

THE RELATIONSHIP BETWEEN WORK STRESS AND LOCOMOTIVE MAINTENANCE OFFICER PERFORMANCE

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ABSTRACT

Limited human resources and time demands can increase workload resulting in faster work stress. If handled over time, it will have an impact on the performance of officers and can also increase work stress. Therefore, this study aims to determine the relationship between work stress and the performance of locomotive maintenance workers at the Purwokerto Locomotive Depot. This study uses a type of quantitative research. Data collection methods used in this research are primary and secondary data sources. The data analysis technique used is the instrument test, Spearman rank correlation and Spearman rank hypothesis test. Calculate the rho count on the work stress variable with a performance showing a value of 0.479, while for the comparison results, the value of the rho table shows several 0.439. In the hypothesis decision-making criteria that $\rho \text{ count} > \rho \text{ table}$ $0.479 > 0.439$, there is a relationship between work stress and employee performance which can also be seen from sig. (2-tailed) of 0.028. Based on retrieval, if the sig. (2-tailed) $0.028 < 0.05$ means that there is a significant relationship between work stress and performance variables. Spearman's rank hypothesis test found a relationship with a correlation value of -0.479, meaning that the relationship is vital in the moderate category. The direction of the relationship from this study is harmful or not unidirectional. And the rho count is greater than the rho table, which is 0.479, which is greater than 0.439, so the hypothesis shows a relationship between work stress and employee performance.

Keywords: work stress, performance, rank spearman, locomotive maintenance officer.

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INTRODUCTION

Currently, railways in Indonesia are a mode of transportation that has various advantages when compared to other modes of transportation, especially road-based modes of transportation (Stini, 2020). With the public's trust in the benefits of the railroad, it is necessary to improve the quality of comfort services by carrying out routine maintenance of facilities according to the existing schedule to support passenger safety (Rahmah, 2016). One of the maintenance facilities owned by PT KAI is the locomotive depot. The Purwokerto Locomotive Depot is a maintenance facility for locomotives operating in area 5 in Banyumas Regency. There are several types of facilities owned. The following is the number of facilities owned by the Purwokerto Locomotive Depot:

Table 1. Number of Locomotive Facilities

No	Type	Units
1	CC 201	15
2	CC 203	5
3	CC 206	9
Amount		20

Source: DAOP Locomotive Availability, 2022

There are 29 facilities which are divided into three types. These facilities are facilities that will be carried out maintenance. Treatment is carried out, such as one monthly (P1), three monthly (P3), six-monthly (P6), and 12 monthly (P12) maintenance (Assidiki, 2021). Maintenance officers carry out these activities in accordance with (Ministerial Regulation No.16, 2017) article (1). When carrying out maintenance of facilities is carried out by personnel who have the competence to carry out maintenance on railway facilities (Abdurrahman Ahmad, 2021). At the Purwokerto Locomotive Depot, maintenance personnel have certificates issued by the Directorate General of Railways, and training has also been attended. Maintenance officers at the Purwokerto Locomotive Depot have competency certificates for non-electric propulsion facilities per Ministerial Regulation No.16, 2017 (Priyanto, 2020).

The competence of locomotive facility maintenance officers follows the competency matrix in the Purwokerto Locomotive Depot. From certificates issued by the director general, all of them have. For education and training at the implementer level, all have implemented it, but for training at the advanced implementing level, there are some who have not carried out the activity; out of 21 people, there were three people who had not done advanced training at the advanced implementation level. In locomotive maintenance, competent officers are needed according to their competency certificate. In carrying out maintenance, there is its own schedule for each locomotive; the planning party makes the schedule. However, in the planning schedule, there are still many discrepancies with the plan that has been made. There are several causes for this discrepancy, according to the planning officer at the Purwokerto Locomotive Depot, including that the locomotive is currently on the road, there is a schedule for outgoing locomotives that are under maintenance at Balai Yasa, often the length of care is unpredictable. Technical constraints in maintenance at Balai Yasa can also cause schedule changes where spare parts that still need to be made available can also change maintenance schedules and locomotives that are still on the track and far from the central depot position. This increased the responsibility of the maintenance staff due to a clash in the locomotive maintenance schedule.

