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THE EFFECT OF WORK STRESS ON CREW PERFORMANCE ON THE FSO SHIP GAGAK RIMANG PT EQUINOX BAHARI UTAMA

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ABSTRACT (11 PT)

This study aims to determine whether stress affects crew performance and to understand the nature of that influence, particularly among crew members serving on the FSO Gagak Rimang vessel operated by PT Equinox Bahari Utama. In the maritime industry, human resources (HR) play a crucial role in ensuring vessel operations run smoothly and in achieving company objectives. Understanding the extent to which stress impacts crew performance is essential, as optimal performance is necessary to maintain operational efficiency. In this study, stress was measured using indicators such as workload, leadership attitude, working hours, conflict, communication, and job authority, while performance was assessed through indicators including quantity, quality, teamwork, responsibility, and initiative. A quantitative research method was employed, with statistical analysis conducted using SPSS version 27. The results revealed a significant negative relationship between stress and crew performance, with a correlation coefficient of 0.883, indicating that higher levels of stress are associated with lower performance. Simple regression analysis showed that stress accounts for 77.9% of the variation in crew performance, while the remaining 22.1% is influenced by other factors not examined in this study. Therefore, it can be concluded that stress has a significant and negative impact on the performance of crew members at PT Equinox Bahari Utama. Based on these findings, the company is encouraged to consider implementing measures to manage crew stress in order to enhance overall performance.

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Introduction

The maritime work environment, particularly aboard Floating Storage and Offloading (FSO) units, presents distinct psychological and operational challenges for seafarers. Prolonged isolation, routine monotony, high-pressure operational demands, and limited social interaction are inherent aspects of life onboard FSOs and constitute significant sources of occupational stress. The FSO Gagak Rimang, operated by PT Equinox Bahari Utama, exemplifies such a working environment. Stress among crew members may stem from internal factors, such as physical fatigue and interpersonal conflict, as well as external stressors, including adverse weather conditions and stringent production targets. These conditions underscore the need for a comprehensive understanding of how stress impacts crew performance.

This study seeks to examine the influence of work-related stress on three critical indicators of crew performance: the quantity of work completed, the quality of work delivered, and the level of initiative demonstrated by crew members. While PT Equinox Bahari Utama has implemented several stress mitigation initiatives—such as communication access with families, wellness activities, and routine briefings—the persistence of psychological strain among the crew suggests potential gaps between existing interventions and the lived realities at sea. Given the essential role of human performance in maritime operations, assessing the psychological dimensions of crew welfare is vital.

The present research is situated within the specific context of the FSO Gagak Rimang and aims to establish a clearer empirical linkage between stress levels and operational output. Drawing upon observational data, performance evaluations, and limited crew interviews, this study endeavors to elucidate the systemic effects of stress on maritime labor. Furthermore, it advocates for the integration of proactive mental health strategies into safety and quality management frameworks. By doing so, it contributes to the broader discourse on sustainable maritime human resource practices and operational resilience.

Materials and Methods

This study employed a quantitative method with a total sampling approach. The population and sample consisted of 36 crew members of PT Equinox Bahari Utama who work aboard the FSO Gagak Rimang vessel. By using total sampling, all members of the population were included as the sample, making the results more representative and reflective of actual conditions in the field.Data collection was carried out through the distribution of questionnaires using a 5-point Likert scale, designed to measure variables relevant to the research topic. This scale enabled the collection of measurable data regarding the crew's perceptions and experiences, particularly related to their levels of stress and work performance. This approach allowed the researcher to obtain comprehensive and objective information aligned with the study's objectives.

Result and Discussion

Validity Test

Before the questionnaire was used in this study, a validity test was conducted to ensure the reliability of the instrument. The test was administered to crew members of PT Equinox Bahari Utama assigned to the FSO Gagak Rimang vessel. A question item was considered valid if the calculated r-value exceeded the r-table value of 0.329, based on 36 respondents (df = 34).

- If r count > r table, the item is valid.
- If r count < r table, the item is invalid.

