

Analysis the Effect of the Implementation Occupational Safety and Health Management System Factors on Worker Productivity in Fit out Mall Work in DKI Jakarta

Herry Supriyatna¹, Rosalendro Eddy Nugroho²

¹Postgraduate Students, Department of Master Civil Engineering, Mercu Buana University, Jakarta, Indonesia

²Postgraduate Lecturer, Department of Master Management, Mercu Buana University, Jakarta, Indonesia

Corresponding Author: Herry Supriyatna

ABSTRACT

Work accidents in Indonesia are still likely to be high even though the Company received a certificate of Occupational Safety and Health Management System (SMK3) soaring up 70%. In these phenomena there are indications of declining productivity of construction workers. One of the unique construction results is the property mall. In Jakarta itself has built 80 malls with various classes. The application of SMK3 in each legal civil activity must be carried out in accordance with Government Regulation no. 50 of 2012 which is integrated with the company's regulations. The research was conducted on the participants of mall management building in Jakarta and in cooperation with PT XYZ one of the developers and managers of a large mall in Jakarta. It is necessary to evaluate the factors of the application of SMK3 that affect the productivity of workers in fit out mall work. The data was taken with field surveys, interviews and questionnaires as well as supporting data. It uses 7 free variables defined by ranking by the RII (Relative Importance Index) method, and combined with multiple linear regressions. The results showed the dominant factor affecting worker productivity in fit out mall jobs in DKI Jakarta was the communication factor of workers (X5) with a significance of 0.002 and a double regression coefficient of 0.821.

Keywords: OSHMS, Productivity, RII, SPSS

INTRODUCTION

The trend of job accidents in Indonesia is still likely to be high, for the

construction sector alone accounts for almost 32% of the total accidents that occur. Where in the period 2016-2019 was recorded as the highest construction accident year, it can be seen in figure 1. Meanwhile, the Ministry of Manpower of the Republic of Indonesia mentioned that in 2018, smk3 certificate receiving company increased by 16.65 % to 1465 Company, this can be seen in figure 2. But this is a contrast when looking at data released by BPS mentioning that Construction companies in Indonesia in 2018 amounted to 160,576, while from 7.4 million construction workers that the percentage of new job accident guarantee owners amounted to 8.9% of the total construction workers(<https://beritagar.id/artikel/berita/banyak-pekerja-konstruksi-tak-punya-jaminan-kecelakaan-kerja/>, retrieved 17 July 2020).

In the above phenomena there are indications of factors causing the decline in the productivity of workers, especially the construction sector. The issue of work accidents is one of the important labor topics. This is because the high quality of health and safety in the workplace is a worker's right that must be fulfilled by the company in addition to other normative rights. Companies should be aware that workers are not a constantly utilized resource but rather a social being that must be looked after and considered given the

many factors and risks of harm that exist in the workplace. In addition to companies, the government is also responsible for protecting occupational health and safety because it can affect worker productivity. Efforts made by the government by issuing legislation governing occupational safety and health (K3) namely Law No. 1 of 1970 on Occupational Safety and Health (K3), Government Regulation of 2012 No. 50 on the implementation of Occupational Safety and Health Management System (SMK3). In article 87 paragraph 1 of Law No. 13 of 2003 on Employment it is stated that each company must establish a K3 management system that is integrated with the company's management system. The provision stipulated in paragraph 1 shall be governed by government regulation no. 50 of 2012 described in Chapter II article 5 paragraphs 1 and 2 stated that each company shall implement occupational safety and health management system (SMK3).

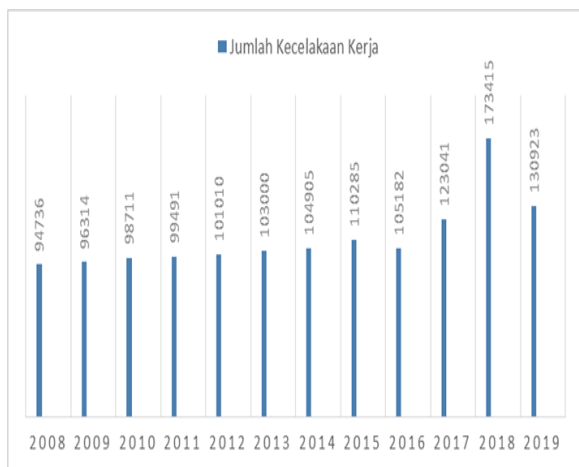


Figure 1: Chart of Work Accidents in Indonesia
Source: BPJS Ketenakerjaan (<https://www.bpjsketenakerjaan.go.id/berita/23322/>).

