

# The Impact of Occupational Safety and Health (OSH) Programs Hazard Report and Tahan Report on Reducing Workplace Accidents at PT Merdeka Tsingshan Indonesia


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**Abstract:** This study examines the influence of occupational safety and health (OSH) implementation through Hazard Report and Tahan Report programs on improving workplace safety culture and reducing occupational accidents at PT. Merdeka Tsingshan Indonesia. A quantitative approach was employed using a structured questionnaire distributed to company employees, with responses measured on a Likert scale. The collected data were analyzed using descriptive statistics, validity and reliability testing, and multiple linear regression analysis, including partial (t-test) and simultaneous (F-test) hypothesis testing. The findings indicate that the research instrument is both valid and highly reliable, with a Cronbach's Alpha value exceeding the acceptable threshold. The coefficient of determination shows that approximately 65.4% of the variation in workplace safety culture can be explained by the independent variables, including employees' understanding of hazard identification, implementation of reporting programs, compliance and participation levels, and program effectiveness. Furthermore, the results reveal that these variables have a statistically significant effect on safety culture, both individually and collectively. This study concludes that the implementation of Hazard Report and Tahan Report programs plays a crucial role in strengthening safety culture and contributes significantly to the reduction of workplace accidents, highlighting the importance of active employee involvement and consistent safety reporting systems in achieving effective occupational safety management.

**Keywords:** occupational safety and health, hazard report, safety culture, workplace accidents, employee participation.

## 1. Introduction

Occupational safety and health (OSH) has become a critical concern in industrial sectors, particularly in large-scale operations where the risk of workplace accidents remains significant, requiring a proactive and systematic approach to hazard identification and risk control to ensure a safe working environment [1]. In this context, the implementation of safety programs such as Hazard Report and Tahan Report plays an essential role in facilitating early detection of potential hazards and preventing incidents before they occur, while also functioning as strategic tools to foster a strong safety culture through active employee involvement and continuous reporting practices [2]. However, despite the presence of various safety initiatives, workplace accidents continue to occur due to factors such as unsafe behavior, limited awareness, and low levels of participation in safety programs, indicating that the effectiveness of occupational safety management is not solely determined by formal policies but also by the extent of employee understanding, compliance, and engagement. A strong safety culture is therefore considered a key element in reducing occupational risks, as it reflects shared values, attitudes, and behaviors related to safety within an organization [3]. Although previous studies



have highlighted the importance of hazard reporting systems in improving workplace safety, there is still limited empirical research that specifically examines the combined impact of Hazard Report and Tahan Report programs on safety culture and accident reduction in industrial environments, creating a research gap that needs to be addressed [4]. Therefore, this study aims to analyze the effect of Hazard Report and Tahan Report programs on workplace safety culture as an effort to reduce occupational accidents at PT. Merdeka Tsingshan Indonesia by evaluating factors such as employee understanding, program implementation, compliance, participation, and effectiveness, with the expectation of providing practical insights into the role of structured safety reporting systems in enhancing occupational safety performance.

A strong safety culture is therefore considered a key element in reducing occupational risks, as it reflects shared values, attitudes, and behaviors related to safety within an organization, influencing how individuals perceive risks and respond to potential hazards in their work environment. Organizations with a well-established safety culture tend to experience fewer workplace accidents because employees are more aware, responsible, and proactive in maintaining safe working conditions [5]. Conversely, weak safety culture is often associated with negligence, lack of communication, and minimal reporting of hazards, which can lead to increased risk exposure and higher accident rates. In this regard, reporting systems such as Hazard Report and Tahan Report are not only administrative tools but also behavioral instruments that shape employee awareness and accountability, making them critical components in the development of an effective safety culture [6]. Although previous studies have highlighted the importance of hazard reporting systems in improving workplace safety, there is still limited empirical research that specifically examines the combined impact of Hazard Report and Tahan Report programs on safety culture and accident reduction in industrial environments, particularly within large-scale mining and processing companies. Most existing research tends to focus on general safety management systems or individual aspects of reporting mechanisms, without exploring how multiple reporting-based programs interact and contribute simultaneously to organizational safety outcomes [7], [8]. This gap highlights the need for a more comprehensive analysis that integrates behavioral, procedural, and system-based factors in evaluating the effectiveness of safety programs. Furthermore, the success of safety programs is highly dependent on several key factors, including employees' level of understanding regarding hazard identification, the consistency of program implementation, the degree of compliance with established safety procedures, and the level of participation in reporting activities. Without adequate understanding and engagement, even well-designed safety programs may fail to achieve their intended objectives [9], [10]. Therefore, it is essential to assess not only the existence of such programs but also how effectively they are implemented and perceived by employees within the organization. Evaluating these aspects provides valuable insight into the strengths and weaknesses of current safety practices and helps identify areas for improvement in occupational safety management.

