

The Influence Of Work Stress And Work Environment Toward The Graha Natuna Employee's Work Achievement At Pt Mcdermott Indonesia Batam

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Abstract-This research aims to determine the influence of work stress and work environment toward employee's work achievement. This research was conducted at PT McDermott Indonesia Batam. The sample technique was taken by using a purposive sampling method by using the Slovin formula, with a total sample of 143 people. Data was collected by using questionnaires and by using multiple linear analysis. The results of this study indicate that; 1) Job stress has a significant and positive influence toward employee's work achievement. 2) The work environment has a significant and positive influence toward employee's work achievement. 3) Job stress and work environment have a positive and significant influence toward employee's work achievement.

Keywords-Work Environment, Work Achievement, Work Stress

I. INTRODUCTION

A. Background

Human resource is someone who can plan work, make goods or services, sell products [8]. For companies, human resources are important assets because human resource has an important role for the company. Human resource at this time is not just as a mean of production but also a brain and determinant of the ongoing activities carried out by the company. Human resource as a mean of production means that humans act as one of the important factors in producing goods or services. Human resources are a factor in determining the development of a company. Every company, to achieve its objectives, is required to improve work performance of its human resources to work effectively and efficiently.

To improve work performance of human resources, there are several factors that influence, one of them is work stress. Stress comes from English word "Stress" which means freedom of soul or pressure of one's soul. Job stress is internal and external which creates full pressure and symptoms are served by any depressed person or employee [3].

Work environment is an environment around where employees work, how employees work, equipment and materials used in doing work, and how to manage their work both as individuals and as groups [9].

Work achievement is the result achieved by employees through good performance of quality & quantity in carrying out their duties and responsibilities according to [4]. Quality achievement is the work result achieved based on predetermined conformity conditions, while the work's result in quantity is the work result determined by the amount of work done by the employee.

B. Research Questions

Based on the background issues that stated earlier, the main problems that will be discussed are as follows:

1. How far is the work stress influence the work achievement in Graha Natuna PT McDermott Batam?
2. How far is the work environment influence the work achievement in Graha Natuna PT McDermott Batam?
3. How far is work stress and work environment simultaneously influence the work achievement in Graha Natuna PT McDermott Batam?

C. Significance of the Study

As for the benefits obtained from the research conducted by researcher are as follows:

1. Practical Benefits

This research is expected to be useful as information to all the employees of PT McDermott Batam about the extent of the role of work stress and work environment toward employee's work achievement in Graha Natuna PT McDermott Batam.

2. Theoretical Benefits

This research is expected to be a reference for the readers and can gain the knowledge about the factors that influence employee work achievement.

D. Objective of the Study

Based on the formulation of the problem above, the purpose to be achieved in this study are as follows:

1. Knowing how far is the influence of work stress toward work achievement at Graha Natuna Pt McDermott Batam.
2. Knowing how far is the influence of work environment toward work achievement at Graha Natuna PT McDermott Batam.
3. Knowing how far is the influence of work stress and work environment toward work achievement at Graha Natuna PT McDermott Batam. 2.

II. LITERATURE REVIEW

A. Theoretical Framework

Work Stress

According to [2], stress is a situation happened when employee that influences employee's emotion, the state of employee and how the employee's way of thinking. Moreover, according to [3], stress is a condition that creates a situation full of pressure, and the symptoms experienced by each employee who is depressed.

According to [2], there are a few indicators that caused stress to the employee, i.e.:

1. Excessive workload given.
2. Work pressure given by the superior.
3. Inadequate work facilities and time.
4. Problems between employees and superiors and colleagues.
5. Problems with salary and work time obtained are not equal.

According to [7], work stress is caused by three factors, they are:

1. Environment
 - An uncomfortable working environment will make the employee uncomfortable as well.
2. Organizational factors
 - a. The rules and demands for work in employment are unclear.
 - b. Conflicts between leaders and employees make tense and uncomfortable conditions.
 - c. The organizational structure determines the level of differentiation in the individual.
 - d. Leadership actions and behaviors that create an atmosphere of tension, fear and anxiety.
3. Individual Factors
 - a. Family Issues
 - b. Economic Issues

Work Environment

The work environment is the environment around where employees work, how employees work, equipment and materials used in doing work [9]. Work environment is an event that exists around employees that can influence employees to do their jobs [5].

From some definitions of the work environment, it can be concluded that the work environment is an important factor in the success of a company to achieve work performance. Eventhough the work environment does not directly influence in determining work performance but a good work environment will support the achievement of work performance.

According to [9], work environment divided by two, namely:

1. Physical work environment
 - a. Work environment in workspace such as chairs, desks, and work centers.
 - b. Indirect environments such as temperature, air circulation, lighting, odor, paint usage and facilities in the workplace.
2. Nonphysical work environment

Nonphysical work environment is a work environment that is not related to the physical conditions such as the workspace, the relationship between superiors and employees, and the relationship between coworkers.

