The Effect Of Occupational Safety and Health Patrols In Improving Personal Protective Equipment Compliance Among Dock Workers

Aslin Nuroniyah[1], M. Anjar Pamungkas[2], Vigih Hery Kristanto[3].
[1,2,3]*Politeknik Pelayaran Surabaya*
Email: aslin.nuroniyah03@gmail.com

ABSTRACT

This study to analyze the effect of Occupational Safety and Health (OSH) patrols on compliance with the use of Personal Protective Equipment (PPE) among dock workers at PT. Siam Maspion Terminal. The study is based on the observation that some workers still fail to use complete PPE during loading and unloading activities despite the routine implementation of OSH patrols. This research is a quantitative method with descriptive and inferential approaches. Data were collected through questionnaires to dock workers at PT. Siam Maspion Terminal. OSH patrols served as the independent variable, while PPE compliance was the dependent variable. The data were analyzed using descriptive statistics, validity and reliability tests, classical assumption tests, simple linear regression, and partial t-tests with SPSS software. The results indicate that OSH patrols positively influence PPE compliance. Routine and consistent patrols, supported by effective communication and follow-up actions on safety violations, improve workers' awareness and discipline in using PPE according to company standards. Therefore, OSH patrols contribute to strengthening workplace safety culture and reducing accident risks in the port environment.

Keywords:*OSH Patrols, PPE Compliance, Personal Protective Equipment, Dock Workers (TKBM), Occupational Safety.*

Introduction

Occupational Safety and Health (K3) is a crucial aspect of the port industry. Ports are one of the workplaces with a high risk of workplace accidents.(Ridwan et al., 2024) Loading and unloading activities involve workers with a high risk of occupational accidents. Port work environments are complex, with characteristics such as the use of heavy equipment, the mobilization of large volumes of goods, and changing weather conditions, all of which pose potential hazards in jetty and dock areas.(Arjuna, 2024) This situation demands the implementation of strict K3 standards, one of which is through compliance with the use of Personal Protective Equipment (PPE) by Loading and Unloading Workers (TKBM).

Although regulations regarding the use of PPE have been established in various national standards and company regulations, field observations indicate that the level of compliance with TKBM still varies. In several terminal companies, including PT. Siam Maspion Terminal, workers are still found not using complete PPE, such as helmets, vests, protective glasses, and safety shoes. This non-compliance is often influenced by several factors, such as a lack of

awareness of the dangers, the perception that PPE hinders work comfort, weak supervision, and the indecisiveness of imposing sanctions.

To ensure consistent implementation of OHS standards, port companies generally conduct OHS patrols as a form of active oversight of work activities. These patrols aim to monitor work area conditions, detect potential hazards, and ensure workers comply with safety procedures, including the use of PPE. However, the effectiveness of OHS patrols in improving compliance remains questionable, given that PPE violations are still found despite regular inspections.

This phenomenon raises the suspicion that certain factors influence the impact of OHS patrols, such as the frequency of patrols, the quality of communication between officers and the TKBM, the level of assertiveness of corrective actions, and the overall safety culture in the workplace. If OHS patrols are not running optimally, the potential for accidents due to non-compliance with PPE use will increase, resulting in losses for both workers and the company.

Therefore, this study is important to obtain a clear picture of the role of OHS patrols in improving compliance with PPE use among TKBM workers at PT. Siam Maspion Terminal, while also identifying factors that hinder its effectiveness. The results are expected to provide recommendations for the company in improving its monitoring system, strengthening its safety culture, and reducing the risk of workplace accidents.

Research Method

This study uses quantitative methods with descriptive and inferential approaches to analyze the effect of Occupational Safety and Health (K3) patrols on compliance with the use of Personal Protective Equipment (PPE) among Loading and Unloading Workers (TKBM) at PT. Siam Maspion Terminal. The study was conducted at PT. Siam Maspion Terminal, Gresik, during the author's onshore practice period.

The independent variable in this study is the OHS patrol which is measured through indicators of the frequency of patrol implementation, patrol consistency, inspection quality, instructions and communication of OHS officers, and follow-up on OHS violations. The dependent variable is compliance with the use of PPE which is measured through the consistency of the use of complete PPE, the suitability of the type of PPE, worker awareness, compliance with the rules for using PPE, and discipline in using PPE while working.