The results of the validity test are as follows:

Table 1 Results of Validity Test of Variable X

Code	Corrected Item-Total Correlation (R Hitung)	Table R	Validity
X1	.864	.334	Valid
X2	.787	.334	Valid
X3	.808	.334	Valid
X4	.738	.334	Valid
X5	.822	.334	Valid
X6	.823	.334	Valid
X7	.868	.334	Valid
X8	.917	.334	Valid
X9	.825	.334	Valid
X10	.685	.334	Valid
X11	.781	.334	Valid
X12	.845	.334	Valid
X13	.838	.334	Valid
X14	.785	.334	Valid
X15	.834	.334	Valid
X16	.780	.334	Valid
X17	.812	.334	Valid
X18	.752	.334	Valid

From table 1, all calculated r data are greater than r table, namely 0.329, so all statements on variable X are considered valid.

Table 2 Results of Validity Test of Variable X

Code	Corrected Item-Total Correlation	Table R	Validity
Y2	.505	.334	Valid
Y4	.806	.334	Valid
Y5	.576	.334	Valid
Y6	.495	.334	Valid
Y7	.688	.334	Valid
Y8	.609	.334	Valid
Y9	.520	.334	Valid
Y10	.592	.334	Valid
Y11	.684	.334	Valid
Y12	.554	.334	Valid
Y13	.763	.334	Valid
Y14	.486	.334	Valid
Y15	.458	.334	Valid

From table 2, all calculated r data are greater than r table, namely 0.3334, so all statements on variable Y are considered valid.

Reliability Test

An instrument is considered reliable or consistent if the Cronbach's Alpha value is greater than 0.60. In this study, instrument reliability was tested using the Cronbach's Alpha method. If the value is below 0.60, the questionnaire is deemed unreliable.

Table 3 Result of Reliability Test of Variable X

Reliability Statistics

Cronbach's Alpha	N of Items
.969	18

It can be concluded that the Cronbach's Alpha value is 0.969 > 0.60, so the questionnaire for variable X is declared reliable.

Tabel 4 Result of Reliability Test of Variable Y

Reliability Statistics

Cronbach's Alpha	N of Items
.850	13

It can be concluded that the Cronbach's Alpha value is 0.850 > 0.60, so the Y variable questionnaire is declared reliable.

Normality Test

The normality test is used to determine whether the data are normally distributed, as a good regression model requires normally distributed residuals. In this study, the Kolmogorov-Smirnov test was conducted using SPSS version 27. Data are considered normal if the significance value is greater than 0.05, indicating that the null hypothesis is accepted.

Table 5 Result of Normality Test

One-Sample Kolmogorov-Smirnov Test

			Unstandardized Residual
N			36
Normal Parameters[a,b]	Mean		.0000000
	Std. Deviation		2.29430306
Most Extreme Differences	Absolute		.143
	Positive		.143
	Negative		-.137
Test Statistic			.143
Asymp. Sig. (2-tailed)[c]			.060
Monte Carlo Sig. (2-tailed)[d]	Sig.		.061
	99% Confidence Interval	Lower Bound	.054
		Upper Bound	.067

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

d. Lilliefors' method based on 10000 Monte Carlo samples with starting seed 2000000.

It can be concluded that the significance value of 0.06 > 0.05, meaning that Ha is accepted. This means that the data is normally distributed.

Linearity Test

The linearity test checks whether the independent and dependent variables have a significant linear relationship. Using SPSS version 27, the relationship is considered linear if the significance value is below 0.05.

Table 6 Linearity Test Result

			Sum of Squares	df	Mean Square	F	Sig.
Kinerja * Stres	Between Groups	(Combined)	788.972	25	31.559	6.861	.002
		Linearity	650.738	1	650.738	141.465	.000
		Deviation from Linearity	138.234	24	5.760	1.252	.369
	Within Groups		46.000	10	4.600		
	Total		834.972	35			

The significance value is 0.369, which is greater than 0.05, indicating a linear relationship between variable X (work stress) and variable Y (crew performance).

Heteroskedasticity Test

The Glejser test is used to detect heteroscedasticity, or unequal residual variances, in a regression model. This test ensures the model meets classical assumptions for accurate interpretation. If the significance value (Sig.) is greater than 0.05, there is no heteroscedasticity. If Sig. ≤ 0.05, heteroscedasticity is indicated.

Table 7 Heteroskedasticity Test Result

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	3.511	1.029		3.412	.002
	Stress	-.029	.017	-.284	-1.725	.094

a. Dependent Variable: ABS_RES

Sig. value 0.094 which is greater than 0.05, so it can be concluded that there is no heteroscedasticity in the data.

Hypothesis Test

The decision rule is: if the significance value < 0.05, then Ha is accepted and H0 is rejected. Conversely, if the significance value > 0.05, then H0 is accepted and Ha is rejected.

