

Analysis of Occupational Safety, Health and Accident on Work Productivity in the Pamong Praja Police Unit, Labuhanbatu Regency

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Abstract

This study aims to analyze safety, health, and work accidents on the work productivity of the Civil Service Police Unit of Labuhanbatu Regency. This type of research is quantitative, the place of this research is the Civil Service Police Unit on Jalan. WR. Supratman No. 46, Labuhanbatu. Data collection techniques used in the study were observation, documentation and questionnaires using a Likert scale. The population in this study were 233 employees of the Civil Service Police Unit of Labuhanbatu Regency. The sample was taken using the Slovin formula, which was determined with a significance level of 0.05, so the sample size in this study was 147 people. The multiple linear regression equation from this research is: $Y=0.914+0.1875X_1+0.367X_2+0.516X_3$. The value of B on safety (B1) is 0.187. The health value (B2) is 0.367. The work accident value (B3) is 0.516 and the constant value (a) is 0.914. The description of the multiple linear regression equation shows that the variables of safety (X1), health (X2), and work accidents (X3) have a positive direction coefficient on work productivity. The t-count value of 3.006 > t-table of 1.655 proves that the safety variable (X1) has a positive effect on the work productivity variable (Y). Then the significant value is 0.003 < 0.05, which means the safety variable (X1) has a significant effect on the work productivity variable (Y). Based on the results of the regression analysis, the t-count value was 5.090 > t-table 1.655, which means that the health variable (X2) has a positive effect on the work productivity variable (Y). Then the significant value is 0.000 < 0.05, which means that the health variable (X2) has a significant effect on the work productivity variable (Y). Furthermore, the results of the regression analysis obtained the t arithmetic value of 6.316 > t table 1.655 proving that the work accident variable (X3) has a positive effect on the work productivity variable (Y). Then the significant value is 0.000 < 0.05 indicating that the work accident variable (X3) has a significant effect on the work productivity variable (Y). The value of Fcount is 104,734 > Ftable 2.67 with a significance value of 0.000 < 0.05. From the results of this study, it can be concluded that safety (X1), health (X2), and work accidents (X3) simultaneously have a positive and significant effect on work productivity (Y).

Keywords

Safety; health; work accidents; work productivity.



I. Introduction

The most important resource for an organization is human resources (HR), namely people who provide energy, talent and creativity in an organization. Human resource management (HRM) can be defined as the utilization of human resources within the organization which is carried out through the functions of human resource planning. Every

organization or company of course always tries to increase work productivity in order to achieve the goals of an organization. To achieve the goal of work productivity, of course, requires a job that has good productivity that works effectively and efficiently. For this reason, the company takes many ways to increase work productivity including Occupational Safety, Health and Accidents.

Organization must have a goal to be achieved by the organizational members (Niati et al., 2021). The success of leadership is partly determined by the ability of leaders to develop their organizational culture. (Arif, 2019).

The phenomenon found in the Civil Service Police Unit of Labuhanbatu Regency is that the safety, health and work accident system provided to the Civil Service Police of Labuhanbatu Regency is still not effective, so that currently there are still many Civil Service police units who have to take care of themselves if health conditions are bad, from physical and mental health. This is because the civil service police unit has direct contact with the community and the general public, so it is very vulnerable to unstable health and work safety which cannot be fully ascertained by the Labuhanbatu district civil service police unit. Likewise with work accidents, because the duties of the Civil Service are very different from those of the community. According to Wong, et al., (2016),

In the 1945 Constitution Article 86 paragraph 2: "To protect the safety of workers/laborers in order to realize optimal work productivity, Occupational Health and Safety efforts are carried out". Article 87: "Every company is required to implement an Occupational Health and Safety Management System that is integrated with the Company's Management System. Furthermore, Kamuli (2012) states that work productivity is an appropriateness of the use of work methods or methods rather than human resources and how to use them effectively and efficiently by using the tools available within an organization.

