Arta Karya has a positive effect on the motivation of project workers.

Overall influence of OSH:

The F-test analysis showed a calculated F-value of 27.852, which is greater than the critical F-value of 3.35, with a significance value of 0.000b, less than 0.05. This confirms the third hypothesis (H3), demonstrating a significant overall influence of occupational safety and health on work motivation.

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