Primary data was obtained by distributing a closed-ended questionnaire using a five-level Likert scale to 65 TKBM respondents, while secondary data was obtained from literature, journals, and company documents. Data analysis techniques included descriptive analysis, validity testing, reliability testing, classical assumption testing (normality and linearity), simple linear regression, and a partial t-test using SPSS software.

Results and Discussion

Results

This study was conducted on 65 dock workers (TKBM) at PT. Siam Maspion Terminal. The purpose of this research was to determine the effect of Occupational Safety and Health (OSH/K3) patrols on compliance with the use of Personal Protective Equipment (PPE). Data

were collected through questionnaires consisting of 20 statement items distributed to respondents and analyzed using SPSS software.

Validity Test

The validity test was conducted to determine whether each questionnaire item accurately measured the intended research variable. An item is considered valid if the calculated correlation coefficient (r-count) is greater than the r-table value of 0.244 at a significance level of 5%.

The results showed that all items in the OSH Patrol variable (X1–X10) obtained r-count values ranging from 0.743 to 0.818. Similarly, all items in the PPE Compliance variable (Y1–Y10) obtained r-count values ranging from 0.765 to 0.841. Since all r-count values exceeded the r-table value, every questionnaire item was declared valid and suitable for use in the research. These findings indicate that all indicators successfully represented the concept of OSH Patrols and PPE Compliance.

Reliability Test

The reliability test was performed using Cronbach's Alpha to assess the consistency of the research instrument. The results showed that the Cronbach's Alpha value for the OSH Patrol variable was 0.947, while the PPE Compliance variable obtained a value of 0.955.

Both values were significantly higher than the minimum reliability threshold of 0.60, indicating that the questionnaire had excellent internal consistency. Therefore, the instrument can be considered highly reliable and capable of producing stable results when administered under similar conditions.

Normality Test

The normality test was conducted using the Kolmogorov-Smirnov method. The significance value obtained was 0.200, which exceeded the required threshold of 0.05.

This result indicates that the residual data were normally distributed. consequently, the data met one of the essential assumptions required for regression analysis, allowing further inferential statistical testing to be performed.

Linearity Test

The linearity test was conducted to determine whether the relationship between OSH Patrols and PPE Compliance was linear. The analysis produced a Deviation from Linearity significance value of 0.421.

Since the significance value was greater than 0.05, the relationship between the independent and dependent variables was considered linear. This finding confirms that simple linear regression is an appropriate method for analyzing the relationship between the two variables.

Simple Linear Regression Analysis

The regression analysis produced the following equation:

$Y = -2.089 + 1.053X$

The regression coefficient of 1.053 indicates a positive relationship between OSH Patrols and PPE Compliance. This means that every one-unit increase in the implementation of OSH Patrols is associated with an increase of 1,053 units in PPE Compliance.

The positive coefficient demonstrates that improvements in patrol implementation are likely to enhance workers' compliance with PPE requirements.

Correlation and Determination Coefficients

Table 1. Correlation and Determination Table

R	R Square	Adjusted R Square	Interpretation
0.981	0.963	0.962	Very Strong

The correlation coefficient (R) obtained from the analysis was 0.981. According to the interpretation of correlation coefficients, this value indicates a very strong relationship between OSH Patrols and PPE Compliance.

The coefficient of determination (R^2) was 0.963, meaning that 96.3% of the variation in PPE Compliance could be explained by the implementation of OSH Patrols. The remaining 3.7% was influenced by other factors not included in this study, such as safety culture, leadership commitment, PPE comfort, worker motivation, and safety training programs.

Partial t-Test

The partial t-test was conducted to determine whether OSH Patrols significantly affect PPE Compliance.

The analysis showed a t-value of 40.223, which was substantially higher than the t-table value of 1.998. Additionally, the significance level was 0.000, which is lower than the required significance level of 0.05.

These results indicate that the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted. Therefore, OSH Patrols have a positive and statistically significant effect on PPE Compliance among dock workers at PT. Siam Maspion Terminal.

Discussion

The findings of this study demonstrate that Occupational Safety and Health (OSH/K3) patrols play a crucial role in improving PPE Compliance among dock workers at PT. Siam Maspion Terminal. The significant influence identified through regression analysis suggests that effective patrol implementation contributes directly to safer worker behavior.