On the other hand, Mathis and Jakson (2017) interpret K3 separately, namely health, safety, and security. Health refers to general physical, mental and emotional stability. A healthy individual is one who is free from disease, injury, and mental and emotional problems that can interfere with normal human activities in general. Occupational health and safety must address the issue of risk management in the workplace from a risk that could end in an accident, injury or ill health. Occupational safety and health is a form of sustainable development through healthy people, safe workplaces, reduced accident costs, controlled environment, managed work accidents and increased knowledge of safety in the workplace (Jilcha and Kitaw, 2016). According to Gong, (2019), Occupational safety is a major aspect of the organization and is an important culture for companies to reduce work accidents. Special supervision is needed in an organization that is carrying out work activities so that workers who are active in the work environment can have guaranteed work safety (Tymvios and Gambase, (2016); Yanar et al., (2019). According to Rahayu et al., (Tymvios and Gambase, (2016); Yanar et al., (2019)). According to Rahayu et al., (2017) explains that the indicators in work safety are: a) Preparation of machines and their accessories, b) The existence of a lighting system c). Condition of work equipment, d) Use of personal protective equipment, e) Use of work procedures, f). Equipment security habits, g). Employee physical atmosphere, h). Employee spiritual atmosphere. (2017) explained that indicators in work safety are: a) The arrangement of machines and their accessories, b) The existence of a lighting system c). Condition of work equipment, d) Use of personal protective equipment, e) Use of work procedures, f). Equipment security habits, g). Employee physical atmosphere, h). Employee spiritual atmosphere. (2017) explained that indicators in work safety are: a) The arrangement of machines and their accessories, b) The existence of a lighting system c). Condition of work equipment, d) Use

of personal protective equipment, e) Use of work procedures, f). Equipment security habits, g). Employee physical atmosphere, h). Employee spiritual atmosphere.

Occupational health is a responsibility carried out by organizations or companies for workers or employees both in terms of physical and mental health (Haghani et al., 2020). Occupational health is a responsibility given by mental companies (as stated by Dai, Hu, Xiong, Qiu, and Yuan, (2020); Lu, Wang, Lin, and Li, (2020) regarding workers' health problems, attitudes, knowledge, and behavior related to health problems (Zhang, et al., 2020) Several indicators of occupational health such as supply of OHS equipment, healthy work space, clean work environment, greening, cleaning of work areas, Medical Check Up, (Suma'mur, 2015)

A work accident is a planning perspective from a leader in completing a job well to avoid a higher work accident. A work accident is something that is very undesirable by the leadership in a job to its workers. Work accidents often occur due to poor and illegal working conditions, (Chiang et al., 2018). Heinrich et al., (2014) suggested indicators of work accidents, namely: a). Heredity b). Human negligence c). Attitude d). Work Environment e). Lack of lighting (Irradiation) f). Employee conditions.

Work productivity is a satisfaction that is directly expected by the leadership of the company or organization. (Halkos and Bousinakis, 2017). The definition of work productivity is knowledge and also input internally by the leadership to employees or workers in an organization or company by knowing the size of work productivity through the final result of a job (Palvalin, 2017). The indicators of work productivity are: ability, increased results achieved, work motivation of employees, enthusiasm in doing work, self-development, quantity, quality (Wulandari et al., 2020).

II. Research Method

(This type of research is descriptive quantitative and the place of this research is the Civil Service Police Unit on Jalan. WR. Supratman No. 46, Labuhanbatu. Data collection techniques used in the study were observation, documentation and questionnaires using a Likert scale. The population of the study was the Civil Service Police Unit of Labuhanbatu Regency, amounting to 233 people. In this study, samples were taken using the slovin formula, which was determined with a significance level of 0.05. The size of the sample in this study using the Slovin formula was 147 people. The analysis used in this study is multiple linear regression.

III. Result and Discussion

The validity test in this study was conducted on 30 respondents outside the research sample using the Slovin formula. Ghazali (2018) states that the validity test is used as a measure of whether a questionnaire is eligible to be declared valid or not with significant criteria > 0.5 . Valid data is data that does not differ between data reported by researchers and data that actually occurs in the object of research. The results of the validity test in this study are listed in Table 1:

Table 1. Validity Test Results

Indicator	Total Correlation	Criteria Sig.	Description
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Preparation of work equipment	,743	0.5	Valid
lighting system	,723	0.5	Valid
Working equipment condition	,731	0.5	Valid
Use of personal protection	,771	0.5	Valid
Use of work procedures	,724	0.5	Valid
Equipment safety habits	,677	0.5	Valid
Employee physical atmosphere	,682	0.5	Valid
Employee spiritual atmosphere	,752	0.5	Valid
OHS equipment supplies	,847	0.5	Valid
Healthy workspace	,829	0.5	Valid
Clean work environment	,872	0.5	Valid
Greening	,847	0.5	Valid
Work area cleaning	,676	0.5	Valid
Medical Check Up	,639	0.5	Valid
heredity	,904	0.5	Valid
Human negligence	,862	0.5	Valid
Attitude	,876	0.5	Valid
Work environment	,766	0.5	Valid
Irradiation	,887	0.5	Valid
Employee conditions	,699	0.5	Valid
Ability	,651	0.5	Valid
Improved results achieved	,744	0.5	Valid
Employee motivation	,690	0.5	Valid
Passion for doing work	,608	0.5	Valid
Self-development	,721	0.5	Valid
Quantity	,821	0.5	Valid
Quality	,697	0.5	Valid

Description: *Sig Criteria < 0.5

Source: Research Results, 2021.

Sugiyono (2017) suggests that the reliability test is carried out to find out the results of the measurement are consistent when the same measuring instrument is measured. An indicator in the questionnaire can be accepted or said to have good reliability if the value of Croanbach Alpha > 0.6. The results of the reliability test in this study can be contained in Table 2:

Table 2. Reliability Test Results

Variable	Croanbach Alpha (CA)	Description
Safety	,777	Reliable

Variable	Croanbach Alpha (CA)	Description
Health	,796	Reliable
Work accident	,804	Reliable
Work productivity	,774	Reliable

Description: *Criteria CA > 0.6.

Source: Research Results, 2021

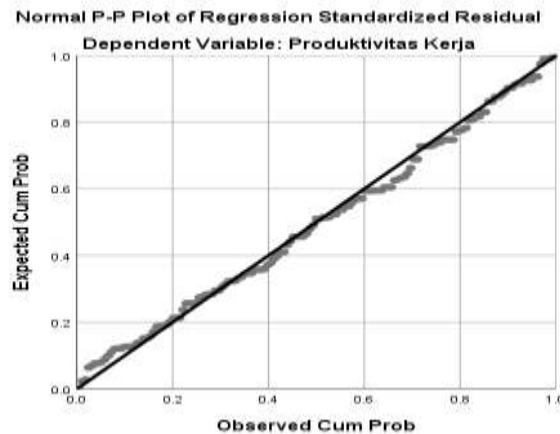
Table 1 and Table 2 show that all statement items are valid and reliable because they meet the criteria for measuring validity and reliability, namely 0.5 and 0.6. The next test uses the classical assumption test with normality. The normality test of this study is contained in Table 3:

Table 3. Test results Normality
One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		147
Normal Parameters, b	mean	.0000000
	Std. Deviation	1.27588904
Most Extreme Differences	Absolute	.054
	Positive	.054
	negative	-.043
Test Statistics		.054
asyp. Sig. (2-tailed)		.200c,d

- a. Test distribution is Normal.
- b. Calculated from data.
- c. Lilliefors Significance Correction.
- d. This is a lower bound of the true significance.

The normality test in Table 3 uses the Kolmogorov-Smirnov method with a significance value of 0.200. These results indicate that the significance level is > 0.05, so it can be stated that the normality test in this study is normally distributed. The following is a normality test using the p-plot graph contained in Figure 1:



Source: Research Results, 2021

Figure 1. P-Plot Graph Normality test

Graph 1 shows that the regression model in this study is normally distributed, it can be seen from the residual points of the regression model that spread out following the diagonal line. Another classic assumption test was analyzed by multicollinearity test. The results of the multicollinearity test in the study are listed in Table 4:

Table 4. Multicollinearity Test Results

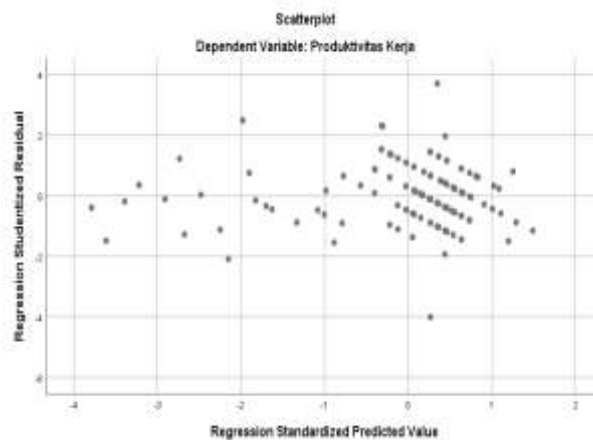
Model		Unstandardized Coefficients		Standardized Coefficients	Collinearity Statistics	
		B	Std. Error	Beta	Tolerance	VIF
1	(Constant)	.914	1,768			
	Safety	.187	.062	.171	.675	1.481
	Health	.367	.072	.332	.514	1,944
	Work accident	.516	.082	.451	.430	2,327

a. Dependent Variable: Work Productivity

Description: * $p < 0.05$.