PT XYZ is one of the national private companies, the company developed into a healthy company with the main business pillars namely as developer, investor, owner and manager of an area in the form of malls and office towers in West Jakarta. However, there are still some challenges in the implementation of K3 (occupational safety and health) in the implementation of construction projects and fit out projects, it can be seen in figure 3.

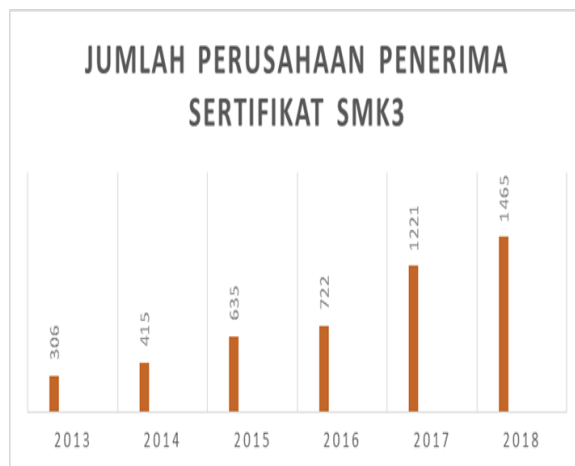


Figure 2: Graph of The Number of Companies Receiving SMK3 Certificate
Source: Kemenakertrans (<https://bssn.go.id/menaker-hanif-canangkan-peringatan-bulan-k3-nasional-2018/>).

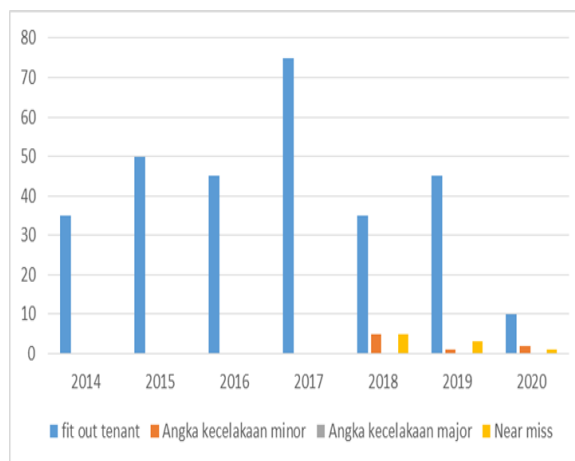


Figure 3: Fit Out Tenant and Employment Accident Rate For Period 2014-2020
Source: PT. XYZ

Worker productivity is the result of a divide between total output and total worker input, so that worker productivity can be measured by looking at hourly productivity, productivity per person, total production, turn over workers, absenteeism, and the amount of industrial action. The productivity in question is the relationship between the quantity of output and the input used to produce the output. This is basically a measure of the effectiveness and efficiency of the company in producing output (in the form of goods or services) with available resources. (Hellen Sang et al, 2014).

Another opinion expressed by the study of godrati et al library (2018) cites research (Nasir, 2013, Park et al, 2005) that construction companies use different terms

to calculate worker productivity because there is no standard definition in the construction industry. While other research reveals that labor productivity is a large volume of work that can be generated by a worker or a work team within a certain grace period. That is, labor productivity is the amount of time it takes a worker or a work team to produce a specific volume of work (Hernandi Yodie and Jane, 2020).

From some of the researchers' opinions on the relationship of construction performance and worker productivity are closely related that the dimensions of measurement of good construction

performance results can be measured in terms of cost, time and quality. In other words, the performance results of a project in line with the productivity of workers based on that can be concluded that for indicators of productivity achievement workers can be described as achieving the target of a process that has already been carried out. According to Lukas Sihombing (2018) from the results of his research shows that there are two indicators of productivity namely labor productivity and capital productivity. Here's figure 4 showing the research gaps and the author's research position with previous research.