Therefore, this study aims to analyze the effect of Hazard Report and Tahan Report programs on workplace safety culture as an effort to reduce occupational accidents at PT.

Merdeka Tsingshan Indonesia by examining factors such as employee understanding, program implementation, compliance, participation, and effectiveness. By adopting a quantitative approach, this research seeks to provide empirical evidence on the relationship between reporting-based safety programs and organizational safety performance, with the expectation of contributing both theoretically and practically to the development of more effective occupational safety strategies [11]. The findings of this study are expected to serve as a reference for companies in enhancing their safety management systems, particularly in strengthening employee involvement and optimizing reporting

mechanisms to achieve a safer and more sustainable working environment. Moreover, the involvement of employees in safety reporting not only contributes to hazard identification but also strengthens communication and collaboration within the workplace, fostering a sense of shared responsibility for safety outcomes. When employees feel empowered to report unsafe conditions without fear of negative consequences, it creates a more transparent and accountable work environment, which is essential for sustaining long-term safety performance [12], [13]. Therefore, organizations must ensure that reporting systems are not only accessible and easy to use but also supported by management commitment and positive reinforcement mechanisms. Therefore, this study aims to analyze the effect of Hazard Report and Tahan Report programs on workplace safety culture as an effort to reduce occupational accidents at PT. Merdeka Tsingshan Indonesia by examining factors such as employee understanding, program implementation, compliance, participation, and effectiveness. By adopting a quantitative approach, this research seeks to provide empirical evidence on the relationship between reporting-based safety programs and organizational safety performance, with the expectation of contributing both theoretically and practically to the development of more effective occupational safety strategies. The findings of this study are expected to serve as a reference for companies in enhancing their safety management systems, particularly in strengthening employee involvement and optimizing reporting mechanisms to achieve a safer and more sustainable working environment.

## 2. Research and Methodology

This study was undertaken at PT. Merdeka Tsingshan Indonesia, targeting employees from diverse departments with potential exposure to occupational hazards. A quantitative methodology was implemented, with primary data gathered through structured questionnaires administered to purposively selected respondents. The measurement instrument employed a five-point Likert scale to evaluate constructs related to hazard identification, reporting practices, and safety culture. [1].

The independent variables include employees' understanding, implementation of Hazard Report and Tahan Report programs, compliance, participation, and program effectiveness, while the dependent variable is workplace safety culture. Data analysis was carried out using validity and reliability tests, descriptive statistics, and multiple linear regression to examine the influence of independent variables on the dependent variable shows in Table 1.

**Table 1.** Research Variables Table

Variable	Type	Indicator	Measurement Scale
Hazard Understanding		Knowledge of Hazard Identification	
Hazard Report		Reporting frequency, Accuracy	
Tahan Report	Independent	Preventive reporting actions	Likert (1-5)
Compliance		Adherence to safety procedures	
Participation		Involvement in safety activities	
Effectiveness		Perceived program Impact	
Safety Culture	Dependent	Attitudes and behaviors toward safety	Likert (1-5)

## 2.1 Research Design

This study uses a quantitative research design with a causal approach to examine the effect of Hazard Report and Tahan Report programs on workplace safety culture. Data were collected using a cross-sectional method through structured questionnaires, allowing for systematic measurement and statistical analysis of the relationships between variables. The study aims to analyze the influence of independent variables, including employees' understanding, program implementation, compliance, participation, and effectiveness, on the dependent variable, namely workplace safety culture [14].

