

**EFFECTS OF WORKLOAD, WORK FATIGUE, AND  
OCCUPATIONAL SAFETY AND HEALTH (K3) ON THE WORK PRODUCTIVITY OF EMPLOYEES  
OF THE WEAVING SECTION OF PT. AHMADARIS TEGAL**

**Rizqi Amelia<sup>1)</sup>, Setyowati Subroto<sup>2)</sup>, Ira Maya Hapsari<sup>3)</sup>**

**<sup>1)</sup>Management, Pancasakti Tegal University**

Email: [ameliarizqi913@gmail.com](mailto:ameliarizqi913@gmail.com)

**<sup>2)</sup>Management, Pancasakti Tegal University**

Email: [titie.putri@gmail.com](mailto:titie.putri@gmail.com)

**<sup>3)</sup>Management, Pancasakti Tegal University**

Email: [hapsari\\_maya@yahoo.com](mailto:hapsari_maya@yahoo.com)

***ABSTRACT***

This research aims to determine the effect of workload, work fatigue, work safety and health on the work productivity of PT weaving department employees. Ahmadaris Tegal. The method in this research uses quantitative methods. The population in this study was 97 employees. The sample was determined using a saturated sampling technique, namely by taking a total of 97 respondents from the entire population. The analytical tools used are validity and reliability tests, using classical assumption test data analysis methods, multiple linear regression, hypothesis testing, and the coefficient of determination R<sup>2</sup> test and using IBM SPSS Version 25. The results of the research show that (t test) workload has an influence on work productivity, work fatigue has an influence on work productivity, work safety and health has an influence on work productivity, and (Test F) workload, work fatigue, work safety and health have a simultaneous influence on work productivity.

**Keywords: Workload, Work Fatigue, Occupational Safety and Health, Work Productivity**

***ABSTRACT***

This study aims to determine the influence of workload, work fatigue, occupational safety and health on the work productivity of employees of the weaving section of PT. Ahmadaris Tegal. The method in this study uses a quantitative method. The population in this study is 97 employees. The sample was determined using a saturated sampling technique, namely by taking a total of 97 respondents from the entire population. The analysis tools used were validity tests and reliability tests, using data analysis methods of classical assumption tests, multiple linear regressions, hypothesis tests, and R<sup>2</sup> determination coefficient tests and using IBM SPSS Version 25. The results showed that (Test t) workload had an effect on work productivity, work fatigue had an effect on work productivity, occupational safety and health had an effect on work productivity, and (Test F) workload, work fatigue, occupational safety and health had a simultaneous effect on work productivity.

**Keywords: Workload, Work Fatigue, Occupational Safety and Health, Work Productivity**

## INTRODUCTION

In every company, company growth is one of the main indicators that must be achieved by the company. To achieve the company's goals, it is necessary to have supporting resources. One of the resources that the company has is human resources. These human resources have a dynamic nature and have the ability to continue to develop, so they need to get attention and guidance in carrying out their activities from the company, considering that the fierce competition that is happening today forces companies to be able to work more efficiently, effectively and productively. A company can be said to be worthy of competition if the company strives to continuously improve the quality and quantity of its workforce. Many factors can be reviewed to improve the quality and quantity of the workforce, one of which is increasing work productivity.

According to (Hasibuan, 2005:128) Productivity is a comparison between output and input and prioritizes the way of utilizing both sources in producing a good or service. In every production activity, all resources have a role that determines the level of productivity, so these resources need to be managed and regulated properly.

Workload is one of the factors that must be considered to increase employee productivity. According to (Hasibuan, 2016) Workload is a task that is given to employees to be completed using the skills and potential of the employee and at a certain time. The higher the demands on employees, the higher the workload will also be and which will

certainly cause work fatigue.

Work fatigue can be interpreted as a body protection mechanism so that the body avoids further damage so that recovery occurs after rest. According to (Budiono, 2003:86) Stating that work fatigue is characterized by a weakening of the workforce in doing work, so that it will increase errors in doing work and can have fatal consequences such as the occurrence of work accidents. One way that companies can reduce or minimize work accidents (*zero accident*) is by providing occupational safety and health programs.