The positive regression coefficient indicates that improvements in patrol activities lead to higher levels of compliance with PPE regulations. This finding suggests that regular monitoring, inspections, and supervision encourage workers to follow safety procedures more consistently. When workers are aware that safety officers regularly inspect work activities, they tend to become more disciplined in using PPE according to company standards.

The very strong correlation coefficient (R = 0.981) further confirms the close relationship between patrol implementation and PPE Compliance. This result indicates that OSH Patrols are not merely administrative activities but function as an effective control mechanism that

influences workers' safety behavior. Through patrol activities, safety officers can identify unsafe actions, remind workers of safety requirements, and immediately address violations before accidents occur.

The coefficient of determination ($R^2 = 0.963$) indicates that OSH Patrols account for a substantial proportion of PPE Compliance behavior. This finding highlights the importance of maintaining consistent patrol activities as part of the company's safety management system. The results also imply that strengthening patrol quality may significantly improve compliance rates and reduce workplace accident risks.

These findings support the theory proposed by the Occupational Safety and Health Administration (OSHA), which states that safety inspections and patrols are essential risk-control measures for ensuring compliance with occupational safety procedures. Regular patrols help organizations identify hazards, monitor worker behavior, and implement corrective actions efficiently.

The findings are also consistent with the research conducted by Islam and Priyanto (2020), which concluded that safety supervision positively influences worker compliance and safety behavior. Increased supervision encourages workers to become more aware of workplace hazards and more committed to following established safety procedures.

In the context of port operations, where workers face numerous occupational hazards such as heavy equipment, moving cargo, slippery surfaces, and changing weather conditions, compliance with PPE requirements is essential. Therefore, the implementation of routine and consistent OSH Patrols is an effective strategy for strengthening safety culture, reducing unsafe behavior, and minimizing workplace accidents among dock workers.

Overall, the results indicate that OSH Patrols are a key factor in promoting PPE Compliance and supporting the development of a safer working environment at PT. Siam Maspion Terminal.

Conclusion

Based on the results of research on 65 TKBM respondents at PT. Siam Maspion Terminal, it can be concluded that Occupational Safety and Health (K3) Patrols have a positive and significant effect on Compliance with the Use of Personal Protective Equipment (PPE). The results of the regression analysis produce the equation $Y = -2.089 + 1.053X$ which indicates that increasing the implementation of K3 patrols will increase compliance with the use of PPE. The results of the t test show a calculated t value of 40.223 which is greater than the t table of 1.998 with a significance value of $0.000 < 0.05$ so that the research hypothesis is accepted. The coefficient of determination (R^2) value of 0.963 indicates that 96.3% of the variation in compliance with the use of PPE is influenced by the implementation of K3 patrols. Thus, K3 patrols are a very important factor in increasing worker awareness, discipline, and compliance with the use of PPE according to company safety standards.

References

Arjuna, A. (2024). Occupational Safety Risk Analysis in Loading and Unloading Activities at Port Terminals. Journal of Transportation Safety, 8(2), 115–126.

Creswell, J. W. (2018). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (5th ed.). Thousand Oaks, CA: Sage Publications.

Ghozali, I. (2021). Multivariate Analysis Application with IBM SPSS 26 Program (10th ed.). Semarang: Diponegoro University Publishing Agency.

Islam, M., & Priyanto, A. (2020). The Effect of Occupational Safety Supervision on Worker Compliance in Using Personal Protective Equipment. Journal of Occupational Safety Management, 5(1), 45–54.

Occupational Safety and Health Administration. (2020). Recommended Practices for Safety and Health Programs. Washington, DC: US Department of Labor.

Ridwan, M., Hidayat, R., & Putra, D. (2024). Implementation of Occupational Safety and Health in Loading and Unloading Operations at Indonesian Ports. Indonesian Maritime Transportation Journal, 12(1), 25–37.

Sugiyono. (2022). Quantitative, Qualitative, and R&D Research Methods (2nd ed.). Bandung: Alfabeta.

Law of the Republic of Indonesia Number 1 of 1970 concerning Occupational Safety.

Regulation of the Minister of Manpower and Transmigration of the Republic of Indonesia Number PER.08/MEN/VII/2010 concerning Personal Protective Equipment.

International Labor Organization. (2023). Safety and Health at Work: A Vision for Sustainable Prevention. Geneva: International Labor Organization.