

Behavior of Personal Protective Equipment (PPE) Use in The Implementation of Occupational Health and Safety (Osh)

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ABSTRACT

Purpose: The purpose of this research is to analyze the behavior of using Personal Protective Equipment (PPE) in the implementation of Occupational Health and Safety (OHS). The behavior of using Personal Protective Equipment consists of government regulations, company policies, and employee compliance.

Design/methodology/approach: This research uses a descriptive quantitative approach. The data collection techniques include questionnaires and documentation. The data analysis tool used is regression and path analysis with SPSS application.

Findings: The results of the study show that government regulations, company policies, and employee compliance do not have a significant effect on the behavior of using PPE by workers. Additionally, government regulations and employee compliance do not have a direct significant effect on OSH implementation. However, the behavior of using PPE and company policies have a direct significant effect on OSH implementation. Indirectly, government regulations have a significant effect on OSH implementation through the behavior of using PPE. This study contributes to enriching the understanding of the factors that influence the implementation of OSH in the forestry industry.

Keywords: *Regulations, Policies, Compliance, Personal Protective Equipment (PPE), Occupational Safety and Health (OSH).*

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I. INTRODUCTION

A. Background

The quality of human resources can, of course, be seen from how the company manages them. Human resource management plays an important role in the life of an organization, including companies. The better the company's performance, the better the company's strategy can be implemented, and the closer the determined goals can be achieved (Supriadi, 2022). Human resource management is a system aimed at influencing employees' attitudes, behaviors, and performance so that they can contribute optimally to achieving company objectives (Supriadi, 2022). The success of a company in managing its human resources greatly determines the success of achieving organizational goals.

Managed human resources are expected to work according to the applicable Standard Operating Procedures (SOP). The SOP creates specific activities within the company. SOP compliance ensures that employees work according to the regulations and optimize performance (Nola, 2023). In a company, it is not only SOP that employees must adhere to, but also the norms of Occupational Safety and Health (OSH), which need to be understood, complied with, and implemented. Similar to SOPs, OSH norms function to ensure employee safety. By implementing SOPs, the efficiency of each company work unit can be significantly increased in terms of time, work processes, and operational costs.

According to the International Labour Organization (ILO), more than 250 million workplace accidents and over 160 million workers become ill due to workplace hazards each year. Furthermore, 1.2 million workers die from workplace accidents and illnesses (Sari, 2024). Meanwhile, the Social Security Administration for Employment (BPJS Ketenagakerjaan) reported that in 2017, there were 123,041 reported workplace accidents, while in 2018, the number reached 173,105 cases with claims for Work Accident Insurance (Nalahudin, 2022). Based on reports for the first semester of 2023, the number of workplace accidents in Indonesia according to BPJS membership type was 159,127 cases from Wage-earning Workers, 7,845 cases from Non-wage-earning Workers, and 1,363 cases from Construction Service Workers. Meanwhile, 91 cases of Occupational Diseases were recorded (Processed Ministry of Manpower Data, 2021).

These figures show that the human and social costs of production are too high. In the past, workplace accidents and health disorders were considered an inevitable part of production. However, there are now various national and international legal standards on occupational safety and health that must be met in the workplace. These standards reflect a broad agreement among employers, workers, and governments that the social and economic costs of workplace accidents and occupational diseases must be reduced (Sari, 2024).

In addition to requiring continuous attention, effective action on occupational safety and health demands a shared commitment from workers and employers. Workers and employers must be prepared to respect well-recognized OSH principles. They must also maintain, follow, and continuously evaluate established policies and practices. The level of commitment can only be built if workers, supervisors, and managers collaborate to create a safety and health system that they understand and trust (Sari, 2024). Workplace accidents are caused by three factors: humans, equipment, and the environment (Damkar, July 14, 2020). The human-related factors include workers' lack of understanding of Occupational Safety and Health (OSH) regulations, minimal OSH training, lack of awareness regarding the use of Personal Protective Equipment (PPE), and inadequate OSH Standard Operating Procedures (SOP) (Nola, 2023).

The implementation of work in a company should adhere to the applicable regulations for every company, including those in the forestry industry like PT Surya Hutani Jaya. PT Surya Hutani Jaya, located in Muara Kaman District, Kutai Kartanegara Regency, is a company engaged in Industrial Plantation Forest (HTI) management based on the principles of sustainable plantation forest management.