Source: Research Results, 2021.

Table 4 shows that the three independent variables have a VIF value < 10 and a value of *tolerance* > 0.1 which means that the data in this study did not experience multicollinearity. Classical assumption testing with heteroscedasticity test in this study can be contained in Figure 2:



Source: Research Results, 2021.

Figure 2. Scatterplot Graph

Figure 2 shows that the data from this study spreads above and below the number 0 on the Y axis, and does not form a clear pattern, thus it can be stated that the data does not experience symptoms of heteroscedasticity. The results of the research analysis by testing multiple linear analysis can be contained in Table 5:

Table 5. Multiple Linear Regression Test Results

Model		Unstandardized Coefficients		Standardized Coefficients	Collinearity Statistics	
		B	Std. Error	Beta	Tolerance	VIF
1	(Constant)	.914	1,768			
	Safety	.187	.062	.171	.675	1.481
	Health	.367	.072	.332	.514	1,944
	Work accident	.516	.082	.451	.430	2,327

a. Dependent Variable: Work Productivity

Description: *p< 0.05

Source: *Research Results, 2021.*

Based on Table 5, the following multiple linear regression equation was obtained: $Y=0.914+0.187X_1+0.367X_2 +0.516X_3$. The results of this equation explain that the value of B on safety (B1) is 0.187. The health value (B2) is 0.367. The work accident value (B3) is 0.516 and the constant value (a) is 0.914. The description of this multiple linear regression equation proves that the variables of safety (X1), health (X2), and work accidents (X3) have a positive direction coefficient on work productivity.

Hypothesis testing in this research study can use the t test. This test was conducted to analyze the effect of the independent variables, namely safety (X1), health (X2), and work accidents (X3) partially on the dependent variable, namely work productivity (Y). The equation for determining the value of t-table can be used as follows: $df = nk-1 = 147-3-1 = 143$. After calculating using this equation, the value of t-table is 1.655. The results of the t test can be loaded in Table 6:

Table 6. t test results

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.914	1,768		.517	.606
	Safety	.187	.062	.171	3.006	.003
	Health	.367	.072	.332	5.090	.000
	Work accident	.516	.082	.451	6.316	.000

a. Dependent Variable: Work Productivity

Description: *p< 0.05

Source: *Research Results, 2021*

Table 6 proves that the results of the regression analysis with a t-count value of 3.006 > t-table 1.655. This shows that the safety variable (X1) has a positive effect on the work productivity variable (Y). Then the significant value is 0.003 <0.05, which means the safety variable (X1) has a significant effect on the work productivity variable (Y). The results of the regression analysis obtained the t-count value of 5.090 > t-table 1.6555 explaining that the health variable (X2) has a positive effect on the work productivity variable (Y). Then the significant value is 0.000 <0.05, which means that the health variable (X2) has a significant effect on the work productivity variable (Y). Furthermore, the results of the regression analysis obtained t arithmetic value of 6.316 > t table 1, 655 shows that the work accident variable (X3) has a positive effect on the work productivity

variable (Y). Then the significant value is $0.000 < 0.05$ explaining that the work accident variable (X3) has a significant effect on the work productivity variable (Y).

The F test was conducted to test the independent variables, namely the ability of safety (X1), health (X2), and work accidents (X3) simultaneously having a significant relationship or not to the dependent variable, namely work productivity (Y). As for determining the value of F_{table} , the following equation can be used: $df = k; n - k = 3; 147 - 3 = 3; 147$. After calculating using this equation, $F_{table} = (3; 147 - 3)$, the value of F_{table} is 2.67. The results of the F test in this study can be contained in Table 7:

Table 7.F. Test Results

ANOVA^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	522,219	3	174.073	104,734	.000b
	Residual	237,672	143	1,662		
	Total	759,891	146			

a. Dependent Variable: Work Productivity

b. Predictors: (Constant), Work Accident, Safety, Health

Description: * $p < 0.05$

Source: *Research Results, 2021.*

Table 7. Shows the F_{count} value of 104,734 $> F_{table}$ 2.67 with a significance value of $0.000 < 0.05$. From these results it can be stated that safety (X1), health (X2), and work accidents (X3) simultaneously have a positive and significant effect on work productivity (Y).