Work Environment Indicators

1. Physical Work Environment Indicators

According to [9], physical work environment indicators are:

- a. Lighting in the workspace.
- b. Temperature in the workspace.
- c. Noise.
- d. Use of paint in the workspace.
- e. Humidity.
- f. Amenities.

Furthermore, [9] stated that nonphysical work environment indicator is harmonious relationship, which means a good relations with fellow employees in a work organization

Work Achievement

According to [2], work performance is the result obtained by an employee in carrying out his duties based on the sincerity of employees in doing work, experience possessed by employees, and the ability of employees to do work and interact with coworkers and superiors, and how employees use time effectively and efficiently in doing work.

B. Conceptual Framework

Based on the theoretical framework and previous research, the conceptual framework can be drawn up in the following scheme:

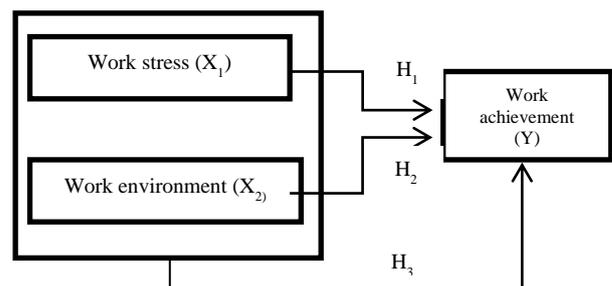


Fig. 1. Conceptual Framework
(Source: Research develop, 2019)

III. METHODS OF RESEARCH

A. Research Design

According to [10] this research is a quantitative research, as the data is can be calculated and the numbers obtained will further be analyzed to determine the result. Data collection technique in this research is distributing questionnaires.

B. Population and Sample

The population in this research is all employees of Graha Natuna, while 143 employees were taken as the sample. Sample determination was taken from 4 departments namely Detailing Engineering, CE (Construction Engineering), MTO (Material Take Off), Document Control with an error of 5% with a level of confidence of 95%.

$$\left(n = \frac{N}{1 + (Ne)^2} \right) = \left(\frac{224}{224(0,05)^2 + 1} \right)$$

n = 143

C. Operational Variable

TABLE I. OPERATIONAL DEFINITION OF THE RESEARCH VARIABLE I.

Variable	Defination	Measurment	Indicator	Scale Indicator
Stress (X1)	Stress is a condition to create a situation full of stress, and the symptoms experienced by each of a pressured (Ivanko, 2012).	<ul style="list-style-type: none"> • Workload • Time and tools • Conflict • Wages • Organization • Individual 	a. Difficult and excessive workload b. Time and work facilities c. Conflicts between individuals and superior (<i>interpersonal demands</i>) d. Conflicts between working group (<i>interpersonal Demands</i>) e. Wages and inappropriate working hours f. Regulations and demands (<i>Role Dimends</i>) g. Family issues h. <i>Organizational Structure</i> i. <i>Organizational Leadership</i>	Likert
Work environment (X2)	Nitissemto (2006) stated that work environment is situation around employee where the situation can influence employee in doing their jobs.	<ul style="list-style-type: none"> • Physical work environment 	a. Lighting b. Air circulation c. Noise d. Paint used e. Humidity f. Facilities	Likertl
		<ul style="list-style-type: none"> • Nonphysical work environment 	a. Harmonious relationship with fellow colleagues b. Harmonious relations between superiors or subordinates.	
Work achievement (Y)	Mangkunegara (2009) stated that work performance is the result of work that can be calculated in quality and quantity in carrying out its work.	<ul style="list-style-type: none"> • Quantity • Quality • Timeliness • Cost • effectiveness 	a. <i>Quantity</i> b. <i>Quality</i> c. <i>Timeliness</i> d. <i>Cost Efectiveness</i>	Likert

D. Validity and Reliability

A questionnaire is said to be valid if the statement on the questionnaire is able to reveal something that will be measured by the questionnaire [10]. The testing technique most often used by researcher to test the validity or validity level is to use Bivariate Pearson correlation (Pearson Moment Products). If the results of $r_{table} < \text{pearson's } r$, then it can be stated that the instrument is valid. Whereas, if $r_{table} > \text{pearson's } r$ then it is invalid.

According to [10], reliability shows consistency whether the questionnaire can be used more than once. Because an instrument is said to be reliable if there are similarities in the results of the data even though used in different research times. Moreover, to find out the value of instrument reliability or test in the form of a questionnaire answer, Cronbach Alpha method with Cronbach alpha criteria > 0.60 if the results obtained from the test meet the criteria, it can be stated that the instrument used is reliable.