According to the Decree of the Minister of Forestry No: SK Menhut 156/Kpts-II/1996 regarding the determination of the work area boundaries of PT Surya Hutani Jaya, the company initially had a definitive area of approximately \pm 183,000 hectares for its production forest area. However, over the span of 30 years, changes in spatial planning and government policies have reduced the area to approximately \pm 153,000 hectares. Based on initial observations by the author, who is an employee at the company, the overall compliance of PT Surya Hutani Jaya employees with occupational safety and health aspects is still not optimal.

Workplace accident reports over the last three years at PT Surya Hutani Jaya indicate an increase in the number of accidents. In 2023, there was a workplace accident categorized as a fatality (death) and a near-miss incident, which had not occurred in the previous years. These data indicate that the company's efforts to reduce workplace accidents have not been fully effective, as the number of accidents has increased over the last three years. Although the company strives to comply with government regulations on the importance of OSH as part of its company policy, the behavior of PT Surya Hutani Jaya employees has not fully adhered to the use of PPE during work activities.

B. Literature review

1. Human Resource Management

Human Resource Management (HRM) is a part of general management that focuses on human resources. Supriadi (2022) explain that Human Resource Management (HRM) encompasses the abilities and potential possessed by leaders and employees in a company. Employees should not be treated as machines and must be recognized for having potential and talents that can be continuously developed for the benefit of the company. Once developed, management needs to create a conducive environment for employees to apply their abilities within the company.

2. Government Regulations

Government regulations are the rules governing corporate social responsibility issued by either central or local governments. Government regulations can be understood as a natural extension of laws that define and control how businesses or individuals must comply with the law. According to Stewart and Walshe (Heryanto, 2024): "Government regulation is a process to ensure that standards as legal requirements are met for certain services or public activities so that policies are fulfilled." Coghill (Basuki, 2017) explains that government regulations can be understood as an inseparable part of a company's environment, as the government, as a regulatory body, plays a significant role in shaping the company's policies toward its external environment.

Henriques and Sadorsky (Basuki, 2017) also suggest that government regulations influence the importance of corporate social responsibility.

3. Company Policies

According to Indrafachrudi (Rina, 2018): "Policy is a fundamental provision that serves as the basis for conducting administrative activities." According to Carl Friedrich (2021), "Policy is an action directed toward a goal within a certain environment to obstacles while seeking opportunities to achieve desired objectives." Company policy refers to the guidelines that outline laws, regulations, and goals and can be used by managers or directors for decision-making and as a guide for managing business activities. Company policies are required to be flexible easily interpretable and understood by all employees.

4. Employee Compliance

Compliance is the extent to which an employee's behavior aligns with the provisions set by the company and/or superiors. Compliance is assessed by the adherence to all activities following the applicable policies, rules, and laws. Employees, on the other hand, are individuals who work by selling their labor (physical and intellectual) to a company and receiving compensation by an agreement (Husain, 2022). Compliance is the starting point for attitudes and behaviors, and thus, these three aspects are interrelated. Factors affecting compliance will lead to changes in attitudes and behaviors, and in turn, these changes will influence the outcome of compliance.

5. Behavior in Using Personal Protective Equipment (PPE)

Personal Protective Equipment (PPE) is equipment designed to protect individuals at work by isolating their bodies from hazards in the work environment (Depnaker, 2006; Budiari, 2020). PPE is a set of tools that must be used by workers to protect their bodies from potential hazards or workplace accidents (Budiono, 2006; Budiari, 2020). Behavior in using PPE refers to the actions of workers in using a set of tools to protect their entire body or parts of it from potential hazards or accidents. The use of PPE is the last stage of efforts to control accidents or occupational diseases.

6. Occupational Safety and Health (OSH)

Mangkunegara (2017) states, "Occupational safety and health are thoughts and efforts to ensure the physical and mental integrity of workers, specifically, and humans in general, to safeguard human creations and culture for the achievement of a just and prosperous society. By implementing Occupational Safety and Health (OSH), companies can reduce financial losses resulting from accidents and occupational diseases. Additionally, the implementation of OSH can enhance employee productivity. Healthy and safe employees in the workplace will be more productive and motivated in their work. The company can also save on medical care costs and compensation (D Ayu Lestari, 2019).