The coefficient of determination test was carried out to analyze the contribution of the influence of the independent variables, namely safety (X1), health (X2), and work accidents (X3) on the dependent variable, namely work productivity (Y). The results of the coefficient of determination test can be contained in Table 8:

Table 8.Coefficient of Determination Test Results

Model Summary^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.829a	.687	.681	1,289

a. Predictors: (Constant), Work Accident, Safety, Health

b. Dependent Variable: Work Productivity

Description: * $p < 0.05$

Source :*Research Results, 2021.*

The value of R Square from the analysis of the coefficient of determination is 0.687, meaning that work productivity can be explained by the variables of Occupational Safety, Health and Accidents of 68.7%, while the remaining 31.3% can be explained by other variables not examined in this study.

3.1 Discussion

The results of the regression analysis obtained the t arithmetic value of $3.006 > t$ table 1.655, which indicates that the safety variable (X1) has a positive effect on the work productivity variable (Y). Then the significant value is $0.003 < 0.05$, which means the safety variable (X1) has a significant effect on the work productivity variable (Y). These results are in accordance with previous research conducted by Mukhtar Galib and Sinaruddin (2021) which stated that safety had a positive and significant effect on employee productivity at PT. Johnline Baratama Site Konawe in Southeast Sulawesi. The health variable (X2) has a positive effect on the work productivity variable (Y) with a t-count value of $5.090 > t$ -table 1.655. Then the significant value is $0.000 < 0, 05$ which means that the health variable (X2) has a significant effect on the work productivity variable (Y). This study is in accordance with research conducted by Wahyuni, Suyadi and Hartanto (2018), the results of the study prove that health has a positive and significant effect on employee work productivity at PT. Kutai Timber Indonesia. The work accident variable (X3) has a positive effect on the work productivity variable (Y) with a t-count value of $6.316 > t$ -table 1.655 and a significant value of $0.000 < 0.05$, which means that the work-accident variable (X3) has a significant effect on the work productivity variable (Y).). The results of this study are in accordance with research conducted by Suradi (2017) which indicates that work accidents have a positive and significant effect on the work productivity of PT.

Safety (X1), health (X2), and work accidents (X3) simultaneously have a positive and significant effect on work productivity (Y), with an Fcount of $104,734 > F$ table 2.67 and a significance value of $0.000 < 0.05$. The results of this study are also in accordance with the research of Kuswandi (2021) which states that safety, health and work accidents simultaneously have a positive and significant effect on the Work Productivity of PT. Delamibrands Kharisma Clothing Palembang Branch. The results of the coefficient of determination with the value of R Square in research on the analysis of safety, health and work accidents on work productivity in the Rantauprapat civil service police unit, proves that work productivity can be explained by the variables of safety, health and work accidents of 0.687 or 68.7%.

IV. Conclusion

1. Safety has a positive and significant effect on Work Productivity in Labuhanbatu district civil service police unit
2. Health has a positive and significant effect on Work Productivity in Labuhanbatu district civil service police unit
3. Work Accidents have a positive and significant effect on Work Productivity in Labuhanbatu district civil service police unit
4. Occupational Safety, Health and Accidents simultaneously have a positive and significant effect on Work Productivity in Labuhanbatu district civil service police unit

References

- Arif, S. (2019). Influence of Leadership, Organizational Culture, Work Motivation, and Job Satisfaction of Performance Principles of Senior High School in Medan City. Budapest International Research and Critics Institute-Journal (BIRCI-Journal). P. 239-254
- Chiang, YH, Wong, FKW, Liang, S. (2018). Fatal construction accidents in Hong Kong.