Subyek	Nomer Literatur										
	1	2	3	4	5	6	7	8	9	10	11
SMK3											
Kesehatan	✓	✓		✓	✓		✓	✓	✓	✓	✓
Keselamatan			✓			✓	✓	✓	✓	✓	✓
Unit Bisnis											
Konstruksi	✓	✓	✓		✓						✓
Kontraktor						✓					
Industri				✓			✓	✓			
Building Manajemen											
Developer									✓		✓
Metoda Analisa											
SPSS	✓	✓			✓	✓			✓	✓	✓
SEM			✓					✓			
RII											✓
Work sampling				✓							
Studi Literatur							✓				
Tahun Penelitian	2018	2017	2016	2005	2013	2018	2018	2016	2015	2013	2020
Negara Riset	China	China	India	Usa	Ina	Ina	Belgia	Turki	Ina	Ina	Ina

Figure 4: Gaps and Research Positions
Source: Author Processed Data

The output of this study is about the effect of smk3 implementation on the productivity of fit out Mall workers. The

frame of thought of this study is described in the following correlational diagram:

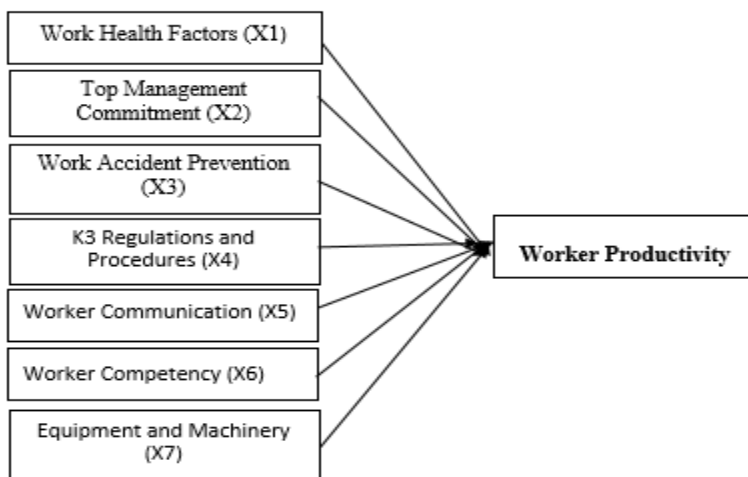


Figure 5: Conceptual Frame Work
Source: Author Processed Data

RESEARCH METHODS

This research method or approach is quantitative, which is intended to measure something with precision. While the research method used in this study is a survey, using questionnaire instruments in

its data collection. Then the data of the questionnaire results will be analyzed using the help of SPSS tools. As for the stages carried out in the dissemination of this research questionnaire there are 2 stages, namely.

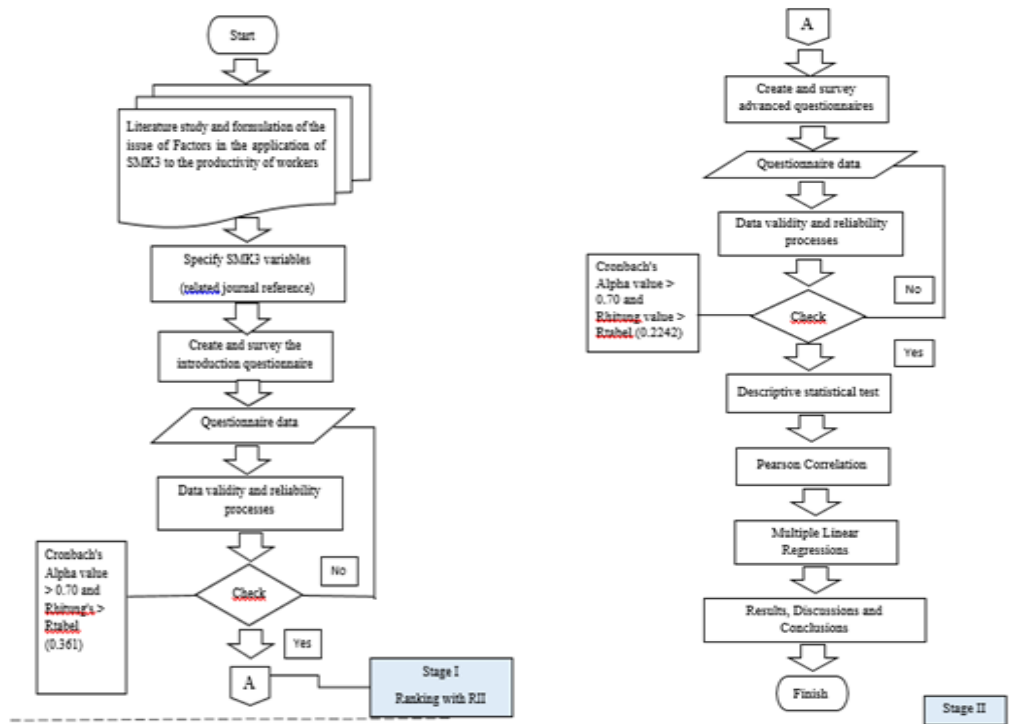


Figure 6: Research Phase Flow
Source: Author Processed Data

RESULT AND DISCUSSION

Research uses a quantitative approach using research instruments in the form of questionnaires. As for the stages carried out in the dissemination of this research questionnaire there are 2 stages, namely.