C. Conceptual Framework

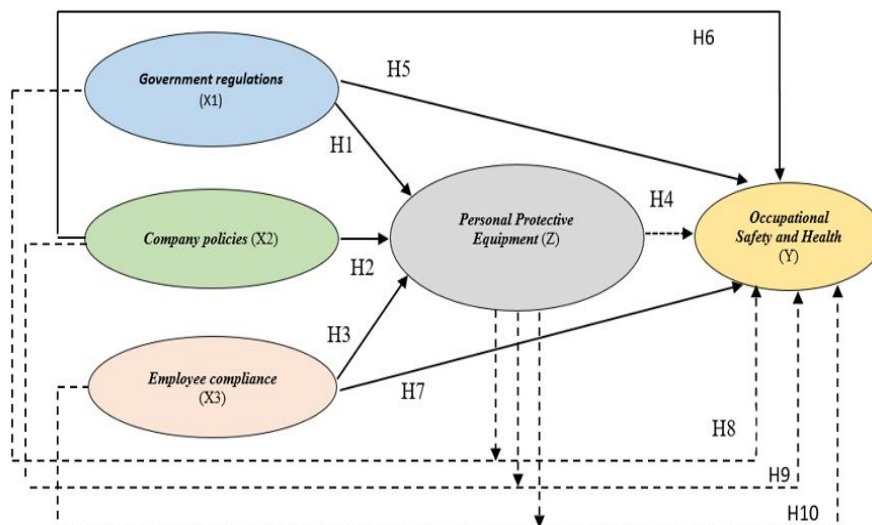


Figure 1. Conceptual Framework

Line Description::**D. Hypothesis**

The hypotheses proposed by the author in this study are as follows:

H₁: Government regulations have a significant influence on workers' behavior in using Personal Protective Equipment (PPE)

H₂: Company policies have a significant influence on workers' behavior in using Personal Protective Equipment (PPE)

H₃: Employee compliance has a significant influence on workers' behavior in using Personal Protective Equipment (PPE)

H₄: Behavior in using Personal Protective Equipment (PPE) has a significant influence on the implementation of Occupational Safety and Health (OSH)

H₅: Government regulations have a significant direct influence on the implementation of Occupational Safety and Health (OSH)

H₆: Company policies have a significant direct influence on the implementation of Occupational Safety and Health (OSH)

H₇: Employee compliance has a significant direct influence on the implementation of Occupational Safety and Health (OSH)

H₈: Government regulations have a significant indirect influence on the implementation of Occupational Safety and Health (OSH) through the behavior of using Personal Protective Equipment (PPE).

H₉: Company policies have a significant indirect influence on the implementation of Occupational Safety and Health (OSH) through the behavior of using Personal Protective Equipment (PPE).

H₁₀: Employee compliance has a significant indirect influence on the implementation of Occupational Safety and Health (OSH) through the behavior of using Personal Protective Equipment (PPE)

II. METHODS**A. Type Of Research**

The scope of this research is to analyze the influence of Government regulations, Company policies, and employee compliance on the implementation of Occupational Safety and Health (OSH) through the behavior of using Personal Protective Equipment (PPE). This study uses a quantitative descriptive approach. The data collection techniques used were questionnaires with a Likert scale (1-5) and documentation studies. This study consists of five variables: the implementation of Occupational Safety and Health (OSH) as the dependent variable (Y), the behavior of using Personal Protective Equipment (PPE) as the mediating variable (Z), and Government Regulation, Company Policy, and Employee Compliance as independent variables (X).

B. Population and Sample

The population in this study consists of 431 employees of PT Surya Hutani Jaya in the Muara Kaman District. Using the Slovin formula (with a significance level of 0.10), 80 samples we found

C. Data Analysis Method

This study uses multiple linear regression analysis carried out with the help of the SPSS version 27 program and conducts path analysis, the data used must pass the classical assumption test, namely the normality test, the multicollinearity test, the heteroscedasticity test and the autocorrelation test.

Path analysis is a statistical technique to test the causal relationship between two or more variables. Structural equations or structural models are when each related/endogenous variable (Y and Z) is uniquely determined by a set of independent/exogenous variables (X). Furthermore, an image that shows the structural causal relationship between variables is called a path diagram. Systematically, path analysis follows a structural model pattern, so the first step in working on or implementing a path analysis model is to formulate structural equations and path diagrams. 1) Structural equation: A Structural equation is an equation that explains the causal relationship, namely exogenous variables X₁, X₂, and X₃ to endogenous variables Y and Z 2). Path Diagram (Path Diagram) to describe the causal relationships between the variables to be studied. Researchers use a diagram model which is usually called a research paradigm, this is used to make it easier to see causal relationships.