Occupational Safety and Health is the protection of work safety experienced by workers, both physically and mentally in their work environment (Awake, 2012:377). Manufacturing companies generally have a large risk of work accidents. Therefore, employees are required to always use personal protective equipment (PPE) to avoid work accidents

This research was conducted at PT. Ahmadaris is located on Jl Raya Padaharja KM.5, Kramat District, Tegal Regency which is a limited liability company manufacturing company engaged in the textile sector whose business activity is to produce gauze and wound dressings made of cotton yarn in various sizes that can be adjusted to consumer needs. In meeting the target, PT. Ahmadaris Tegal demanded that his employees work in accordance with the predetermined targets. The following is a table of the work productivity level of employees of the weaving section of PT. Ahmadaris Tegal in 2022:

**Table 1**  
**Work Productivity Level of Weaving Section Employees**

### PT. Ahmadaris Tegal in 2022

Moon	Number of Employees	Target Production	Production	Achievement (%)
January	97	745.828	688.576	92%
February	97	735.090	724.067	98%
March	97	995.529	831.197	83%
April	97	821.262	760.183	92%
May	97	864.866	722.247	83%
June	97	933.766	923.685	99%
July	97	817.310	770.164	94%
August	97	908.937	882.094	97%
September	97	900.387	826.817	92%
October	97	860.584	778.163	91%
November	97	894.175	866.949	88%
December	97	997.952	894.457	89%

Data Source : PT. Ahmadaris Tegal

Based on table 1, it shows that the level of employee work productivity has not been maximized because there are still many production targets that do not achieve optimal results. Therefore, companies are required to always increase their work productivity in achieving maximum results by always improving the management of existing resources.

In its business journey, PT. Ahmadaris always tries to catch up with the shortcomings of the previous target, so the company focuses more on high production in order to meet the shortcomings of the target.

Based on the results of the interview with the head of the weaving department, namely the workload, employees of the weaving department of PT. Ahmadaris Tegal, in the production process consists of 6 messes or 6 types of production, 1 employee is given the

responsibility of 2 to 3 types of production at once with 7 hours of work (8 am to 4 pm), this makes employees feel that the workload given is considered excessive not in accordance with the capacity and ability of the employee, too much burden borne by the employee will cause excessive fatigue in the employee, This can reduce employee work performance so that employee work productivity also decreases.

**Table 2**  
**Production Target of Weaving Parts**

It	RP M	Constructio n	Pic k	Inc h	Workin g time (hours)	Efficienc y	Production Output/Day/Machin e
1	135	24x20	20	2,54	7	60%	43,21
.	150	44x20	20				48,01
2	135	24x17	17	2,54	7	60%	50,83
.	150	44x17	17				56,48
3	135	24x25	25	2,54	7	60%	34,56
.	150	44x25	25				38,40
4	135	24x28	28	2,54	7	60%	30,86
.	150	44x28	28				34,29
5	135	24x27	27	2,54	7	60%	32,00
.	150	44x27	27				35,56
6	135	24x18	18	2,54	7	60%	48,01
.	150	44x18	18				53,34

Data Source: PT. Ahmadaris Tegal in 2022

Excessive work fatigue can cause many employees not to go to work, lack of focus, concentration and efficiency in doing their tasks so that it can reduce work productivity.

In addition, work fatigue also triggers work errors that will cause work accidents. The following is data on work accidents in 2022-2023:

**Table 3**  
**Work Accident Statistics Data 2022-2023**

Moon	<i>Incident</i>	Lost Workday	Severity	Criterion Severity	Incident Rate (%)	Information
Jan 22	0	0	0,0	<b>Keep</b>	0,0	Exposed to the cutting machine
Feb 22	0	0	0,0		0,0	
Mar 22	0	0	0,0		0,0	
Apr 22	<b>2</b>	<b>5</b>	<b>52,9</b>		<b>0,4</b>	
May 22	0	0	0,0		0,0	
June 22	0	0	0,0		0,0	
Jul 22	0	0	0,0		0,0	
Aug 22	0	0	0,0		0,0	
Sep 22	0	0	0,0		0,0	
Oct 22	0	0	0,0		0,0	
Nov 22	<b>1</b>	<b>1</b>	<b>10,6</b>	<b>Small</b>	<b>0,2</b>	Scratched cutting machine
Dec 22	0	0	0,0		0,0	
Jan 23	0	0	0,0		0,0	
Feb 23	0	0	0,0		0,0	
Mar 23	0	0	0,0	<b>Keep</b>	0,0	Exposed to the cutting
Apr 23	<b>1</b>	<b>5</b>	<b>50,6</b>		<b>0,2</b>	