E. Data Analysis Method

a. Classic assumption test

1. Normality Test is a condition of normal distribution in independent and dependent variables.
2. Test of Autocorrelation that will be used to detect a situation where there is a correlation between the error variables.
3. Multicollinearity Test is a test used to test the existence of relationships between independent variables.
4. Heteroskedastisitas test which can be used to detect the error variance condition one with another error different.

F. Test of multiple regression analysis

This analysis technique is used for measuring instruments between the influence variables by two or more independent variables (X) with the dependent variable (Y) where the independent variables in this study are work stress and work environment while the dependent variable is a work achievement.

G. Hypothesis testing

T test (Partial test)

The t test or partial test is used to measure the level of influence between the independent variables on the dependent variable.

F test (Simultaneous test)

The F test or the simultaneous test is used to determine the effect of the independent variables simultaneously on the dependent variable.

H. Time and Place of Research

The research was conducted on January to June 2019, at PT McDermott Indonesia Batam addressed in Jl. Bawal Batu Ampar industrial estate located in Graha Natuna

IV. RESULT AND DISCUSSION

TABLE II. VALIDITY AND REALIBILITY TEST RESULT

Variabel	Kues	Keang	Status	Alpha	Cronbach Status	
Work Stress (X1)	1	0.1381	0.353	Valid	0.706	Reliabel
	2		0.521			
	3		0.548			
	4		0.435			
	5		0.590			
	6		0.365			
	7		0.506			
	8		0.464			
	9		0.665			
	10		0.332			
Work Environment (X2)	1		0.315			
	2		0.166			
	3		0.520			
	4	0.227				
	5	0.464				
	6	0.402				
	7	0.403				
	8	0.453				
	9	0.442				
	10	0.465				
	11	0.312				
	12	0.492				
	Work achievement (Y)	1	0.399	0.683	Reliabel	
2		0.507				
3		0.527				
4		0.559				
5		0.495				
6		0.578				

From table 2, it can be seen that r pearson from each statement. The results of r_{table} are obtained from table r with the number $n = 143$ at a significant level of 0.05 (two-tailed test) so that the number 0.1381 is obtained and the variables in the study are declared valid. This that all statement items can be carried out the next step is the reliability test. In this study reliable or not if $\alpha > 0.60$ that is considered to have reliability. From the results of the table it can be seen that the work stress variable has a croncbach alpha coefficient of 0.706, the work environment variable is 0.671, and the work performance variable is 0.683 which shows results above 0.60. So, from the table it can be said that the measurement of each of the questionnaire variables is reliable so that the statement items in each of these variables can be trusted and consistent.

A. Normality Test Result

According to [1] the normality test aims to determine whether each of the variables is normally distributed or not. The normality test of the data in this study uses the Kolmogorov-Smirnov Test. The standardized residual curve is said to be normal if the value of Kolmogrov - Smirnov $z < z$ table, or uses the Probability Sig (2 tailed) $> \alpha$, sig > 0.05 . The test results are obtained in table 4 as follows:

TABLE III. NORMALITY TEST RESULT

Kolmogrov-Smirnov Test	Standardized Residual
Kolmogorov-Smirnov Z	.491
Sig. (2-tailed)	.969

The test results show that the data has a significant level of 0.696. This shows that the level of significance

produced is greater than 0.05. Thus, the data analyzed in this study is normally distributed.

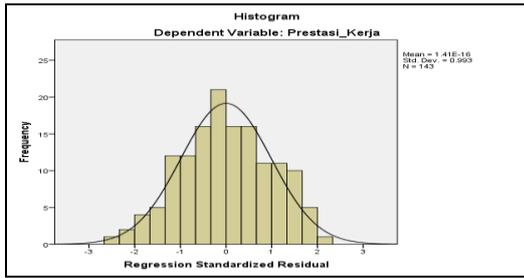


Fig. 2. Normality Test Result, Histogram

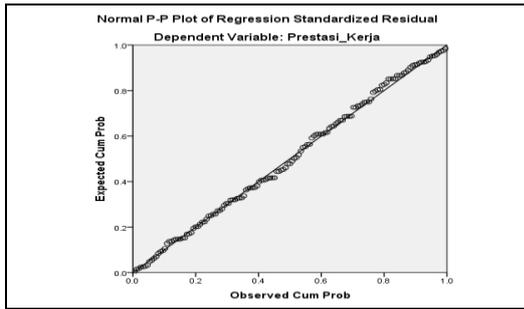


Fig. 3. Normality Test Result, P-plot

B. Multicollinearity Test Result

Testing with the presence or absence of multicollinearity symptoms is done by showing the value of the correlation matrix produced in data processing and the value of VIF (Variance Inflation Factor) and the tolerance value of more than 0.1 and VIF (Variance Inflation Factor) less than 10.0 it shows there are no symptoms of multicollinearity. The following are the results of the multicollinearity test.

