

## The Effect of Work Environment on Work Stress at PT. Timbang Deli Indonesia Verdant Bioscience (Case Study: Seed Production and Selection)

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### ABSTRACT

This study aims to determine the effect of the work environment on work stress at PT. Timbang Deli Indonesia Verdant Bioscience (Case Study: Seed Production and Selection). The sample used in this study were employees at PT. Timbang Deli Indonesia Verdant Bioscience (Case Study: Seed Production and Selection), the number of samples is 35 people. The results of this study indicate that the independent variable, namely the work environment factor (X) has a positive and significant effect on employee work stress at PT. Timbang Deli Indonesia Verdant Bioscience (Case Study: Seed Production and Selection).

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## 1. Introduction

PT Timbang Deli Indonesia is a subsidiary of Verdant Bioscience Pte Ltd, Singapore which operates in Indonesia. Verdant was founded in October 2013 to develop high-productivity F: hybrid oil palm along with other supporting technologies that support significant yield and productivity gains for the palm oil industry worldwide, and agriculture in general.

Broadly speaking, the type of work environment is divided into two, namely: Physical Work Environment, namely the physical work environment is all physical conditions that exist around the workplace that can affect employees either directly or indirectly. The physical work environment can be divided into two categories, namely the environment that is directly related to employees and the intermediate environment or the general environment which can also be called the work environment that affects the human condition. as well as relationships with colleagues, or relationships with subordinates. This non-physical environment is also a work environment group that cannot be ignored. [2,4,11]

Job stress is an adjustment response mediated by individual differences and / or a psychological process which is a consequence of any action from outside (the environment), situations or events that determine excessive psychological and / or physical demands to a person. [1,3]

Previous research by Kartika Yuliantari & Kus Daru Widayat in 2018 with the title Effect of Work Environment on Employee Stress at PT Bank Mandiri (Persero) Tbk Kalibata Jakarta Branch. From the above problems and previous studies indicate the work environment affects work stress. [6,8] So that researchers are interested in raising the title The Effect of Work Environment on Work Stress at PT. Timbang Deli Indonesia Verdant Bioscience (Case Study: Seed Production and Selection). In this study, researchers used simple linear regression analysis and added a simultaneous test in it to strengthen the results of the study and it was hoped that it could be better than previous studies.

In the world of work, often arise various problems related to stress and conditions that can trigger stress. Whether we realize it or not, a person's job creates stress on him. This will undoubtedly appear over a long period of time, because humans are engaged in work every day more than a third of the total time available. The feeling of pressure experienced by employees in carrying out work is influenced by the responses of each individual and psychology, namely the consequences of every activity in the work environment that imposes excessive psychological or physical demands. [7,10,15] Because in carrying out their work. Based on the background described by the researcher wants to conduct research on the influence of the work environment on Work Stress at PT. Timbang Deli Indonesia Verdant Bioscience (Case Study: Seed Production and Selection).

## 2. Method

This type of research is quantitative. The research was conducted at PT Timbang Deli which is located in Galang sub-district, Deli Serdang district. In this study, data were obtained by several collection methods, namely: Research observation, Interview, Questionnaire or Questionnaire, Documentary Study. The population in this study were all employees of PT. Timbang Deli Indonesia Verdant Bioscience (Case Study: Seed Production and Selection). The sample in this study were 35 respondents, namely employees of PT. Timbang Deli Indonesia Verdant Bioscience (Case Study: Seed Production and Selection). Methods of data analysis using simple linear regression. [5,13]

## 3. Results and Analysis

### 3.1 Research Instrument Test

Valid and reliable instruments are an absolute requirement to obtain valid and reliable research results. [9]

#### a. Data Validity Test

The validity test is used by correlating the total factor score with the total score. If the correlation of each factor ( $r$  count) is positive and the magnitude is 0.3 and above, then the factor is a strong construct so it can be concluded that the instrument has good construction validity. [3]

**Table 1.**  
Validity Test Results

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
X1.1	47.06	27,350	,791	,912
X1.2	46.86	31,008	,421	,926
X1.3	46.97	27,852	,737	,914
X1.4	47.06	27,350	,791	,912
X1.5	47.06	27,350	,791	,912
X1.6	46.83	30,029	,481	,924
Y1.1	47.06	27,350	,791	,912
Y1.2	47.26	28,373	,658	,918
Y1.3	47.11	28,222	,746	,914
Y1.4	46.83	30,029	,481	,924
Y1.5	47.26	28,373	,658	,918
Y1.6	47.11	28,222	,746	,914

Source: Primary data processed, 2020

The table above shows that  $r$  count on all statements in each variable has a value greater than 0.3 so that it is declared valid.

#### b. Reliability Test

After the validity test is carried out, the next test is the reliability test.

**Table 2.**  
Reliability Test Results

Cronbach's Alpha	N of Items
,923	12

Source: Primary data processed, 2020

The results of reliability testing in the table above indicate that the variable has a coefficient of alpha ( $\alpha$ ) > 0.6 so it can be said that the questionnaire compiled is reliable or reliable as a data collection tool in this study.

### 3.2 Classical Assumption Test Results

#### a. Normality Test Results

This normality test aims to see whether the regression model, the dependent and independent variables have a normal distribution or not.