Table 8 Hypothesis Test Result

Correlations

		Stress	Kinerja
Stress	Pearson Correlation	1	-.883**
	Sig. (2-tailed)		.000
	N	36	36
KInerja	Pearson Correlation	-.883**	1
	Sig. (2-tailed)	.000	
	N	36	36

**. Correlation is significant at the 0.01 level (2-tailed).

The Pearson Correlation result is 0.883 with a significance value greater than 0.05, meaning Ha is accepted and H0 is rejected. The correlation level between the two variables is very strong. The negative sign indicates an inverse relationship—when variable X (work stress) increases, variable Y (performance) decreases, and vice versa.

Simple Linear Regression

Table 9 Simple Linear Regression Result

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	65.691	1.752		37.502	.000
	TOTAL_X	-1.317	.029	-.883	-10.959	.000

a. Dependent Variable: Kineria_Y

Linear Regression Equation

$$Y = a + bX$$

$$Y = 65691 + (-1.317X)$$

Based on the equation:

1. The constant value (a) is 65.691, meaning the crew's performance is 65.691 when stress is zero.
2. The coefficient (b) of work stress (X) is -1.317, indicating that for every increase in stress, performance decreases by 1.317.

Direction of Relationship

The regression coefficient is negative (-1.317), meaning each increase in stress (X) leads to a decrease in performance (Y).

Effective Contribution

The coefficient of determination (R^2) is 0.779, indicating that work stress (X) contributes 77.9% to the crew's performance (Y).

Discussion

The validity test confirmed that all questionnaire items were appropriate and effectively measured the concepts of stress (X) and performance (Y). The reliability test also showed that both variables met the internal consistency threshold, indicating that the instrument used was dependable. The normality test confirmed that the data followed a normal distribution, supporting the assumptions for regression analysis. The linearity test showed a clear linear relationship between work stress and crew performance, justifying the use of linear regression for further analysis.The heteroscedasticity test results suggested that the variance of the residuals remained constant, indicating that the regression estimates were reliable. Furthermore, the hypothesis testing revealed a significant negative relationship between stress and performance, meaning that higher stress levels tend to reduce the performance of the crew. Regression analysis showed that stress negatively affects crew performance. A rise in stress leads to a measurable decline in work outcomes. The strength of the correlation between both variables was high, and the proportion of performance influenced by stress was dominant, proving that stress is a major factor affecting crew effectiveness.

These findings indicate that various stressors—such as workload, leadership, work hours, interpersonal conflict, and unclear job roles—contribute to a decline in performance indicators like productivity, quality, teamwork, responsibility, and initiative. This demonstrates the urgent need for

effective stress management practices in the maritime sector. This study aligns with previous research, including Ji An et al. (2020) and Supangat & Marsudi (2024), both of which found that job stress significantly reduces satisfaction and productivity, particularly in seafaring roles. Such consistency reinforces the credibility of the results and highlights the broader relevance of this issue. Observations at PT Equinox Bahari Utama showed that the company has implemented several programs to help reduce stress, such as the EBU In-House Training in partnership with the Indonesian Crew Union (KPI), which includes sessions on mental health and emotional resilience. These programs also involve team-building activities in locations like Bali and Magelang to foster camaraderie and alleviate stress. However, these efforts have yet to produce significant, long-term impact. While commendable, the company's current approach lacks consistent follow-up. Therefore, routine counseling and structured mental health support are recommended to strengthen existing programs and create a sustainable system for managing crew stress effectively.

Conclusion

Based on the results of the study, it can be concluded that stress has a significant negative impact on the performance of the FSO Gagak Rimang crew. The instruments used in the research were proven to be valid and reliable, and they met the requirements for regression analysis, including normally distributed data, linear relationships between variables, and the absence of heteroscedasticity. The findings indicate that the higher the level of stress experienced by the crew, the lower their performance in terms of quantity, quality, teamwork, responsibility, and work initiative. Although PT Equinox Bahari Utama has made various efforts to reduce stress—such as technical and psychological training, team-building activities, and social programs—the impact of these measures is still considered suboptimal. Therefore, the company is advised to re-evaluate the effectiveness of its current programs and develop additional, more targeted strategies, including ongoing psychological support, improved communication, and better workload and time management, in order to reduce stress and comprehensively enhance crew performance.

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