III. RESULTS AND DISCUSSION

A. Results

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.291 ^a	.085	.049	4.079

a. Predictors: (Constant), X3, X2, X1

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	67.672	12.595		5.373	.000
	X1	.416	.217	.218	1.914	.059
	X2	.221	.196	.127	1.124	.264
	X3	.223	.219	.113	1.021	.310

a. Dependent Variable: Z

Figure 1: Path Analysis Test Results (a)

Source: Research Results, 2024

According to Table 1 as follows: The analysis test of the effect of X1 on Z (H1) shows a beta value of 0.218 with a significance value of 0.059 > 0.05. The conclusion is that there is no significant direct effect of X1 on Z, which means hypothesis H1 is rejected. The beta value is 0.127 with a significance value of 0.264 > 0.05. The conclusion is that there is no significant direct effect of X2 on Z, which means hypothesis H2 is rejected. The beta value is 0.113 with a significance value of 0.310 > 0.05. The conclusion is that there is no significant direct effect of X3 on Z, which means hypothesis H3 is rejected.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.453 ^a	.205	.163	2.098

a. Predictors: (Constant), Z, X3, X2, X1

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	18.113	7.595		2.385	.020
	X1	.015	.114	.014	.127	.899
	X2	.261	.102	.273	2.558	.013
	X3	.095	.113	.087	.835	.406
	Z	.159	.059	.290	2.715	.008

a. Dependent Variable: Y

Figure 2: Path Analysis Test Results (b)

Source: Research Results, 2024.

According to Table 2 as follows: The beta value is 0.290 with a significance value of 0.008 < 0.05. The conclusion is that there is a significant direct effect of Z on Y, which means hypothesis H4 is accepted. The beta value is 0.014 with a significance value of 0.899 > 0.05. The conclusion is that there is no significant direct effect of X1 on Y, which means hypothesis H5 is rejected. The beta value is 0.273 with a significance value of 0.013 < 0.05. The conclusion is that there is a significant direct effect of X2 on Y, which means hypothesis H6 is accepted. The beta value is 0.087 with a significance value of 0.406 > 0.05. The conclusion is that there is no significant direct effect of X3 on Y, which means hypothesis H7 is rejected. It is known that the direct influence has a value of 0.014 while the indirect influence has a value of 0.0632, which means that the indirect influence is greater than the direct influence. Indirectly, X1 through Z has a significant influence on Y, which means that hypothesis H8 is accepted. It is known that the direct influence has a value of 0.273 while the indirect influence has a value of 0.03683, which means that the indirect influence is smaller than the direct influence. Indirectly, X2 through Z does not have a significant influence on Y, which means that hypothesis H9 is rejected. It is known that the direct influence has a value of 0.087 while the indirect influence has a value of 0.03277, which means that the indirect influence is smaller than the direct influence. Indirectly, X2 through Z does not have a significant effect on Y, which means the hypothesis H10 is rejected.

B. Discussion of Research Results

1. The Influence of Government Regulations on PPE Usage Behavior

From the analysis of the influence of Government Regulations (X1) on the behavior of PPE (Z) usage, it was found that the beta value is 0.218 with a significance value of $0.059 > 0.05$. Therefore, it is concluded that there is no direct significant influence of Government Regulations (X1) on PPE Usage Behavior (Z), meaning that government regulations (laws) do not directly have a significant impact. When related to the study conducted by Risgiyanto (2022), it is indeed true that government regulations have an influence on PPE usage behavior, but these regulations do not directly alter behavior. Instead, they are incorporated into the company's Standard Operating Procedures (SOPs) or company policies, which are communicated to employees through supporting programs implemented in the company. In this study, company policy was separated into an independent variable parallel to government regulations, and the study did not examine the relationship between government regulations and PPE usage behavior through company policies.

