

# Enhancing Employee Productivity Through Effective Occupational Health and Safety Practices

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**Abstract**

**Background:** Occupational health and safety (OHS) programs are essential for ensuring the well-being of employees, particularly in sectors with high-risk environments such as the energy industry. Despite the existence of OHS programs, the effectiveness of these programs in enhancing employee productivity remains underexplored in certain regions. This research focuses on PT PLN UP3 Sorong, a state-owned company in Indonesia, to examine the impact of OHS on employee productivity.

**Research Objective:** The purpose of this study is to analyze the effect of OHS on employee work productivity at PT PLN UP3 Sorong.

**Research Method:** This quantitative study employs a descriptive causal design to examine the relationship between OHS and work productivity. The data were collected from 35 employees of PT PLN UP3 Sorong through questionnaires. Data analysis was conducted using simple linear regression with the help of SPSS software.

**Results:** The findings reveal that OHS has a significant and positive effect on employee productivity. The results indicate that improvements in OHS practices lead to an increase in work productivity among employees. The statistical analysis shows that the implementation of OHS is crucial in boosting employee performance, and the correlation between the variables is strong.

**Conclusion:** The study concludes that OHS significantly contributes to enhancing employee productivity at PT PLN UP3 Sorong. The findings emphasize the importance of investing in OHS programs to improve employee well-being and organizational performance. Companies, especially state-owned enterprises, should prioritize these programs for sustained productivity.

**Keywords:** Employee Productivity; Occupational Health and Safety; PT PLN UP3 Sorong; Simple Linear Regression; Work Environment.

## Pendahuluan

In line with developments in the current era of globalization, it is increasingly important for companies and organizations to effectively optimize the productivity of their available resources to produce high-quality goods and services, thus ensuring competitiveness and promoting sustainable growth. According to Wahyuni (in Hasmita et al., 2023), productivity serves as a primary indicator of a company's progress, where employees must be capable of competing with those from other companies and producing services more efficiently. Chan (in Didit, 2023) defines productivity as the ratio between output and input resources, emphasizing the importance of maximizing output while minimizing input. In the industrial sector, higher productivity levels consistently lead to greater profitability, which has continuously attracted management's attention, thereby positioning productivity as a critical focal point within industry operations.

Candrianto (in Rosento et al., 2021) argues that occupational health and safety (OHS) refers to conditions that ensure health and safety not only for employees but also for companies, communities, and the environments surrounding factories or workplaces. OHS initiatives are intended to prevent unsafe acts and hazardous conditions that may lead to accidents. Similarly, Mondy and Noe (in Muhammad et al., 2022) state that workplace safety represents the company's responsibility to provide health services to employees who sustain injuries while performing their duties. Heinrich (in Wahyu et al., 2022) further emphasizes that OHS programs significantly influence individual work productivity; effective implementation of OHS measures fosters greater work discipline and results in a more productive workforce. Furthermore, Widodo (in Syahril, 2021) highlights that workplace safety enhances employee productivity by fostering greater enthusiasm, motivation, and work efficiency. The successful implementation of workplace safety programs requires active participation from both management and employees.

As a State-Owned Enterprise (SOE), PT PLN (Persero) bears the responsibility of supplying electricity to end users, including households. To achieve higher levels of productivity, the company must possess the ability to attract, educate, assess, and retain a workforce that meets the necessary quantitative and qualitative standards. PT PLN has initiated several development programs within its OHS division, such as Safety Awareness initiatives, OHS Management-Level Training, and OHS Expertise Certification. However, the implementation of these development programs has not been fully optimized, as reflected in the results of interviews conducted with the OHS division manager, summarized below:

Table 1. Interview Results at PT PLN Sorong City

Variable	Indicator	Question	Answer
Productivity (Y)	Development Programs	Does PLN have development programs related to OHS for all employees?	Yes, there are employee development programs related to OHS.
		How many employees have participated relative to the total number of employees?	1. Safety Awareness: All employees, as it aims to enhance general OHS understanding. 2. Management-Level Training: 1 participant (unit manager). 3. OHS Expertise Certification: 30%–40% of total employees.
		What are the targets of these development programs?	To improve workplace safety and achieve zero accidents.
		Have these programs achieved their intended outcomes? What percentage of employees have become competent?	90% of employees who participated have achieved competence in their respective fields, thereby reducing the risk of workplace accidents.