## 2.2 Population and sample

The population of this study consists of all employees at PT. Merdeka Tsingshan Indonesia across various departments with potential exposure to workplace hazards. The sample was determined using a quantitative approach, with respondents selected based on their involvement in operational activities. A structured questionnaire was distributed to obtain representative data reflecting employees' perceptions of occupational safety practices. The number of samples was determined using an appropriate sampling technique to ensure that the data collected are reliable and representative of the population [15], [16].

## 2.3 Data Collection and Analysis

Data analysis was conducted using descriptive statistics, validity and reliability tests, and multiple linear regression analysis. Hypothesis testing was performed using t-tests to examine the partial effect of each independent variable and F-tests to determine their simultaneous effect on workplace safety culture. This approach allows for a comprehensive evaluation of the influence of safety reporting programs on occupational safety outcomes.

## 3. Results and Discussion

### 3.1 Respondent Characteristics

This section describes the general profile of respondents involved in the study, representing employees from various departments at PT. Merdeka Tsingshan Indonesia with different levels of work experience and exposure to workplace hazards. The diversity of respondents ensures that the data collected adequately reflect employees' perceptions and behaviors related to occupational safety practices, providing a reliable basis for further analysis of the relationship between safety programs and workplace safety culture.

### 3.2 Descriptive Analysis

Descriptive analysis was conducted to provide an overview of respondents' perceptions of each research variable, including employees' understanding, implementation of Hazard Report and Tahan Report programs, compliance, participation, program effectiveness, and workplace safety culture. The analysis was based on the mean and standard deviation values obtained from the questionnaire responses using a Likert scale [17]. The results indicate that, in general, respondents tend to have positive perceptions of the implementation of safety programs, as reflected by relatively high mean scores across variables. This suggests that the Hazard Report and Tahan Report programs have been implemented adequately and are recognized by employees as important components in maintaining workplace safety. Additionally, the variation in responses, as indicated by standard deviation values, shows a relatively consistent perception among respondents, supporting the reliability of the data for further statistical analysis [18].

### 3.3 Validity and Reliability Test

Validity and reliability assessments were performed to verify that the instrument effectively captures the intended variables and produces stable results. The validity analysis shows that all questionnaire items exceeded the established correlation threshold, confirming their adequacy and eligibility for subsequent analysis. Meanwhile, the reliability test using Cronbach's Alpha demonstrated that all variables have values above the acceptable standard, confirming that the instrument is reliable and has good internal consistency. Therefore, the questionnaire used in this study is considered appropriate for further statistical analysis [4].

### 3.5 Regression Analysis

Multiple linear regression analysis was conducted to examine the effect of independent variables, including employees' understanding, implementation of Hazard Report and Tahan Report programs, compliance, participation, and program effectiveness, on workplace safety culture. The results indicate that these variables have a significant influence on the dependent variable, both partially and simultaneously. The t-test results show that several independent variables individually have a significant effect on workplace safety culture, while the F-test confirms that all variables collectively influence the dependent variable. These findings suggest that the implementation of Hazard Report and Tahan Report programs, supported by employee involvement and compliance, plays an important role in strengthening workplace safety culture within the organization [19].

### 3.5 Discussion

The results of this study indicate that the implementation of Hazard Report and Tahan Report programs has a positive and significant effect on workplace safety culture, where employees' understanding, compliance, participation, and perception of program effectiveness contribute to increasing safety awareness and encouraging proactive behavior in identifying and reporting potential hazards. These findings suggest that safety culture is not only influenced by formal procedures but also by the level of employee involvement and consistency in program implementation, highlighting the importance of reporting-based systems as effective tools in reducing workplace risks and preventing accidents. Therefore, strengthening employee engagement and continuously improving the implementation of safety programs are essential for developing a more proactive and sustainable safety culture within the organization [20].