2. The Influence of Company Policy on PPE Usage Behavior

From the analysis of the influence of Company Policy (X2) on PPE Usage Behavior (Z), it was found that the beta value is 0.127 with a significance value of $0.264 > 0.05$. Therefore, it is concluded that there is also no direct significant influence of Company Policy (X2) on PPE Usage Behavior (Z). Previous studies, such as Aminu (2021), have shown a meaningful relationship between company policy and PPE usage, particularly concerning policies related to work safety training for employees. However, in this study, workers who did not use PPE were engaged in jobs that did not require it. In contrast, jobs with high-risk exposure mandate the use of PPE. The study also identifies that a worker's position in the company impacts this behavior. Similarly, the literature by Istigfary (2022) discusses the meaningful relationship between company policies in hospitals and the use of PPE. Given the nature of the healthcare sector, hospitals enforce strict policies on PPE use due to high-risk tasks like patient contact and hazardous drug preparation. Other studies, such as those by Okorie O. M. (2023), have also emphasized that company policies on PPE usage significantly contribute to the implementation of occupational health and safety (OHS).

3. The Influence of Employee Compliance on PPE Usage

From the analysis of the influence of Employee Compliance (X3) on PPE Usage (Z), the beta value was 0.113, with a significance of $0.310 > 0.05$. Therefore, there is no direct significant influence of X3 on Z. In previous research by Inna Nesy Barizqi (2015), it was highlighted that when workers are non-compliant with work accident control measures such as technical control, administrative control, and PPE usage, unsafe conditions arise, leading to workplace accidents. Accidents subsequently affect worker behavior, indicating that the relationship between employee compliance (X3) and PPE usage (Z) is not direct. In Barizqi (2015) study, PPE usage itself represented employee compliance impacting workplace safety, which differs from this study, where compliance and PPE usage are treated as separate variables. Husain (2022) study on employee adherence to SOPs found that these procedures help define the rights and responsibilities of employees, forming positive behaviors. However, this study explores compliance more broadly, not just in adherence to SOPs.

4. The Influence of PPE Usage on OSH Implementation

From the analysis of the influence of PPE Usage on OSH Implementation, the beta value was 0.290 with a significance of $0.008 < 0.05$. Therefore, it is concluded that there is a direct significant influence of PPE usage on the implementation of OHS, meaning that PPE usage significantly impacts OHS implementation. Previous studies, such as that by Nurseha (2013), have confirmed the importance of risk control measures, such as PPE usage, in preventing workplace accidents. Firda and Lailatul (2023) also discussed the meaningful relationship between PPE usage and OSH implementation. Similarly, Hendrawati (2022) and Maesaroh (2013) highlighted the significant positive relationship between PPE usage and organizational commitment to OSH.

5. The Influence of Government Regulations on OSH Implementation

From the analysis of the influence of X1 on Y, the beta value was 0.014 with a significance of $0.899 > 0.05$. Therefore, there is no direct significant influence of X1 on Y, similar to the previous analysis where government regulations did not show a direct impact on OSH implementation. Government regulations, when not accompanied by enforcement efforts, do not significantly impact OSH implementation. In the study by Ristiono et al., it was found that OSH implementation in hospitals is influenced by government regulations and policies, management commitment, and other factors affecting the effectiveness of regulations. However, in the context of healthcare, adherence to OSH regulations is more stringent due to the critical nature of the field. The same findings were reported by Pratama, et. al (2021), where detailed variables such as planning, monitoring, and evaluation were examined.

6. The Influence of Company Policy on OSH Implementation

From the analysis of the influence of Company Policy (X2) on OSH Implementation (Y), the beta value was 0.273 with a significance of $0.013 < 0.05$. Therefore, it is concluded that there is a direct significant influence of Company Policy (X2) on OSH Implementation (Y), indicating that company policies do impact the implementation of OSH. This is in line with previous research showing the importance of company efforts in complying with government regulations, thereby shaping behaviors that influence OSH implementation. Supriadi (2022) explored the relationship between company policies and OSH, emphasizing risk identification and control efforts as part of achieving OSH objectives.

6. The Influence of Employee Compliance on OSH Implementation

From the analysis of the influence of Employee Compliance on OSH Implementation, the beta value was 0.087 with a significance of $0.406 > 0.05$. Therefore, there is no direct significant influence of Employee Compliance on OSH Implementation. This study separated compliance from PPE usage, unlike previous studies that combined them, leading to a larger possibility of no influence being found.