TABLE IV. MULTICOLLINEARITY TEST RESULT

Variabel	Collinearity Statistics	
	Tolerance	VIF
Stres Kerja (X ₁)	.895	1.117
Lingkungan Kerja (X ₂)	.895	1.117

Based on table 4 above, it is known that the tolerance of work stress variables (X1) has a value of 0.895 > 0.1 and a VIF value of 10.0 < 1.117. work environment variable (X2) has a tolerance value of 0.895 > 0.1 and VIF value of 10.0 < 1.117. So, from the data concluded the regression equation is not occurred multicollinearity.

C. Heteroscedasticity Test Result

To detect the presence or absence of heteroscedasticity symptoms, namely by looking at the plot graph of the predicted value of the dependent variable, namely ZPRED with the residual SRESID [1]. If there are certain patterns such as dots (widened, narrowed, or wavy) then heteroscedasticity is indicated. The following are the results of heteroscedasticity tests:

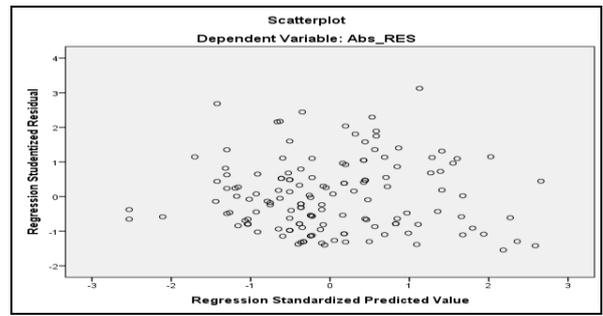


Fig. 4. Heteroscedasticity Test Result

Based on 4 points spread with random and unclear patterns, it can be concluded that the regression model does not have heteroscedasticity problems

D. Multiple Linear Regression Test Result

Based on the results of previous analyzes it has been proven that the equation model proposed in this study has met the requirements. The following are the results of multiple linear regression tests:

TABLE V. MULTIPLE LINEAR REGRESSION TEST RESULT

Variabel	Unstandardized Coefficients	
	B	Std. Error
(Constant)	7.576	2.217
Stres Kerja (X ₁)	.112	.048
Lingkungan Kerja (X ₂)	.294	.047

The regression equation that occurs can be expressed using the formula below:

$$Y = 7,576 + 0,112X_1 + 0,294X_2 + e$$

Information:

- Y : Work Achievement
- X1 : Work Stress
- X2 : Work Environment

From the above equation it can be explained that:

1. The constant has a value of 7.576 which shows the work stress variable (X1), the work environment (X2) is 0, then the work performance variable (Y) has a value of 7.567.
2. The coefficient of work stress variables has a value of 0.112 indicating that the variable work stress increases 1%, the work performance variable (Y) will increase by 0.112 assuming other independent variables remain.
3. The working environment variable coefficient has a value of 0.294 indicating that the work environment variable increases 1%, the work performance variable (Y) will increase by 0.294 assuming other independent variables remain.

V. CONCLUSIONS & RECOMMENDATIONS

A. Conclusions

From the results of the research that has been done, it can be concluded that:

1. Partially (t-test) shows that work stress variables have a significant effect on employee work performance at PT McDermott Indonesia Batam.
2. The working environment variable partially (t-test) shows the results that environmental variables have a

significant effect on employee work performance at PT McDermott Indonesia Batam.

3. Simultaneously (f-test) shows that work stress and work environment variables have a positive and significant effect on employee work performance at PT McDermott Indonesia Batam.

B. Recommendations

The suggestions from the research results for the next researcher are as follows:

1. Based on the results of research that has been carried out on the effect of work stress and work environment on employee work performance at PT McDermott Indonesia Batam with work stress results have a positive and significant effect on work performance, with the highest score on work stress variables found in item X1.4 "conflicts between leaders who make a tense atmosphere in the work environment increase work stress (interpersonal demands) with a mean score of 3.55. Therefore, it is recommended for the management of PT McDermott Indonesia and for the leadership to better pay attention on how to communicate with their employees both vertically and horizontally by discussing problems about work, and more attention to stress on employees because work stress variables have a significant influence on employee performance.
2. Based on the results of research that has been carried out on the effect of work stress and work environment on the work performance of employees of PT McDermott Indonesia Batam with the results of the work environment have a significant effect on work performance, with the lowest average score on work environment variables found on item X2.10 work space and hygiene facilities that adequately support work activities ", X2.13" decision-making processes at companies are transparent "with a mean score of 3.36 (disagree) and 3.37 (disagree). It is thus recommended for companies to review cleanliness, facilities and decision making that is not transparent to the company so that it can improve the work performance of its employees because work environment factors also have a significant effect on employee performance.

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