May 23	0	0	0,0		0,0	machine
June 23	1	0	0,0	Small	0,2	Slipping when loading raw materials into the machine

Data Source: PT. Ahmadaris Tegal in 2022

Lack of supervision from the company, many employees act on their own volition, because it is found that there are still many employees who do not care or ignore the safety and health of the work itself, such as not using PPE equipment when working using semi-automatic which has a high risk.

Based on the background presentation above, the researcher is interested in conducting a research entitled "**The Effect of Workload, Work Fatigue, and Occupational Safety and Health (K3) on the Work Productivity of Production Employees of the Weaving Section of PT. Ahmadaris Tegal**"

The formulation of the problem in this study is as follows: a) Does the workload affect the work productivity of employees of the production of the weaving section of PT. Ahmadaris Tegal? b) Does work fatigue affect the work productivity of PT. Ahmadaris Tegal? c) Whether occupational safety and health affect the work productivity of PT. Ahmadaris Tegal? d) Whether workload, work fatigue, occupational safety and health affect the work productivity of PT. Ahmadaris Tegal?

## LITERATURE REVIEW

### Work Productivity

Comparison of results Output and input. Inputs are often limited by labor, while outputs are measured in physical units, shapes and values. (Sutrisno, 2016:98).

### Workload

According to (Tarwaka, 2015) Workload can be defined as a difference between the capacity or ability of work and the demands of the work that must be faced.

### Work Fatigue

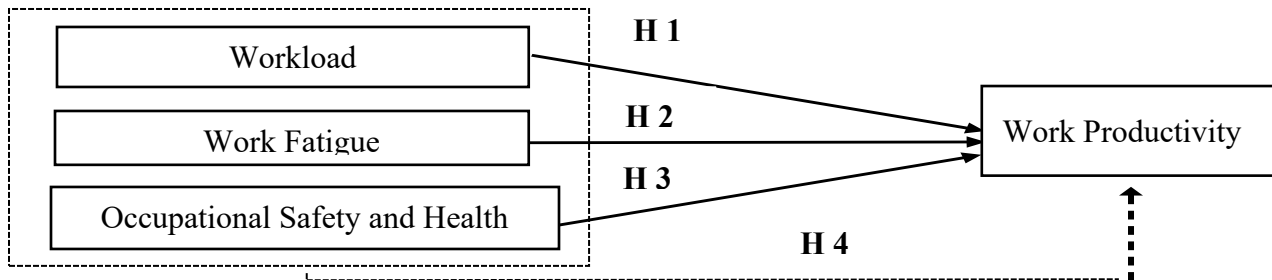
According to (Budiono, 2003:86) Stating that work fatigue is characterized by a weakening of the workforce in doing work, so that it will increase errors in doing work and can have fatal consequences such as the occurrence of work accidents.

## Occupational Safety and Health

According to (Ardana, 2012) Occupational safety and health (K3) is a protection effort aimed at ensuring that

workers and other people at work or are always in a safe and healthy state so that every source of production can be used safely and efficiently.

