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How Occupational Health and Safety Affects Employee Productivity and Work Quality

Multazam
Faculty of Islamic Economics and Business, Alauddin State Islamic University, South Sulawesi, Indonesia

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ABSTRACT

Purpose of the study: This study aims to identify how much influence employee health and safety has on employee performance.

Methodology: Sampling in this study used 96 respondents, the data collection technique was through questionnaires distributed to respondents, and the research variables were Health (X1), Safety (X2), Performance (Y). This study used descriptive analysis with a quantitative approach, and to test the level of reliability using Cronbach Alpha and then the data was processed with Multiple Linear Regression Analysis. Hypothesis testing used the F Test and t Test with a significance level of 10%. Researchers used SPSS Version 17.

Main Findings: From the results of multiple linear regression analysis shows that employee performance is influenced by health variables and work safety variables. The determination results (R2) use the adjusted r square value, because it uses regression with more than one dependent variable, which is 0.685, which means that health variables and work safety variables are able to explain employee performance by 69% while the remaining 31% is influenced by other variables not studied. From the results of the F test and t test calculations, it can be seen that health variables and work safety variables together affect employee performance and the most dominant variable is the work safety variable.

Novelty/Originality of this study: This study presents a new perspective by evaluating the effectiveness of employee participation-based Occupational Health and Safety implementation as a mediating variable that has not been widely researched in relation to increasing individual productivity and performance in industrial sector organizations.

Corresponding Author:
Multazam,
Faculty of Islamic Economics and Business, Alauddin State Islamic University
Jl. Sultan Alauddin No. 63 Makassar, Sulawesi Selatan, Indonesia
Email: mulmultazamzam67@gmail.com

1. INTRODUCTION

Employee performance is the primary foundation for building a company's competitiveness and sustainability [1], [2]. The process of creating products or services relies not only on business or technological strategies but is also largely determined by the performance of individuals and work teams within the organization [3], [4]. When employees demonstrate dedication, discipline, and the ability to innovate, company productivity tends to increase. Conversely, poor performance will negatively impact the company's operational sustainability and reputation [5], [6]. Therefore, employee performance is a crucial indicator in assessing a company's progress.

Performance can be defined as a record of the results achieved by an individual from carrying out tasks over a specific period [7], [8]. Several factors influence performance, including effectiveness, efficiency, initiative,

discipline, and compliance with regulations [9], [10]. However, an adequate work environment, including the provision of facilities, infrastructure, and guarantees for occupational health and safety, is crucial [11], [12]. Without attention to these aspects, optimal performance is difficult to achieve.

Occupational health and safety plays a crucial role in creating a safe, comfortable, and productive work environment [13], [14]. Protection against the risk of accidents and occupational diseases is a form of company responsibility in safeguarding the well-being of its employees [15], [16]. Data shows that the number of workplace accidents in Indonesia remains relatively high, reflecting the weak implementation of occupational health and safety in various industrial sectors. However, the implementation of a sound occupational health and safety system can minimize losses, both in terms of human health and company operational efficiency [17], [18].

The International Labour Organization notes that thousands of workers worldwide die daily from work-related accidents or illnesses [19], [20]. This situation demonstrates the urgency of stricter and more systematic 0ccupational health and safety management [21], [22]. In an era of industrialization marked by the application of high technology, occupational risks are unavoidable, but they can be controlled through collective awareness between management and the workforce. Neglecting occupational health and safety not only leads to accidents but also lowers morale and motivation [23]-[25].

In many cases, the primary cause of workplace accidents is not solely due to equipment or technology, but rather human negligence and a lack of awareness of the importance of safety procedures [26], [27]. Lack of attention to occupational health and safety can create an unfavorable work environment, hinder production processes, and even lead to significant material and immaterial losses. Therefore, it is crucial for management to internalize occupational health and safety values as part of the organizational culture [28], [29].

The implementation of occupational health and safety principles not only protects workers from risks but also increases efficiency, loyalty, and work responsibility [30], [31]. Employees who feel physically and psychologically protected tend to demonstrate better work performance [32], [33]. Occupational health relates to efforts to prevent physical and mental disorders caused by the work environment, while occupational safety encompasses the prevention of accidents caused by equipment, materials, and work methods. Therefore, occupational health and safety is a crucial part of a company's performance improvement strategy [34], [35].

Management that consistently implements an occupational health and safety system will reap long-term benefits, including increased productivity and improved company reputation [36], [37]. Therefore, this study focuses on examining the impact of occupational health and safety implementation on employee performance. By understanding the relationship between these two variables, it is hoped that companies can formulate more appropriate policies to support the optimization of their human resources.