High task demands are one of the factors causing work stress (Tarwaka, 2015). Work at the locomotive depot has enormous challenges, such as having to check and repair the locomotive so that it can run adequately and generally as it should. In an environment full of heavy equipment and machinery, it is a formidable challenge for maintenance staff to get stuck with many physical work routines and a limited number of staff. In this case, source Human resources are one of the essential elements as a driving force that influences a company's success (Tentama, 2015). The following is the number of maintenance officers:

Table 2. Recapitulation of Employee Needs 2022

Position	Need Defined	There are employees			Difference
		organic	Non-Organic	Amount	
Maintenance	29	21	0	21	-8

Source: The need for maintenance staff for the lok depot. Purwokerto, 2022

The table above shows that there is still a shortage with the provision of 29 employees for the need for maintenance personnel. Currently, there are only 21 employees, meaning that eight people still need to improve the need for employees. Limited human resources and the demands of tasks can increase the workload, which causes work stress to arise more quickly (Utami et al., 2020). Work

stress has several factors, namely the existence of an extreme environment, noise, work equipment and machines that interfere with concentration, and the workload given is excessive (BUDIASA, nd). If this is not addressed immediately, it will impact the officers' performance. Based on previous research (Sari, 2011) regarding the impact of noise on employees of PT KAI Regional Operations IV Semarang showed that of the 51 respondents studied, 13 respondents analyzed work stress, 24 respondents experienced a bit of stress, and there were 14 respondents were quite stressed. Locomotive depot noise is higher than the noise level at the train depot. A lack of maintenance personnel can also cause work stress. This is in line with research conducted (TYAS, 2019) that work stress is caused by several complaints experienced by employees at the Jember and Bayuwangi locomotive maintenance station, including communication disorders, physiological disorders and psychological disorders. According to (Hadi et al., 2022). Therefore, work stress is an important problem because it affects performance, so it needs to be handled to achieve a company's goals (Shahrial & Robica, 2014). Based on the description of the background above, the purpose of this study was to determine and analyze the relationship between work stress and the performance of maintenance workers for the Purwokerto locomotive depot.

METHODS

The variable of this research is the work stress variable with the performance variable. The tie of this research is to test the proposed hypothesis and whether it will be accepted or rejected. This research uses a type of quantitative research. The data collection method used in this study is the primary data source in the form of performance stress level data and performance data. As well as using secondary data in the form of data archives from the Purwokerto Locomotive Depot.

The population in this study were maintenance workers at the Purwokerto Locomotive Depot, totalling 21 people. The sampling technique in this research uses total sampling, or another term, a census, where the entire population is sampled (Sugiyono, 2021). Because the population of locomotive maintenance officers at the Purwokerto Locomotive Depot is less than 30 people, in this study, data processing used instrument tests, namely validity and reliability tests. In managing the data, it was assisted by an application from a computer, namely SPSS 26 (Statistical Product and Service Solution) and assistance from excel. As well as using data analysis using Spearman's rank correlation and Spearman's rank hypothesis test to test the truth of a statement.

RESULTS AND DISCUSSION

1. Validity and Reliability Test Results

a. Instrument Validity Test

To determine whether the data used is feasible, it is necessary to test its validity and reliability. In this study, the validity test was carried out on 21 respondents, namely maintenance officers at the Purwokerto Locomotive Depot. Based on the quiz to find out the value of the r table, it can be seen that the degree of freedom (df) = $n-2$. Then the df obtained is $21 - 2 = 19$. With a significance of 0.05, an r table of 0.4329 is obtained. So for a comparison between the r count and r table, shown in the table below:

Table 3. Work Stress Validity Test Results

Variable	R count	R table	Information
X1	0.871	0.4329	Valid
X2	0.664	0.4329	Valid
X3	0.651	0.4329	Valid
X4	0.83	0.4329	Valid
X5	0.575	0.4329	Valid
X6	0.575	0.4329	Valid
X7	0.691	0.4329	Valid
X8	0.575	0.4329	Valid
X9	0.575	0.4329	Valid
X10	0.691	0.4329	Valid
X11	0.810	0.4329	Valid
X12	0.871	0.4329	Valid
X13	0.651	0.4329	Valid
X14	0.810	0.4329	Valid
X15	0.515	0.4329	Valid

The results of the validity test table for the questions above regarding work stress show that all questions have fulfilled the r_{table} of 0.4329. From these results, it was stated that 15 questions regarding work stress were valid, so the questionnaire data collection had been obtained.

Table 4. Performance Validity Test Results

Variable	R count	R table	Information
Y1	0.451	0.4329	Valid
Y2	0.641	0.4329	Valid
Y3	0.621	0.4329	Valid
Y4	0.756	0.4329	Valid
Y5	0.553	0.4329	Valid
Y6	0.687	0.4329	Valid
Y7	0.486	0.4329	Valid

In the validity test table above related to work stress, it was found that the r_{table} was 0.4329. From the validity test results, seven work stress questions were declared valid and feasible to use as research data.

b. Instrument Reliability Test

The reliability test was carried out on work stress, and performance variables were declared valid using SPSS 26. In deciding to test the instrument, if Cronbach Alpha > 0.70.

Table. 3 Reliability Test Results

Reliability Statistics	
Cronbach'Alpha	N of Items
0.783	22

Based on the table above, the value of *Cronbach Alpha* > 0.70, 0.783, is more significant than 0.70. Shows that the results of the reliability test are reliable.