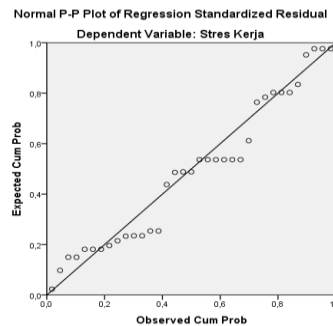


Fig 1. Normality Test Results Using the Normal Probability Plot Graph Method

Normality test results can be seen shows that the data spreads around the diagonal line and follows the direction of the diagonal line, so the regression model in this study is normally distributed. This shows that the regression model is feasible because it meets the assumption of normality.

#### b. Multicollinearity Test Results

The multicollinearity test aims to test whether the regression model has a correlation between independent (independent) variables.

Table 3  
Multicollinearity Test Results

Model	Coefficients <sup>a</sup>	
	Tolerance	VIF
1 (Constant)		
1 Work environment	1,000	1,000

a. Dependent Variable: Job Stress

Source: Primary data processed, 2020

The results of the multicollinearity test of the VIF value on the independent variable are 1,000 <10, meaning that there is no multicollinearity between the independent variables in the regression model of this study.

### 3.3 Simple Linear Regression Test Results

Simple linear regression analysis aims to measure the strength of the relationship between two or more variables, it also shows the direction of the relationship between the dependent variable and the independent variable. This study used a simple linear regression equation. Following are the results of data processing using SPSS 20. [12,14]

Table 4.  
Simple Linear Regression Test Results

Model	Unstandardized Coefficients		Standardized Coefficients
	B	Std. Error	Beta
1 (Constant)	6,690	3,271	
1 Work environment	,713	,125	,705

Source: Primary data processed, 2020

From the regression table above, it can be seen that the equation formed is:

$$Y = 6,690 + 0.713X$$

This equation explains that:

- 1) A constant of 6,690 indicates that if the work environment variable is constant, the work stress variable value is 6,690.
- 2) The value of 0.713 shows that if the work environment variable (X) increases by one, the value of the work stress variable will increase by 0.713 assuming other factors are constant.

### 3.4 Hypothesis Test Results

Hypothesis testing is done to answer the hypotheses that have been made. This hypothesis testing consists of testing the hypothesis partially and simultaneously testing the hypothesis.

#### a. Partial Test Results (T Test)

T test is used to determine whether the independent variable partially has a significant effect on job stress. The calculation of the t test or partial test in this study uses SPSS version 20.

**Table 5.**  
Test resultsT

Model	t	Sig.
1 (Constant)	2,045	,049
Work environment	5,716	,000

a. Dependent Variable: Work Stress

Source: Primary data processed, 2020

From the results of the data processing above, it can be seen that the work environment (X) with work stress (Y) obtains the t value of 5.716 while the t table value is 1.690. Because the t value is 6.716 > the t table value is 1.690 and the significance is 0.000 < 0.05, it can be seen that partially there is a significant influence between the work environment variable (X) and the work stress variable (Y). This means that  $H_a$  is accepted.

#### b. Simultaneous Test Results (Test F)

Simultaneous Test (Test F) aims to see the effect of the independent variables simultaneously on the dependent variable. The calculation of the F test is assisted by using SPSS version 20.

**Table 6**  
F Test Results

Model	F	Sig.
1 Regression	240,934	,000b
Residual		
Total		

a. Dependent Variable: Work Stress

b. Predictors: (Constant), Work Environment

Source: Primary data processed, 2020

F count of 240,934 with a significance of 0,000. F count 240.934 > F table 4.13 and a significance value of 0.000 < 0.05, it can be seen that the regression analysis model is significant. This means that  $H_a$  is accepted, meaning that there is an influence of work environment (X) on work stress (Y).

### 3.5 Coefficient of Determination (R<sup>2</sup>)

The coefficient of determination is used to measure the percentage of the total variation in the dependent variable Y which is explained by the independent variable X in the regression. The coefficient of determination uses SPSS version 20.

**Table 7**  
Coefficient of Determination  
**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,705a	,498	,482	2,271

a. Predictors: (Constant), Work Environment

Source: Primary data processed, 2020

### 3.6 Discussion

Based on the table above, it is obtained that the R square value is 0.482, this means that the work environment has an effect of 48.2% on work stress, while the remaining 51.8% is influenced by other variables not discussed in this study. The results of this study indicate that the work environment has a positive effect on work stress. The influence of the work environment on work stress can be explained by several factors. Factors that often occur are physical and non-physical work environments that cause discomfort and hinder employee performance. Co-workers who lack understanding in carrying out their duties and are less responsible. When employees feel uncomfortable with their work environment, this causes stress on the employees. A safe and comfortable work environment can reduce employee work stress levels. Conversely, an unsafe and comfortable work environment will increase employee work stress.

### 4. Conclusion

Based on the results of the research conducted, the following conclusions can be drawn:

- a. Based on the results of the F test, it shows that the independent variable, namely the work environment on the dependent variable. Work stress has a significant effect, namely with the calculated F value of  $32.676 > F$  table 4.13 and a significance value of  $0.000 < 0.05$ .
- b. From the results of the T test shows that the work environment with work stress has a significant effect by obtaining a t value of  $5.716 > t$  table value of 1.690 and a significance of  $0.000 < 0.05$ .
- c. Based on the R square ( $R^2$ ) test, it shows that the value of 0.498 means that the work environment variable has a 49.8% effect on work stress.
- d. From the results of research simultaneously based on grouping sex, age, education and length of work there is no difference with the results of the simultaneous test as a whole.

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