### HYPOTHESIS



Picture 1  
Conceptual Thinking Framework

Information:

—————→ : Partial influence  
-----→ : Simultaneous Influence

- H1** : Workload affects Employee Work Productivity of Weaving Parts Production PT. Ahmadaris Tegal
- H2** : Work Fatigue affect the Employee Work Productivity of Weaving Parts Production PT. Ahmadaris Tegal
- H3** : Occupational Safety and Health affect the Employee work productivity production of PT. Ahmadaris Tegal
- H4** : Workload, work fatigue, occupational safety and health are affected simultaneously on the work productivity of PT. Ahmadaris Tegal

### RESEARCH METHODS

The method in this study uses a quantitative method. The population in this study is 97 employees. The sample was determined using a saturated sampling technique, namely by taking a total of 97 respondents from the entire population. The analysis tools used were validity tests and reliability tests, using data analysis methods of classical assumption tests, multiple linear regressions, hypothesis tests, and R2 determination coefficient tests and using IBM SPSS Version 25. The results showed that (Test t) workload had an effect on work productivity, work fatigue had an effect on work productivity, occupational safety and health had an effect on work productivity, and (Test F) workload, work fatigue, occupational safety and health had a simultaneous effect on work productivity.

## RESULTS AND DISCUSSION

### A. Validity and Reliability Test Results

This test was carried out to measure the validity of a questionnaire statement, and was carried out on 30 respondents who had the same characteristics. With the criterion of  $r$  value calculation  $> r$  table.

**Table 4**  
**Validity Test Results**

Item No.	r calculate				r table	Information
	Y	X1	X2	X3		
1	0,761	0,772	0,902	0,729	0,361	Valid
2	0,625	0,791	0,865	0,687	0,361	Valid
3	0,761	0,700	0,775	0,743	0,361	Valid
4	0,796	0,663	0,786	0,801	0,361	Valid
5	0,734	0,775	0,723	0,727	0,361	Valid
6	0,615	0,657	0,755	0,763	0,361	Valid
7	0,663	0,750	0,754	0,648	0,361	Valid
8	0,774	0,741	0,798	0,833	0,361	Valid
9	0,732	0,581	0,794	0,718	0,361	Valid
10	0,673	0,710	0,794	0,618	0,361	Valid

Source : SPSS 25 processing results

Based on table 2 above, it can be concluded that all statement items in the variables Y, X1, X2, X3 are proven to be valid, because the value of  $r$  calculated is greater than the  $r$  of the table.

**Table 5**  
**Reliability Test Results**

Variable	Cronbach's Alpha Values	Standard	Information
Workload (x1)	0.890	0,60	Reliable
Work Fatigue (X2)	0.935	0,60	Reliable
Occupational Safety and Health (X3)	0.899	0,60	Reliable
Work Productivity (Y)	0.892	0,60	Reliable

Source : SPSS 25 processing results

Based on table 5 above, all variables have a positive value of Cronbach's Alpha and are greater than the standard alpha coefficient of 0.60. Therefore, it can be concluded that the data tested in this study is reliable or consistent.

### B. Results of the Classic Assumption Test

**Table 6 Results of the normality test**

One-Sample Kolmogorov-Smirnov Test			
			Unstandardized Residual
N			97
Normal	Mean		.0000000
Parameters a,b	Std. Deviation		1.47304371
Most Extreme Differences	Absolute		.067
	Positive		.065
	Negative		-.067
Test Statistic			.067
Asymp. Sig. (2-tailed) <sup>c</sup>			.200d
Monte Carlo Sig. (2-tailed) <sup>e</sup>	Sig. 99%		.337
		Lower Confidence Interval	.325
		Upper Bound	.349

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

d. This is a lower bound of the true significance.

Source : SPSS 25 processing results

Based on table 6 above, the Asymp value. Sig 0.200  $>$  0.05, it can be concluded that the data is normally distributed.

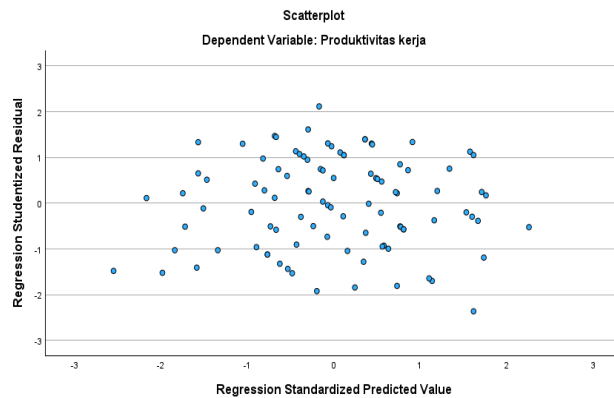
Coefficients <sup>a</sup>			
		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Workload	.645	1.550
	Work fatigue	.427	2.341
	K3	.474	2.110

a. Dependent Variable: Work productivity

**Table 7 Results of Multicollinearity Test**

Source : SPSS 25 processing results

The test results showed that the tolerance value was >0.01 and the VIF value, so there was no indication of multicollinearity between variables.