Based on the interview findings, the OHS division manager of PT PLN UP3 Sorong City stated that the three programs have been implemented with the primary objective of enhancing workplace safety and achieving zero accidents. The Safety Awareness program was attended by all employees to increase their general understanding of OHS principles. The Management-Level OHS Training was attended by one manager from each operational unit. These initiatives have positively impacted employee and managerial productivity. However, the development programs have not been fully optimized, as evidenced by the fact that only 30%–40% of employees have participated in the OHS Expertise Certification program. Furthermore, only 90% of participating employees have achieved the targeted competencies in their respective fields.

This indicates that employees at PT PLN have not yet fully benefited from optimal environmental health and safety protections in the workplace. Consequently, there remains a tangible risk of occupational accidents and injuries, which can hinder efforts to improve productivity and operational efficiency. The

above phenomenon and findings suggest that employee productivity at PT PLN UP3 Sorong City has not yet reached optimal levels. The significant occupational risks encountered in the field could diminish employee productivity. Moreover, the uneven participation in employee development programs highlights disparities in OHS training coverage. Additionally, some employees' failure to participate in these programs has contributed to suboptimal employee productivity at PT PLN UP3 Sorong City.

However, this research is important to conduct because, although the OHS (Occupational Health and Safety) development programs have been implemented at PT PLN UP3 Sorong, their outcomes have not been evenly distributed among all employees. As a result, there are still risks of workplace accidents that could negatively impact employee productivity. Previous studies have mostly focused on the general implementation of OHS programs in large industrial or manufacturing sectors, whereas this research specifically highlights the electricity supply sector (particularly in the state-owned company PT PLN) in the Sorong area, Southwest Papua, which faces unique geographical and human resource challenges.

This gap forms the foundation of this research, considering that few studies have explored the direct relationship between the effectiveness of OHS development and employee productivity in the electricity supply sector in Eastern Indonesia. This study is expected to contribute to enriching the literature on the implementation of occupational health and safety programs, particularly in the context of state-owned enterprises (SOEs) located in underdeveloped, frontier, and outermost regions (3T areas). The purpose of this study is to analyze the extent to which the development of OHS programs influences employee productivity at PT PLN UP3 Sorong. Practically, this research aims to provide recommendations for the development of more effective OHS management policies to enhance productivity, workplace safety, and operational efficiency within the company.

## **Studi Literatur**

### **Employee Productivity**

According to Ratnasari and Lestari in (Faradilla et al., 2023), productivity is a measure of employees' contribution to the organization and serves as a benchmarking metric that identifies organizational efficiency and effectiveness. Mulyadi in (Muhammad et al., 2022) states that productivity refers to the comparison between employees' input and output. A worker may achieve high results, but it does not necessarily mean their productivity increases. Employees are considered productive if they are able to produce output (goods and services) according to targets within an effective and efficient timeframe. Productive employees will contribute positively to achieving company goals, as the tasks assigned to them are completed successfully. Ratnasari and Lestari in (Faradilla et al., 2023) also mention that productivity is a measure of employees' contribution to the organization and a benchmarking tool for evaluating organizational efficiency and effectiveness.

Based on these expert opinions, it can be concluded that productivity measures how much contribution employees make to the organization. It also serves as an indicator of how effective and efficient the organization operates. A worker is considered productive if they can deliver the targeted output effectively and efficiently within the allocated time, thereby helping the company achieve its goals. According to Sutrisno in (Wahyu et al., 2022), work productivity can be measured using the following indicators: capability, improvement of results achieved, work enthusiasm, self-development, quality, and efficiency.