First Stage Questionnaire (Preliminary Survey)

At this preliminary survey stage is to determine the free variable that will be used as this research variable by using the relative importance index (RII) method. In this first stage validity and reability test with the number of 18 variables, cronbach's alpha (a) value > 0.70 , which is 0.755 and the table's $r > r$ value is 0.361 with the number of 30 respondents. The results showed that the research questionnaire was religious and valid. Here are the validity test results and

RII results and the results of variables free of smk3 implementation factors that will be ranked based on the weight value acquisition, seen in figure 7.

Validity Test Results
Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
x1	145.4	235.352	0.45	0.749
x2	145.5	232.466	0.644	0.745
x3	145.5333	231.706	0.509	0.745
x4	145.5333	231.913	0.545	0.745
x5	145.4	235.49	0.441	0.749
x6	145.5667	230.047	0.727	0.742
x7	145.5667	232.875	0.499	0.746
x8	146.1	226.714	0.575	0.739
x9	146.1667	225.661	0.599	0.738
x10	145.5333	235.223	0.467	0.748
x11	145.8667	224.326	0.674	0.736
x12	145.9333	229.03	0.623	0.741
x13	145.7333	231.099	0.601	0.744
x14	145.2667	231.099	0.675	0.743
x15	146.0667	225.995	0.789	0.737
x16	146.3	224.01	0.669	0.736
x17	146.0667	225.995	0.789	0.737
x18	146.3	224.01	0.669	0.736
xtotal	74.9667	60.654	1	0.91

Ranking results with RII method

No	Variabel	Rank	Factor
1	x14	0.933	Work Health Factors
2	x1	0.906	Top Management Commitments
3	x5	0.906	Work Accident Prevention
4	x2	0.886	K3 Rules and Procedures
5	x3	0.880	Worker Communication
6	x4	0.880	Worker Competencies
7	x10	0.880	Equipment and Machinery
8	x6	0.873	Security Factors
9	x7	0.873	Work equipment and Clothing
10	x13	0.840	Work Environment
11	x11	0.813	Electricity and Sound
12	x12	0.800	Public Protection
13	x15	0.773	Common Factors
14	x17	0.773	Worker Engagement
15	x8	0.766	Vehicle Path/Access
16	x9	0.753	Fire safety Factors
17	x16	0.726	Other Factors
18	x18	0.726	Worker Supervision

Figure 7: Phase I Results validity test and ranking with Relative Importance Index (RII) Method
Source: Author Processed Data

Second Phase Questionnaire (Advanced Survey)

After getting a variable ranking of the factors applying SMK3 in the first phase questionnaire, followed by the second phase questionnaire in this study consists of 2 research variables are:

- a) Independent or free variables (X) are the factors of the application of SMK3 (The results of the first stage questionnaire ranking based on the resulting weight value).
- b) Dependent or bound variable (Y) is Worker Productivity (labor).

In the validity test results in this second stage the results show there are 2 invalid indicators namely X5.3 and Y1.5 so that it is eliminated in the next validity test

No	Variable Correlation	Pearson Correlation	Relationship Correlation	Significance < 0.05
1	X1-Y	0.385	Considerable	0.001
2	X2-Y	0.480	Considerable	0.000
3	X3-Y	0.552	Strong	0.000
4	X4-Y	0.513	Strong	0.000
5	X5-Y	0.626	Strong	0.000
6	X6-Y	0.295	Considerable	0.009
7	X7-Y	0.609	Strong	0.000

Figure 9: Pearson Correlation Test Results
Source: Author processed data from SPSS

process because the r value of the table's < r count is 0.2242, as seen in figure 8 below.