7. Indirect Effects of Government Regulations on OSH Implementation Through PPE Usage Behavior

The indirect effect of X1 through Z on Y was calculated by multiplying the beta value of X1 on Z by the beta value of Z on Y, resulting in $0.218 \times 0.290 = 0.0632$. The total effect of X1 on Y is the sum of the direct effect (0.014) and the indirect effect (0.0632), totaling 0.0772. This shows that the indirect influence of X1 through Z on Y is greater than the direct effect, indicating that government regulations influence OSH implementation through PPE usage behavior. As mentioned in several journals, including by Hendiani and Wediawati (2023), there is a relationship between work discipline or employee compliance (with government regulations and company policies) as an intervening variable in the implementation of Occupational Health and Safety (OSH) and its impact on employee performance.

8. The Influence of Company Policies on the Implementation of Occupational Health and Safety (OSH) Through the Behavior of Personal Protective Equipment (PPE) Usage

From the analysis test of the influence of X2 through Z on Y, it was found that the beta value for the direct effect of X2 on Y is 0.273. Meanwhile, the indirect effect of X2 through Z on Y is the product of the beta value of X2 on Z and the beta value of Z on Y, namely: $0.127 \times 0.290 = 0.03683$. Therefore, the total effect of X2 on Y is the direct effect added to the indirect effect, which is: $0.273 + 0.03683 = 0.30983$. Based on these calculations, it is known that the direct effect has a value of 0.273, while the indirect effect is 0.03683, meaning that the indirect effect is smaller than the direct effect. Indirectly, X2 through Z does not have a significant effect on Y. This result can be understood as companies typically having multiple policies, and not only the policy on the use of PPE affects OSH, but other company policies, such as OSH planning documents, have a greater impact on the implementation of OSH in the company. This is also explained by Dana (2021), who stated that company policies have an indirect effect on the implementation of OSH in companies through infrastructure and facilities. It is also explained that the above variables indirectly influence the availability of OSH infrastructure and facilities in the workplace. Safety promotion, OSH inspection, and audit significantly affect OSH infrastructure and facilities. This differs from this study, which does not elaborate on safety promotion, inspection, and audit.

9. The Influence of Employee Compliance on the Implementation of Occupational Health and Safety (OSH) Through the Behavior of Personal Protective Equipment (PPE) Usage

From the analysis test of the influence of X3 through Z on Y, it was found that the beta value for the direct effect of X3 on Y is 0.087. Meanwhile, the indirect effect of X3 through Z on Y is the product of the beta value of X3 on Z and the beta value of Z on Y, namely: $0.113 \times 0.290 = 0.03277$. Therefore, the total effect of X3 on Y is the direct effect added to the indirect effect, which is: $0.087 + 0.03277 = 0.11977$. Based on these calculations, it is known that the direct effect has a value of 0.087, while the indirect effect is 0.03277, meaning that the indirect effect is smaller than the direct effect. Indirectly, X3 through Z does not have a significant effect on Y. Employee behavior also does not have a significant indirect effect on the use of PPE. Although some employee behaviors were not studied, in this case, employee behavior does not have an indirect effect on the implementation of OSH. If we relate this to previous research, it is found that the relationship between employee compliance as an intervening variable is connected with the use of Standard Operating Procedures (SOPs) as an independent variable and safety as a dependent variable. Bahri (2022) also explained that leadership supervision, compliance with workplace SOPs, and work discipline have a significant positive effect on safety. Thus, previous researchers stated that compliance with SOPs indeed has an impact, although this study did not specifically examine that aspect.

IV. CONCLUSION

The results of the study indicate that government regulations, company policies, and employee compliance do not have a significant impact on the behavior of using personal protective equipment (PPE) by workers. Additionally, government regulations and employee compliance do not have a significant direct effect on the implementation of Occupational Health and Safety (OSH). However, the behavior of PPE usage and company policies have a significant direct effect on the implementation of OSH. Indirectly, government regulations significantly influence the implementation of OSH through the behavior of PPE usage. Based on these findings, it can be concluded that government regulations and company policies play an important role in the implementation of OSH, while employee compliance requires further attention to be optimized. This research contributes to enriching the understanding of the factors that influence the implementation of OSH in the forestry industry. It is recommended that companies strengthen policies related to the use of PPE and increase awareness about the importance of government regulations and employee compliance in supporting workplace safety.

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