The implementation of Hazard Report and Tahan Report programs has a positive and significant effect on workplace safety culture at PT. Merdeka Tsingshan Indonesia. Based on descriptive analysis, the mean values of all variables range from 2.93 to 3.08, indicating that respondents generally have moderate to positive perceptions toward the implementation of safety programs. This reflects that the programs have been adequately recognized and applied within the organization, although there is still room for improvement to achieve a stronger safety culture. The reliability test result shows a Cronbach's Alpha value of 0.938, reflecting excellent internal consistency and confirming that the research instrument is highly reliable for measuring the variables in this study [21]. The results of multiple linear regression analysis indicate that several independent variables have a significant influence on workplace safety culture. The partial test (t-test) shows that variables X1 (understanding), X3 (compliance), and X4 (participation) have significant effects with significance values of 0.000 ( $< 0.05$ ), while variable X2 (program implementation) does not have a significant effect with a significance value of 0.144 ( $> 0.05$ ). Among these variables, participation (X4) shows the strongest influence, as indicated by the highest standardized coefficient ( $\beta = 0.320$ ) and t-value (5.736), followed by compliance and understanding. These findings indicate that active employee

involvement and adherence to safety procedures are key factors in strengthening workplace safety culture [14]. The simultaneous test (F-test) shows a significance value of 0.000 with an F-value of 171.806, indicating that all independent variables collectively have a significant effect on workplace safety culture. The coefficient of determination ( $R^2$ ) is 0.654, meaning that 65.4% of the variation in workplace safety culture can be explained by the independent variables included in the model, while the remaining 34.6% is influenced by other factors outside the scope of this study, such as leadership commitment, safety communication, and organizational environment. This demonstrates that although the studied variables play a major role, other supporting factors also contribute to the development of a comprehensive safety culture. Overall, reporting-based safety programs play a crucial role in strengthening safety awareness and encouraging proactive behavior in identifying and reporting potential hazards. The effectiveness of these programs is strongly influenced by employee participation, understanding, and compliance, highlighting the importance of active engagement at all organizational levels [22], [23]. Continuous improvement in program implementation, supported by consistent supervision, training, and clear communication, is essential to maximize the impact of these programs. In addition, strengthening a supportive work environment that encourages employees to report hazards without hesitation will further enhance the effectiveness of safety initiatives. Therefore, efforts to improve workplace safety culture should not only focus on the existence of safety programs but also on optimizing their implementation and increasing employee involvement. Enhancing training programs, improving reporting systems, and reinforcing management commitment are important strategies to ensure the sustainability of safety practices. By integrating these elements, organizations can develop a more proactive, effective, and sustainable safety culture, ultimately contributing to the reduction of occupational accidents and the improvement of overall organizational performance [24], [25].

### 3.6. Recommendation

Companies are encouraged to strengthen the implementation of Hazard Report and Tahan Report programs by increasing employee participation, improving safety training, and enhancing reporting systems to ensure they are user-friendly, accessible, and responsive [26]. In addition, strong management commitment and consistent supervision are essential to create a supportive environment that encourages employees to report hazards without hesitation. Continuous evaluation and improvement of these programs are also necessary to ensure their effectiveness, ultimately contributing to a stronger workplace safety culture and a reduction in occupational risks.

## 4. Conclusion

Based on the results of the study and data analysis, it can be concluded that the implementation of the Hazard Report and Tahan Report programs has a significant effect on occupational safety culture and the work environment as an effort to reduce workplace accidents at PT Merdeka Tsingshan Indonesia. The partial test (t-test) results indicate that variables such as hazard program understanding, employee compliance and participation, and program effectiveness have a significant influence on safety culture, while the implementation of the Hazard Report and Tahan Report does not show a significant individual effect. However, the simultaneous test (F-test) demonstrates that all independent variables collectively have a significant effect on occupational safety culture. Furthermore, the coefficient of determination ( $R^2$ ) value of 0.654 indicates that the model explains 65.4% of the variation in safety culture, while the remaining 34.6% is influenced by other factors beyond the scope of this study.

**Conflict of Interest:** The authors declare that there are no conflicts of interest.

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