### **Occupational Health and Safety (OHS)**

According to Ardana in (Catur and Widodo), occupational health and safety (OHS) refers to protection efforts aimed at ensuring that workers and others in the workplace remain safe and healthy, so that all production resources can be utilized safely and efficiently. Mathis and Jackson in (Vega) define occupational health and safety (OHS) as activities that ensure the creation of safe working conditions, free from physical and mental disturbances, through training, guidance, supervision, and control of employees' tasks, as well as providing assistance in accordance with regulations set by the government or companies where employees work.

Furthermore, Ryani in (Parashakti and Putriawati) states that OHS is a condition that must be realized in the workplace with maximum effort based on scientific knowledge and deep consideration, aiming to protect workers, humans, and their works and cultures through the consistent application of accident prevention technologies, in accordance with applicable laws and standards. Based on these expert opinions, it can be concluded that occupational health and safety (OHS) is a protection effort to ensure that everyone in the workplace remains safe and healthy. OHS involves activities that ensure employees perform their tasks under safe conditions, free from physical and mental disturbances. The objective is to ensure that all production resources can be used safely and efficiently. According to Mangkunegara in (Ni'matu, 2019), the indicators of occupational health and safety are: A condition free from physical disturbances, A condition free from mental disturbances, and A secure condition.

### **Hypothesis**

According to the research by Nining et al. (2018), occupational health and safety have a positive and significant effect on employee productivity. Similar findings were stated in the research of Aseptua and Astri (2022), Catur and Widodo (2018), Indah et al. (2019), and Effendi (2019), all of which conclude that occupational health and safety positively and significantly influence employee work productivity.

H1: Occupational Health and Safety (OHS) has a Positive and Significant Effect on Employee Productivity at PT PLN UP3 Sorong City.

### **Metode Penelitian**

This study aims to analyze the effect of Occupational Health and Safety (OHS) on Employee Work Productivity. The research adopts a quantitative research approach. This study utilizes a descriptive-causal research design, which aims to examine the cause-and-effect relationship between variables through hypothesis testing. The location of this research was conducted at PT PLN UP3 Sorong. The population for this study consists of employees of PT PLN UP3 Sorong, totaling 60 individuals. A sample size of 35 employees was selected for the study, using a simple random sampling technique. The researcher employed a questionnaire (survey) as the primary data collection method.

The data collection process was conducted by distributing questionnaires to the selected respondents. The questionnaire included a series of closed-ended questions designed to measure both Occupational Health and Safety (OHS) and employee productivity. The respondents were required to answer each question based on their experience and perceptions regarding OHS practices at PT PLN UP3 Sorong and their personal productivity at work. The responses were collected and organized for further analysis.

For data analysis, the researcher employed simple linear regression analysis. This method was used to examine the relationship between OHS (independent variable) and employee productivity (dependent variable). The data were processed and analyzed using the SPSS (Statistical Package for the Social Sciences) software to ensure accuracy and reliability in the findings.

### **Data Collection Procedure**

**Preparation Phase:** The researcher designed and validated the questionnaire, ensuring that all items were aligned with the objectives of the study and accurately represented the variables of interest. A pilot test was conducted to verify the reliability and validity of the instrument.

**Data Distribution:** The finalized questionnaires were distributed to the sample of 35 employees, ensuring that each participant understood the purpose and significance of the study. A brief explanation of the study was provided, along with instructions on how to fill out the questionnaire.

**Data Collection:** The completed questionnaires were returned to the researcher, who reviewed the responses for completeness and consistency.

**Data Analysis:** The collected data were then entered into SPSS for statistical analysis. Simple linear regression was applied to test the hypothesis and determine the impact of OHS on employee productivity.