Research conducted by Rifqi et al., [38] emphasizes the importance of recommendations for implementing Occupational Health and Safety as a means to improve employee performance productivity, while Firman [39] study focuses more on Occupational Health and Safety implementation in the context of increasing productivity without exploring the aspect of work quality in depth. Both focus on the relationship between occupational safety and productivity, but have not comprehensively integrated the dimensions of occupational health and safety and how both aspects—occupational health and safety—simultaneously affect not only productivity but also the quality of employee work results. Therefore, the current research aims to fill this gap by analyzing the influence of Occupational Health and Safety holistically on two important aspects of employee performance: productivity and work quality.

This research is novel because it not only examines the influence of Occupational Health and Safety on employee productivity as has been done in previous studies, but also broadens its scope by examining its impact on work quality, which has so far received less attention. The urgency of this research lies in the increasing demands of the workplace for efficiency and quality simultaneously, so that an Occupational Health and Safety approach is needed that is not only preventive against work risks, but also strategic in encouraging optimal employee performance as a whole. Thus, the results of this study can provide practical contributions to company management in designing more integrated Occupational Health and Safety policies that have a direct impact on organizational performance.

2. RESEARCH METHOD

2.1. Type of Research

This study uses descriptive analysis with a quantitative approach and uses multiple regression analysis techniques assisted by the SPSS program. The quantitative method is a method that uses a sampling system from a population and uses a structured questionnaire as a data collection tool [40], [41]. The quantitative approach is used to find detailed factual information and identify problems or to obtain justification for conditions and ongoing activities. This approach is used to determine the effect of occupational health and safety on employee performance.

2.2. Population and Sample

A population is a generalized area consisting of objects or subjects that possess certain qualities and characteristics [42], [43]. Based on the definition of a population, the population of this study is all 1,962 employees of PT. Semen Tonasa in Pangkep. The sample is a subset of the population and its characteristics, and the sample size in this study uses the Slovin formula [44], [45]. Based on this, the minimum sample size that must be achieved in this study is 95.15, or rounded up to 96 employees.

2.3. Data Collection Techniques

The data collection technique used in this study was a questionnaire. A questionnaire is a data collection technique that involves providing respondents with a set of questions to answer in order to obtain the necessary information [46].

2.4. Data Analysis Techniques

The data analysis used in this study is multiple regression analysis to determine whether there is a positive influence of the independent variable on the dependent variable, in addition, the researcher also conducted an F test which is used to determine the joint influence of the independent variables significantly on the dependent variable. Next, the researcher will conduct a t test which is used to determine whether each independent variable individually or partially has a significant influence on the dependent variable.

3. RESULTS AND DISCUSSION

3.1. Multiple Regression Analysis

Multiple linear regression was used to analyze the effect of occupational health and safety on employee performance at PT. Semen Tonasa in Pangkep Regency. The confidence level used in this analysis is α = 10%.

Table 1. Results of Multiple Linear Regression Analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.126	1.225		1.736	.086
	X_1	.134	.071	.115	1.898	.061
	X_2	.620	.048	.788	13.001	.000

Based on the output results of SPSS statistics 25 for windows in table 1 above, the multiple linear regression equation can be formulated as follows:

$$Y = 2.126 + 0.134\ X_1 + 0.620\ X_2 + e$$

The interpretation of the multiple linear regression equation is a constant value of 2.126, so this can be interpreted that if the occupational health variable and the occupational safety variable are constant (unchanged), then employee performance is 2.126. The occupational health variable (X1) affects employee performance by 0.134, meaning that if the occupational health variable (X1) increases by 0.134, employee performance will increase linearly by 0.134. Conversely, if the occupational health variable (X1) decreases, employee performance will also decrease. The occupational safety variable (X2) affects employee performance by 0.620, meaning that if the occupational safety variable (X2) increases by 0.620, employee performance will increase linearly by 0.620. Conversely, if the occupational safety variable (X2) decreases, employee performance will also decrease.

3.2. Simultaneous Test (F Test)

The F-test is used to determine the significant joint influence of independent variables on the dependent variable. If F-count > F-table, it can be said that the independent variables can simultaneously explain the dependent variable. The results of the F-test are as follows:

Table 2. F Test Results

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	111.865	2	55.933	104.471	.000[a]
	Residual	49.791	93	.535		
	Total	161.656	95			

The results of the F-test statistical calculation in table 2 show a calculated f value of 104,471. After that, it is compared with the F table value of 2.36 with a significance of 10% (0.10). So it can be concluded that the calculated F > F table (104,471 > 2.36) with Sig F 0.000 < 0.10, this means that the independent variables of occupational health (X1) and occupational safety (X2) together have a positive and significant effect on employee performance, so it is stated that the first hypothesis proposed is accepted.