Variabel	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Has il
X1.1	0.469	0.945	Valid dan Reliabel
X1.2	0.258	0.947	Valid dan Reliabel
X1.3	0.231	0.947	Valid dan Reliabel
X1.4	0.563	0.944	Valid dan Reliabel
X2.1	0.499	0.945	Valid dan Reliabel
X2.2	0.536	0.944	Valid dan Reliabel
X2.3	0.53	0.944	Valid dan Reliabel
X2.4	0.471	0.945	Valid dan Reliabel
X2.5	0.657	0.944	Valid dan Reliabel
X2.6	0.776	0.943	Valid dan Reliabel
X3.1	0.434	0.945	Valid dan Reliabel
X3.2	0.458	0.945	Valid dan Reliabel
X3.3	0.421	0.945	Valid dan Reliabel
X3.4	0.576	0.944	Valid dan Reliabel
X3.5	0.55	0.944	Valid dan Reliabel
X4.1	0.654	0.943	Valid dan Reliabel
X4.2	0.456	0.945	Valid dan Reliabel
X4.3	0.695	0.943	Valid dan Reliabel
X4.4	0.631	0.944	Valid dan Reliabel
X4.5	0.728	0.943	Valid dan Reliabel
X5.1	0.629	0.944	Valid dan Reliabel
X5.2	0.701	0.943	Valid dan Reliabel
X5.3	0.138	0.949	Tidak Valid dan Reliabel
X5.4	0.702	0.943	Valid dan Reliabel
X5.5	0.66	0.943	Valid dan Reliabel
X6.1	0.665	0.944	Valid dan Reliabel
X6.2	0.557	0.944	Valid dan Reliabel
X6.3	0.485	0.945	Valid dan Reliabel
X6.4	0.476	0.945	Valid dan Reliabel
X6.5	0.601	0.944	Valid dan Reliabel
X7.1	0.711	0.943	Valid dan Reliabel
X7.2	0.651	0.944	Valid dan Reliabel
X7.3	0.687	0.943	Valid dan Reliabel
X7.4	0.736	0.943	Valid dan Reliabel
Y1.1	0.53	0.945	Valid dan Reliabel
Y1.2	0.55	0.944	Valid dan Reliabel
Y1.3	0.287	0.946	Valid dan Reliabel
Y1.4	0.505	0.945	Valid dan Reliabel
Y1.5	0.143	0.947	Tidak Valid dan Reliabel
Y1.6	0.615	0.944	Valid dan Reliabel
Y1.7	0.506	0.945	Valid dan Reliabel
Y1.8	0.626	0.944	Valid dan Reliabel

Figure 8: Phase II Results Validity Test

Pearson Correlation

The results of Pearson's correlation test that the correlation of work health factors, top management commitment factors, and worker competence to worker productivity are considerable, while the correlation of work accident prevention factors, K3 regulatory and procedure factors, worker communication factors, and equipment and machine factors to worker productivity is strong, can be seen in figure 9.

Classic Assumption Test

The normality test used in this study is with the Kolmogorov Smirnov nonparametric statistical test, where the significance value should show a number above 0.05 which means the data has been distributed normally, can be seen in figure 10.

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		77
Normal Parameters ^{a,b}	Mean	0.0000000
	Std. Deviation	2.29921902
	Most Extreme Differences	
	Absolute	0.092
	Positive	0.092
	Negative	-0.090
Test Statistic		0.092
Asymp. Sig. (2-tailed)		.163 ^c
a. Test distribution is Normal.		
b. Calculated from data.		
c. Lilliefors Significance Correction.		

Figure 10: Kolmogorof Smirnov Test One sample results
Source: Author Processed Data

Based on the value obtained at 0.163 > 0.05 in the table above, it can be concluded that the data is distributed normally. Multicolinearity tests show the ideal regression model should not occur correlations among independent variables. How to detect multicholinerity by using

Multiple Linear Regressions

Variabel	Koefisien Regresi	thitung	Sig
Konstanta	13.344	3.952	0.000
X1 Faktor Kesehatan Kerja	-0.245	-1.249	0.216
X2 Komitmen Top Manajemen	-0.066	-0.369	0.713
X3 Pencegahan kecelakaan kerja	0.448	2.594	0.012
X4 Prosedur dan peraturan K3	-0.229	-1.040	0.302
X5 Komunikasi Pekerja	0.821	3.200	0.002
X6 Kompetensi Pekerja	-0.101	-0.756	0.452
X7 Peralatan dan Mesin	0.390	1.648	0.104
Fhitung = 9.725			
Ttabel = 1.99495			
Sig = 0.000			
R = 0.705			
R ² = 0.497			

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	396.363	7	56.623	9.725	.000 ^b
Residual	401.767	69	5.823		
Total	798.130	76			

a. Dependent Variable: Y Produktifitas Pekerja
b. Predictors: (Constant), X7 Peralatan dan Mesin, X6 Kompetensi Pekerja, X3 Pencegahan kecelakaan kerja, X1 Faktor Kesehatan Kerja, X5 Komunikasi Pekerja, X2 Komitmen Top Manajemen, X4 Prosedur dan peraturan K3

Figure 12: Multiple Linear Regression and Anova Results
Source: Author Processed Data

Tolerance and Variance Inflation Factor (VIF). A model will be free from multicholinerity problems when its tolerance is close to 0.10 and the VIF value is below the number 10, can be seen in figure 11.