**Figure 2**Heteroscedasticity Test Results

Based on the Scatterplot graph of the distribution of points above and below the zero number on the Y axis, the data is homoscedasticity

### C. Multiple Linear Regression Analysis Results

**Table 8**Results of Multiple Linear Regression Analysis

Type	Coefficients <sup>a</sup>				
	Unstandardized Coefficients	Std. Error	Standardized Coefficients	t	Sig.
(Constant)	-.616	3.327		-.185	.854
Workload	.289	.078	.281	3.682	.000
Work fatigue	.475	.110	.403	4.301	.000
K3	.272	.096	.251	2.824	.006

a. Dependent Variable: Work productivity

Source : SPSS 25 processing results

Based on the table above, it can be written in the regression equation formula as follows:

$$Y = 1.584 + 0.271X_1 + 0.537X_2 + 0.067X_3 + e$$

### D. Hypothesis Test Results

**Table 9**Partial Test Results (t-Test)

Type	t	Sig.
(Constant)	-.185	.854
Workload (x1)	3.682	.000
Work Fatigue (X2)	4.301	.000
Occupational Safety and Health (X3)	2.824	.006

Source : SPSS 25 processing results

- The Workload variable (X1) obtained a calculated t-value of 3.682 with a significance value of 0.000. So it can be concluded that  $H_0$  was rejected and  $H_a$  was accepted. Thus, it means that there is an influence of Workload on the Work Productivity of employees of the weaving section of PT. Ahmadaris Tegal.
- The Variable of Work Fatigue (X2) obtained a calculated t-value of 4.301 with a significance value of 0.000. So it can be concluded that  $H_0$  was rejected and  $H_a$  was accepted. Thus, it means that there is an effect of Work Fatigue on the Work Productivity of employees of the weaving section of PT. Ahmadaris Tegal.
- The Occupational Safety and Health Variable (X3) obtained a calculated t-value of 2.824 with a significance value of 0.000. So it can be concluded that  $H_0$  was rejected and  $H_a$  was accepted. Thus, it means that there is an influence of Occupational Safety and Health on the



Work Productivity of employees of the weaving section of PT. Ahmadaris Tegal.

**Table 10 Results of Simultaneous Tests (Test F)**

ANOVA <sup>a</sup>					
Type	Sum of Squares	Df	Mean Square	F	Sig.
Regression	389.570	3	129.857	57.976	,000B
Residual	208.306	93	2.240		
Total	597.876	96			

a. Dependent Variable: Work productivity

b. Predictors: (Constant), K3, Workload, Work fatigue

Source : Data processed by SPSS version 25

Based on table 10, it shows that the F calculation is 164,805 and the significance value is 0.000. Therefore, it can be concluded that the variables of Professionalism (X1), Work Ethics (X2), and Work Ability (X3) simultaneously affect Employee Performance at Riez Palace Hotel Tegal

#### E. Determination Coefficient Result (R<sup>2</sup>)

**Table 11 Results of Determination Coefficient (R<sup>2</sup>)**

Model Summary <sup>b</sup>					
Type	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.807 <sup>a</sup>	.652	.640	1.497	2.224

a. Predictors: (Constant), K3, Workload, Work fatigue

b. Dependent Variable: Work productivity

Source : Data processed by SPSS version 25

Based on table 11 in the *Adjusted R Square* column, the test results obtained a value of 0.640, so to see the percentage amount using the formula  $Kd = r^2 \times 100\%$ , the value of the determination coefficient obtained is  $0.640 \times 100\% = 64\%$  So it can be concluded that Work Productivity can be influenced by the variables Workload, Work Fatigue, and Occupational Safety and Health by 64%, while for the remaining 36% it is influenced by other variables that are not researched in this study.