### **Measurement and Evaluation**

The results of the study will be evaluated based on the statistical significance of the regression analysis. A significance level of 0.05 will be used to determine whether the relationship between OHS and employee productivity is statistically significant. The coefficient of determination ( $R^2$ ) will also be examined to assess the proportion of variance in employee productivity explained by OHS practices. Additionally, the researcher will assess the reliability of the data using Cronbach's alpha to ensure the consistency of the measurement tool. The outcome of the study will provide insights into how effective OHS practices are in enhancing employee productivity and will contribute to the existing literature on workplace safety and productivity.

## **Hasil**

### **Validity Test**

The validity test aims to measure the accuracy or validity of a measuring instrument/questionnaire. The table value for  $r$  is 0.355. The following are the results of the validity test:

Table 2. Validity Test Results

Statement	r-value	Remark
x1	0.922	Valid
x2	0.758	Valid
x3	0.856	Valid
x4	0.740	Valid
x5	0.813	Valid
x6	0.797	Valid
x7	0.770	Valid
x8	0.823	Valid
x9	0.919	Valid
x10	0.809	Valid
y1	0.727	Valid
y2	0.843	Valid
y3	0.873	Valid
y4	0.878	Valid
y5	0.692	Valid
y6	0.661	Valid
y7	0.702	Valid
y8	0.807	Valid
y9	0.707	Valid
y10	0.940	Valid
y11	0.898	Valid

Statement	r-value	Remark
y12	0.835	Valid
y13	0.776	Valid

Source: Processed data with SPSS 20, 2024

Based on the table above, the validity test results for the work productivity variable with a sample size of 35 are described in 13 statements. All validity test results indicate that the statements are valid, as the calculated r coefficient is > 0.333. For the OHS variable with 10 statements, all statements related to OHS are valid, as the calculated r coefficient is > 0.333.

### Reliability Test

The reliability test was conducted using Cronbach’s Alpha to measure the consistency of the research variables. The following are the reliability test results for this study:

Table 3. Reliability Test Results

Variable	Cronbach’s Alpha	Remark
Occupational Health and Safety (OHS)	0.936	Reliable
Work Productivity (Y)	0.963	Reliable

Source: Processed data with SPSS 20, 2024

Based on the table above, the Cronbach’s Alpha value for the OHS variable (X1) is 0.936, which is above the threshold of 0.60. The Cronbach’s Alpha value for the work productivity variable (Y) is 0.963, which also exceeds the 0.60 threshold. This indicates that all items of each variable are reliable.

### Simple Linear Regression Analysis

Simple linear regression analysis aims to determine the effect of the independent variable on the dependent variable. Below are the results of the simple linear regression analysis for this study:

Table 4. Simple Linear Regression Analysis Results

		Coefficients <sup>a</sup>				
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4,071	3,945		1,032	,310
	K3	1,211	,089	,922	13,666	,000

a. Dependent Variable: Work Productivity

Source: Processed data with SPSS 20, 2024

The regression equation is as follows:

$$Y = a + bX$$

$$Y = 4.071 + 1.211X$$

Based on this equation, the following interpretations can be made: The constant value (a) = 4.071 means that if OHS (X1) is 0, work productivity will remain constant at 4.071. and OHS (b) = 1.211 means that for each unit increase in the OHS variable, work productivity will increase by 1.211, assuming other independent variables remain constant.

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

The coefficient of determination (R square) is used to predict the contribution of the independent variable, OHS, to the dependent variable, work productivity. Below are the results of the coefficient of determination for this study:

Table 5. Coefficient of Determination Results

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,922 <sup>a</sup>	,850	,845	2,185

a. Predictors: (Constant), Occupational Health and Safety (OHS)

b. Dependent Variable: Work Productivity

Source: Processed data with SPSS 20, 2024

Based on the table above, the correlation value (R) is 0.922 and the R Square value is 0.850. This means that 85% of the variation in work productivity is influenced by OHS, and the remaining 15% is influenced by factors not included in this study.