Coefficients ^a			
Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	X1 Faktor Kesehatan Kerja	0.486	2.058
	X2 Komitmen Top Manajemen	0.276	3.619
	X3 Pencegahan kecelakaan kerja	0.568	1.762
	X4 Prosedur dan peraturan K3	0.215	4.652
	X5 Komunikasi Pekerja	0.214	4.671
	X6 Kompetensi Pekerja	0.552	1.812
	X7 Peralatan dan Mesin	0.238	4.208

a. Dependent Variable: Y Produktifitas Pekerja

Figure 11: Tolerance and VIF Coefficient Results
Source: Author Processed Data

Based on the tolerance value of all independent variables in this study obtained >0.10 and the acquisition of vif values of all independent variables < 10 as seen in the table, it can be concluded that the regression model does not occur correlation between independent variables.

This analysis was conducted to get an assessment of the influence between the factors of smk3 application to the productivity of workers in fit out mall jobs. In this analysis has the output of the most influential factors with a sig value of < 0.05, simultaneous influence with test F, the effect of the significance of individual parameters with the t test, the form of simultaneous relationship with the multiple correlation coefficient, and the percentage influence of the determination coefficient, seen in figure 12.

This multiple linear regression coefficient was carried out to determine the most influential factors in the application of SMK3 to workers' productivity in fit out mall work, looking at sig < value of 0.05. Based on the coefficient values in the table above, the multiple linear regression models in this study were compiled using unstandardized regression coefficient values B (for simultaneous influence analysis) and standardized beta (for partial influence analysis). Linear models in their coefficient, these multiple linear regression equations are:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k$$

Because in this study the free (independent) variables were 7 variables that are the factors of the application of SMK3 and a variable bound (dependent) is worker productivity, the model of multiple linear regression in this study.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7$$

$$Y = 13.344 - 0.245X_1 - 0.066X_2 + 0.448X_3 - 0.229X_4 + 0.821X_5 - 0.101X_6 + 0.390X_7$$

From the regression equation above shows that the constant value of positive value is 13,344 that the productivity of workers has a positive effect and increases if the factors of the application of SMK3 are positive and direct, as well as the otherwise the productivity of workers negatively affects and decreases if the factors of the application of SMK3 are negative and not

unimeded. In Test F when applied jointly and simultaneously the effect of the factors of the application of SMK3 on the productivity of fit out mall workers has simultaneous effect. And individually or t test shows that work health factors, top management commitment factors, K3 procedure and regulatory factors, worker competency factors, and equipment and machine factors negatively and insignificantly affect worker productivity when applied individually. Similarly, the prevention of work accidents and communication factors of workers have a positive and significant effect on worker productivity applied individually.

Multiple Correlation Coefficient (R) and Determination Coefficient (Rsquare) Results

Based on the results of the multiple coefficients obtained in figure 12 shows that the correlation of the influence of smk3 implementation factors on worker productivity in fit out mall work is strong, while based on the results of the coefficient of determination that the factors of the application of SMK3 in this study have given simultaneous effect of 49.7% on the productivity of fit out mall workers.

CONCLUSION

Based on the results and discussion on the factors of applying the Occupational Health and Safety Management System to The Productivity of Workers in Fit Out Mall work, the conclusions in this study are .

1. Correlation of smk3 implementation factors to worker productivity in fit out mall work has a considerable to strong correlation.
2. While based on the results of regression coefficient and t test for work health factors (X1), top management commitment factor (X2), procedure and regulatory factors K3 (X4) and worker competency factor (X6) negatively affect worker productivity, for work accident prevention factor (X3), worker communication factor (X5) and

equipment and machine factor (X7) have a positive effect on worker productivity.

3. The dominant factor in the application of SMK3 to worker productivity is the communication factor of workers (X5) with a significance of $0.002 < 0.05$ with a regression coefficient of 0.821. Based on the coefficient value of determining the factors of the application of SMK3 to the productivity of workers in fit out mall work have a simultaneous effect of 49.7 %.
4. Based on F test the effect of the application of SMK3 factors to the productivity of workers in fit out mall work is very influential simultaneously when carried out together and simultaneously.

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