- Journal of Construction Engineering and Management, 144(3), 04017121.
- Dai, Y., Hu, G., Xiong, H., Qiu, H., Yuan, X. (2020). Psychological impact of the coronavirus disease 2019 (COVID-19) outbreak on healthcare workers in China. MedRxiv preprints. <https://doi.org/10.1101/2020.03.03.20030874>
- Galib M., Sinaruddin (2021) Employee Productivity of PT. Delamibrands Kharisma Clothing Palembang Branch. Journal of Management Applications, Economics and Business, 5(2), STIM Lasharan Jaya.
- Ghazali I. (2018). Multivariate Analysis Application with IBM SPSS25 Program. STIE Indonesia.
- Gong, Y. (2019). Safety culture among Chinese undergraduates: A survey at a university. Safety Science, 111, 17-21.
- Haghani, M., Bliemer, MCJ, Goerlandt, F., Li, J. (2020). The scientific literature on Coronaviruses, COVID-19 and its association safety-related research dimensions: A scientometric analysis and scoping review. Safety Science, 129. <https://doi.org/10.1016/j.ssci.2020.104806>
- Halkos, G., Bousinakis, D. (2017). The Effect of Stress and Satisfaction on Productivity. International Journal of Productivity and Performance Management, 595, 415–431. <https://doi.org/10.1108/17410401011052869>.
- Heinrich M., Barnes, J., Gibbson, S., Williamsom, EM, (2014), Pharmacognosy and Phytotherapy, Jakarta, EGC Medical Book.
- Jilcha K, Kitaw D. (2016). Industrial occupational safety and health innovation for sustainable development. Technology and International Journal.
- Kamuli, S. (2012). Organizational Influence on Employee Work Productivity. Journal of Innovation, Volume 9, No. 1, March 2012
- Kuswandi R. (2021), the Effect of Occupational Safety, Health and Accidents (K3), Work Environment and Incentives on Employee Productivity at PT. Delamibrands Kharisma Clothing Palembang Branch. Thesis of the Faculty of Economics, Tridinanti University, Palembang
- Palvalin, M. (2017). How to Measure Impacts of Work Environment Changes on Knowledge Work Productivity – Validation and Improvement of the Smartwow Tool. Measuring Business Excellence, 212, 175–190. <https://doi.org/10.1108/Mbe-05-2016-0025>.
- Rahayu ID Musadieq M, PrasetyaA. (2017). the Effect of Leadership Style and Occupational Health and Safety Program on Work Motivation Study on Permanent Employees of the Maintenance Department of PT. Badak LNG Bontang). Brawijaya University, Malang.
- Sugiyono. (2017). Research and Development Methods: Research and Development, Bandung: Alfabeta.
- Suma'mur. (2015). Company Hygiene and Work Safety. Publisher: Sagung Seto. Jakarta.
- Suradi, (2017), The Effect of Work Accidents on Work Productivity of Employees of PT. Maruki International Indonesia. Journal of Technology, 12(1), journal-uim-makassar.ac.id
- Tymvios, N., Gambatese, JA (2016). Perceptions about design for construction worker safety: Viewpoints from contractors, designers, and university facility owners. Journal of Construction Engineering and Management, 142(2), 1–11.
- Law Number 13 of 2003 Article 86 concerning the Right to obtain OSH Protection, Indonesia
- Law Number 13 Year 2003 Article 87 paragraph (2) concerning Manpower, Indonesia
- Wahyuni N, Suyadi B. and Hartanto B. (2018) the Effect of Occupational Safety and

Health (K3) on Employee Work Productivity at PT. Kutai Timber Indonesia

- Wong, L., Wang, Y., Law, T., Lo, CT (2016). Association of root causes in fatal fall-from-height construction accidents in Hong Kong. *Journal of Construction Engineering and Management*, 142(7): 04016018
- Wulandari, RW, Farida, U., Santoso, A. (2020). The Influence of Work Discipline, Non-Physical Work Environment, and Work Stress on Teacher Work Productivity at SMK Bakti Ponorogo. *ASSET: Journal of Management and Business*, 3(1).<https://doi.org/10.24269/asset.v3i1.2701>
- Yanar, B., Lay, M., Smith, PM (2019). The interplay between supervisor safety support and occupational health and safety vulnerability on work injury. *Safety and Health at Work*, 10(2), 172–17.
- Zhang, M., Zhou, M., Tang, F., Wang, Y., Nie, H., Zhang, L., You, G. (2020). Knowledge, attitude, and practice regarding Covid-19 among healthcare workers in Henan, China. *Journal of Hospital Infection*, 105, 183–187.