### Hypothesis Testing with t-Test

This test aims to determine the extent to which the OHS variable (X) significantly affects work productivity (Y) either partially or individually. If the Sig. value < 0.05 or t count > t table, the independent variable (X) has a significant effect on the dependent variable (Y). Conversely, if the Sig. value > 0.05 or t count < t table, no effect is present. Below are the results of the t-test in this study:

Table 6. Partial Hypothesis Test (t-Test)

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4,071	3,945		1,032	,310
	K3	1,211	,089	,922	13,666	,000

a. Dependent Variable: Work Productivity

Source: Processed data with SPSS 20, 2023

Based on the table above, the Sig. value for OHS towards work productivity is 0.000 < 0.05, and the t count value is 13.666 > t table value of 2.048. Therefore, it can be concluded that H1 is accepted, indicating a positive and significant effect of OHS on work productivity.

### Pembahasan

The results of this study indicate that the occupational health and safety (OHS) variable has a positive and significant effect on employee work productivity at PT PLN UP3 Sorong. This suggests that improvements or enhancements in occupational health and safety can contribute positively to the level of employee work productivity. As the implementation of OHS improves, employee work productivity tends to increase. These findings are consistent with the views expressed by Wahyu et al. (2020), who stated that the implementation of OHS significantly affects work productivity directly. This highlights that optimal OHS practices are crucial for

determining an individual's work productivity. The better the implementation of OHS in a company, the higher the work productivity of its employees.

Furthermore, according to Hasmita Anwar et al. (2023), it was found that, in a partial sense, the occupational health and safety variable significantly influences employee work productivity. This aligns with the results of this study, reinforcing the notion that enhancing OHS practices leads to increased productivity. Similarly, Syahril (2021) concluded that OHS has a positive and significant effect on work productivity. If there is an improvement in occupational health and safety, it will positively influence work productivity.

These findings support the notion that creating a safe and healthy work environment can significantly enhance employee motivation and performance. The improvement in safety protocols and the health infrastructure available to employees directly contribute to their well-being, thereby fostering better work engagement and productivity.

The results of this study are in line with previous research on the positive relationship between OHS practices and work productivity. Wahyu et al. (2020) found a significant direct effect of OHS implementation on work productivity, similar to the findings of this study, which also highlight the critical role of OHS in improving employee productivity. Furthermore, studies by Hasmita Anwar et al. (2023) and Syahril (2021) similarly concluded that OHS positively influences work productivity, confirming the validity of the current findings in the broader academic context. These studies collectively underline the importance of investing in OHS programs to boost employee performance across various organizational settings.

While this study provides significant insights into the relationship between OHS and work productivity, several limitations should be considered. Firstly, the study is limited by its sample size of only 35 employees from PT PLN UP3 Sorong. A larger sample size could offer a more generalized and robust understanding of the relationship across different employee demographics. Additionally, this study is confined to a single company, which may limit the external validity of the findings to other organizations with different work environments or operational contexts. Another potential limitation is the reliance on self-reported data through questionnaires, which may introduce response bias. Employees might overstate their perceptions of safety practices or their productivity levels due to social desirability bias. Future studies could incorporate objective performance metrics and include multiple organizations to enhance the generalizability and accuracy of the results. Additionally, this study focused solely on the direct impact of OHS on work productivity, without considering other influencing factors such as organizational culture, management practices, and external socio-economic conditions, which could also play significant roles.

### **Kesimpulan**

This study explicitly addresses the research questions by demonstrating that occupational health and safety (OHS) significantly and positively influences employee work productivity at PT PLN UP3 Sorong. The results indicate that improvements in OHS practices lead to enhanced employee productivity, which aligns with previous studies, emphasizing the importance of creating a safe and healthy work environment. The findings contribute to the existing literature by providing evidence that effective OHS implementation plays a crucial role in increasing productivity in the energy sector, particularly in

underdeveloped regions like Sorong. Therefore, the study highlights the need for companies, especially state-owned enterprises, to prioritize OHS programs to improve both employee well-being and organizational performance.

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