3.3. Partial Test (t-Test)

The t-test is used to determine whether each independent variable has a significant partial effect on the dependent variable. If t count > t table, it can be said to be significant, meaning there is an influence between the independent variable being studied and the dependent variable. The results of the t-test are as follows:

Table 3. T-test Results

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.126	1.225		1.736	.086
	X_1	.134	.071	.115	1.898	.061
	X_2	.620	.048	.788	13.001	.000

The t-test analysis in table 3 for the occupational health variable, the calculated t value is 1.898 while the t value of the distribution table 0.10 (10%) is 1.290 then the calculated t> t table and the significance value is 0.061 <0.10 meaning that the individual occupational health variable (X1) has a positive and significant effect on employee performance. While for the occupational safety variable shows the calculated t value of 13.001 while the value in the t table distribution 0.10 (10%) is 1.290 then the calculated t> t table and the significance value is 0.000 <0.10 meaning that individually the occupational safety variable (X2) has a positive and significant effect on employee performance. Based on the data above, the occupational health and safety variables partially influence employee performance, thus the second and third hypotheses proposed can be accepted. And of the two variables, the most dominant influence is the work safety variable (X2) which obtained a t-value of 13.001 so that the fourth hypothesis proposed can be accepted.

The proposed hypothesis testing, which assumed that occupational health and safety simultaneously influence employee performance, was accepted. The regression analysis revealed that the independent variables of occupational health and safety simultaneously have a positive and significant effect on employee performance. The magnitude of the simultaneous positive effect of occupational health and safety variables on employee performance was 104.471, with a significance value of 0.000.

The proposed hypothesis testing, which indicated that occupational health influences employee performance, was accepted. The regression analysis revealed that occupational health variables significantly positively influence employee performance. This means that better occupational health programs result in improved employee performance. The magnitude of the positive effect of occupational health variables on employee performance was 1.898, with a significance value of 0.061. The results of the multiple linear regression analysis indicated that occupational health variables are a significant factor in employee performance.

The proposed hypothesis testing, which indicated that occupational safety influences employee performance, was accepted. The regression analysis revealed that occupational safety variables significantly positively influence employee performance. This means that the greater the importance of occupational safety, the better the employee's performance. The magnitude of the positive influence of the occupational safety variable on employee performance is 13.001 with a significance value of 0.000 (Table 4.11). The results of the multiple linear regression analysis indicate that the occupational safety variable is one of the factors that has a significant influence on employee performance.

Based on the results of the multiple regression analysis, it can be concluded that the implementation of occupational health and safety plays a significant role in supporting improved employee performance at PT. Semen Tonasa. This reflects the importance of a healthy and safe work environment as a primary prerequisite for employee productivity and effectiveness. The positive relationship between occupational health variables and employee performance indicates that attention to workers' physical and mental well-being can improve their work enthusiasm and focus, ultimately resulting in more optimal work results.

Furthermore, occupational safety has been shown to have a more dominant influence than occupational health on employee performance [16], [47]. This indicates that safety during work is a crucial factor for workplace comfort, reducing anxiety about potential accidents, and encouraging employees to work more effectively and efficiently. These findings underscore the need for companies to pay serious attention to the provision of personal protective equipment, safe work procedures, and ongoing safety training.

Simultaneously, the combination of occupational health and safety demonstrates a significant positive contribution to employee performance. This demonstrates that these two aspects are inseparable and need to be integrated into human resource management policies. These results support the importance of a holistic approach to implementing an occupational health and safety program that is not merely reactive, but also preventive and promotive, to create a productive and sustainable work environment.

Thus, the results of this study provide a practical contribution to companies in developing performance improvement strategies by strengthening occupational health and safety systems. Companies are not only required to comply with regulations but also need to make occupational health and safety part of their strategic work culture. Integrating OHS into employee performance management systems has the potential to increase loyalty, reduce absenteeism, and foster a positive company image in the long term.

This research has a positive impact in enriching the literature on the influence of occupational health and safety on employee performance, particularly in industrial sectors such as PT. Semen Tonasa. The findings can serve as a practical reference for company management in designing more structured OHS policies that directly impact employee productivity and work quality. Furthermore, this research also emphasizes the importance of a simultaneous approach between occupational health and safety, which have often been studied separately. However, this research has several limitations, including the focus on a single company, which means the results cannot necessarily be generalized to other sectors or regions. Furthermore, the use of a 10% significance level can affect the level of confidence in statistical test results when compared to the general standard of 5%, so caution is needed in interpreting the significance level of the relationship between variables. For further research, it is recommended to involve a wider sample and consider other variables that may also influence employee performance, such as job satisfaction or leadership style.

4. CONCLUSION

Based on the results of the study on the Influence of Occupational Health and Safety on Employee Performance, it is concluded that occupational health and safety have a simultaneous effect on employee performance, where the higher the level of Occupational Health and Safety, the higher the performance shown. Partially, both occupational health and occupational safety have a positive and significant effect on performance, with occupational safety being the most dominant variable in influencing employee performance. Further research is recommended to examine the mediating role of psychological factors such as job satisfaction and job stress in the relationship between occupational safety and employee productivity. Furthermore, comparative studies across industry sectors could be conducted to understand the extent to which Occupational Health and Safety programs effectively impact work quality in different contexts.

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