#### F. Discussion

a. The Workload variable (X1) is obtained with a calculated t value of 3,682 with a significance value of 0.000. So it can be concluded that Ho was rejected and Ha was accepted. Thus, it means that there is an influence of Workload on the Work Productivity of employees of the weaving section of PT. Ahmadaris Tegal. So that the hypothesis proposed is accepted as true, and strengthened by the results of previous research conducted Saefullah et al. (2017) which found that Workload affects Work Productivity.

- b. The variable of Work Fatigue (X2) was obtained with a calculated t value of 4,301 with a significance value of 0.000. So it can be concluded that  $H_0$  was rejected and  $H_a$  was accepted. Thus, it means that there is an effect of Work Fatigue on the Work Productivity of employees of the weaving section of PT. Ahmadaris Tegal. So that the hypothesis proposed is accepted as true, and strengthened by the results of previous research conducted Dahlia (2019) which found that Work Fatigue has an effect on Work Productivity.
- c. The Occupational Safety and Health variable (X3) obtained a calculated t value of 2,824 with a significance value of 0.000. So it can be concluded that  $H_0$  was rejected and  $H_a$  was accepted. Thus, it

means that there is an influence of Occupational Safety and Health on the Work Productivity of employees of the weaving section of PT. Ahmadaris Tegal. So that the hypothesis proposed is accepted as true, and strengthened by the results of previous research conducted Rst et al. (2021) which found that Safety and Health Work affects Work Productivity

- d. Based on the results of the F test using SPSS 25, it shows that the F value is calculated at 57,976 and the significance value is  $0.000 < 0.05$ , so  $H_0$  is rejected and  $H_a$  is accepted. It can be concluded that the variables Workload, Work Fatigue, and Occupational Safety and Health (K3) simultaneously affect Work Productivity.

## CONCLUSIONS AND SUGGESTIONS

### A. Conclusion

The conclusions that can be drawn from this study are as follows:

1. Workload affects the work productivity of weaving production employees at PT. Ahmadaris Tegal
2. Work fatigue affects the work productivity of weaving production employees at PT. Ahmadaris Tegal
3. Occupational safety and health (K3) affects the work productivity of weaving production employees at PT. Ahmadaris Tegal
4. Workload, Work fatigue, Occupational safety and health (K3) have a simultaneous effect on the work productivity of weaving production employees at PT. Ahmadaris Tegal

### B. Suggestion

1. For Companies
  - a. For PT. Ahmadaris Tegal Weaving Production Section

For companies, they should pay more attention to the workload given to employees, by reducing the number of employee responsibilities for machines, so that each employee only has responsibility for one machine according to the capacity and ability of employees so that it is not

too excessive.

Employee fatigue must also be paid more attention, especially physical condition, so that employees do not experience excessive fatigue by providing sufficient rest time and a not excessive workload.

Occupational Safety and Health (K3) must also be paid more attention and improved, by routinely providing education about the occupational safety and health (K3) program, and the company must better supervise and control all activities carried out by employees of the weaving section, so that their employees are more compliant with the work rules that have been set, one of which must use personal protective equipment (PPE), so that employees do not carry out their work according to their own wishes.

- b. For Company Management

The results of this study can be used as a reference to take actions in an effort to increase employee work productivity, namely by reducing employee workload so that it is not excessive, paying more attention to conditions

the employees so as not to experience excessive fatigue, and must provide education on the K3 program regularly and must also better supervise and control all activities carried out by employees of the weaving section, so that the employees are more compliant with the work rules that have been set, one of which must use the equipment of personal protective equipment (PPE).

c. For employees of PT. Ahmadaris Tegal Weaving Production Section

For the employees of PT. Ahmadaris Tegal Weaving Production Section must

be more disciplined in complying with the work rules that have been given by the company, not working according to their own wishes.

2. For the next researcher

For future researchers, it is better to be able to examine other variables such as work environment, work ability, etc. that are allegedly related to work productivity to help PT. Ahmadaris Tegal increases the effectiveness of these variables in controlling employee work productivity

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