2. Job Stress Level Test Results

Based on the distribution of questionnaires related to the level of work stress to the locomotive maintenance officers at the Purwokerto Locomotive Depot. The calculations that have been classified are based on the Depression Anxiety and Stress Scale (DASS) method. The following is a table presentation and classification of work stress levels:

Table 5. Work Stress Level Results

Respondents	Amount	Information
1	26	Critical
2	15	Light
3	28	Critical
4	15	Light
5	26	Critical
6	23	Currently
7	19	Currently
8	29	Critical
9	15	Light
10	26	Critical
11	19	Currently
12	20	Currently
13	15	Light
14	15	Light
15	22	Currently
16	17	Currently
17	15	Light
18	26	Critical
19	21	Currently
20	24	Currently
21	24	Currently

From the table above, there are several classifications of stress levels. Six people are in the mild category, nine in the moderate category, and six in the machete category.

3. Spearman Rank Correlation Analysis

Spearman's rank correlation analysis was used in this study to determine the relationship between work stress and performance variables. The following results are from calculating the superman rank correlation using SPSS 26.

Table 6. Spearman Rank Test Results

Correlations				
Spearman's rho	X	Correlation Coefficient	1,000	-.479 *
		Sig. (2-tailed)		0.028
		N	21	21
Y		Correlation Coefficient	-.479 *	1,000
		Sig. (2-tailed)	0.028	
		N	21	21

SPSS output above, a correlation efficiency score of -0.479 is obtained. Following the robust correlation level classification, the calculated correlation value is included in the category range 0.40-0.599, meaning that the correlation strength of -0.479 is included in the medium

category. In another sense, a strong, moderate relationship is a possibility. So, there is a possible relationship between stress and the performance of locomotive maintenance workers at the Purwokerto Locomotive Depot. The strong relationship between work stress and performance can be seen from the results of the correlation coefficient, which is -0.479, so the correction is negative. The direction of the negative relationship includes not unidirectional. Thus, it can be interpreted that if the variable (work stress) increases, this will cause the variable (performance) to decrease in stress levels. The results of this analysis support research from (Massie et al., 2018), whose research results show a significant effect between work stress and employee performance of $0.027 < 0.05$ at the Manado IT Center Management Office.

4. Hypothesis Test Results

To test the acceptance or rejection of H_0 , a comparison can be made between the calculated rho and the rho table. This hypothesis test is used to find out whether the correlation coefficient of the independent variable (X) has a significant relationship to the dependent variable (Y) or not. The following is the hypothesis of this study.

Table 7. Spearman Rank Hypothesis Test Results

Correlations				
Spearman's rho	X	Correlation Coefficient	1,000	-.479 *
		Sig. (2-tailed)		0.028
		N	21	21
	Y	Correlation Coefficient	-.479 *	1,000
		Sig. (2-tailed)	0.028	
		N	21	21

The rho table can be found in the rho table, namely with an error level of 5% and a total sample of 21 (5%, 21). However, in the rho table for a complete example of 21, a comparison is not available to get the results of the rho table as follows (Sugiyono, 2021):

$$\begin{aligned}
 a : b &= c : d \\
 (21-20) : (22-20) &= (X-0.450) : (0.428-0.450) \\
 1 : 2 &= (X-0.450) : (-0.022) \\
 2X - 2 (0.450) &= 1 (-0.022) \\
 2X - 0.9 &= 0.022 \\
 2x &= 0.9 - 0.22 \\
 2x &= 0.878 \\
 X &= 0.878/2 \\
 X &= 0.439
 \end{aligned}$$

Based on the calculation of the rho count on the work stress variable with a performance showing a value of 0.479 while for the comparison results the value of the rho table shows a number of 0.439. In the criteria for deciding on the hypothesis that rho count > rho table $0.479 > 0.439$, there is a relationship between work stress and employee performance and can be seen too from sig. (2-tailed) of 0.028. On the basis of retrieval if the sig. (2-tailed) $0.028 < 0.05$ means that there is a significant relationship between work stress and performance variables. This is in line with research conducted by (Widianingrum & Djastuti, 2016), which states that there is a

relationship between work stress and employee performance of $t \text{ count} < t \text{ table}$ ($0.006 < 1.671$) at PT. Kereta Api Indonesia (PERSERO) Operational Area IV Semarang.

CONCLUSION

The level of work stress for maintenance workers at the Purwokerto Locomotive Depot that dominates is a moderate level of work stress. The percentage of all officers who experience work stress levels is in the medium category, namely 43% or as many as nine officers out of a total of 21 officers. Spearman's rank hypothesis test found a relationship with a correlation value of -0.479, meaning that the relationship was strong in the medium category. The direction of the connection from this study is harmful or not unidirectional. And the rho count is greater than the rho table, which is 0.479, which is greater than 0.439, so the hypothesis shows a relationship.

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