

Perception of officers in work safety protocols to achieve zero accidents at PT. Paramitha Build Means

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ABSTRACT

The high rate of occupational accidents indicates that the implementation of Occupational Safety and Health (OSH) in the construction sector still needs to be strengthened, including at the PT. Paramitha Bangun Sarana (Soci Mas) project, where worker compliance with the use of personal protective equipment (PPE) and standard operating procedures (SOPs) remains low. This study aims to describe the implementation of safety protocols and the achievement of the zero-accident program at the project site. A descriptive quantitative method was applied using a total sampling of 50 field workers. Data were collected through questionnaires and observations. Frequency distribution results show that most respondents were aged 18–33 years (82%), male (94%), and high-school graduates (82%). The level of OSH protocol perception was very good, with 94% of respondents agreeing and 6% strongly agreeing on the optimization of safety protocols. Zero-accident achievement was also high, indicated by 94% agreeing and 4% strongly agreeing with the program's application. These findings confirm that consistent application of OSH protocols, strong management support, and a solid safety culture can create a safe work environment, support the realization of zero-accident targets, and contribute to Sustainable Development Goal (SDG) 8 on decent work and economic growth.

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INTRODUCTION

Occupational Safety and Health (OSH) is a crucial aspect in the construction industry, which carries a very high risk of workplace accidents. According to data from the International Labour Organization (ILO), approximately 2.78 million workers worldwide die annually from workplace accidents and occupational diseases, with 160 million cases of occupational diseases and 374 million non-fatal injuries occurring annually (International Labour Organization, 2022). Meanwhile, in Indonesia, according to data from the Social Security Agency for Employment (BPJS Ketenagakerjaan), there were 298,137 cases of workplace accidents throughout 2023, an increase compared to the previous year (BPJS Ketenagakerjaan RI, 2023). This high figure indicates that the implementation of OSH systems is not yet optimal in various work sectors, particularly the

construction sector. The Indonesian government has mandated mandatory implementation of occupational safety and health (K3) through Law No. 1 of 1970 concerning Occupational Safety and Health, reinforced by Ministerial Regulation No. 5 of 2018 concerning Occupational Safety and Health. However, the implementation of these regulations in the field still faces various obstacles, such as low worker compliance with the use of personal protective equipment (PPE), insufficient supervision, and a weak occupational safety culture (Masrully, 2019).

The high rate of workplace accidents in Indonesia compared to neighboring countries such as Singapore and Malaysia highlights the need to strengthen policies and implement more adaptive OSH measures based on local work culture (Indrayana et al., 2020). A safety culture that tends to be merely formal can influence workers' perceptions of the importance of OSH, making a deep understanding of the relationship between work culture and safety perceptions a crucial aspect in strengthening the effectiveness of OSH implementation in the field.

Initial observations conducted by researchers at the PT. Paramitha Bangun Sarana project site indicate that many workers are not fully compliant with OHS protocols. For example, the use of PPE such as helmets and goggles is only carried out under supervision by foremen. In some cases, risky activities such as welding at height are carried out without protection for other workers below. This creates the potential for serious hazards such as incidents of falling hot metal sparks that can injure other workers. This condition indicates that the existing OHS system is not functioning optimally to achieve the target of zero accidents. Zero accidents is a strategic approach that aims to eliminate all potential workplace accidents through prevention, increased supervision, and the establishment of a strong safety culture (Cintya, D., Keke, Y., & Sodikin, 2021; Ema Mayasari et al., 2024). Research by Haryanto & Sulistyowati (2021) shows that implementing a zero-accident program, accompanied by training and management involvement, can reduce workplace accidents by up to 35% in one year. Similarly, a study by Pratama (2020) stated that a strong occupational safety culture and regular safety audits are important factors in reducing occupational risks in the construction sector (Haryanto, 2021; Pratama, 2024).

Therefore, it is crucial to conduct research to assess staff perceptions of the implementation of occupational safety protocols at PT. Paramitha Bangun Sarana to support the achievement of the zero accident target. This research also aligns with Sustainable Development Goals (SDGs) point 8 on "Decent Work and Economic Growth," which emphasizes the importance of creating a safe and healthy work environment for all workers.

RESEARCH METHOD

This study uses a descriptive quantitative approach and simple linear regression analysis to assess the relationship between officers' perceptions regarding the implementation of occupational safety protocols and the achievement of zero accidents in the PT. Paramitha Bangun Sarana construction project. The study population was all field workers directly involved in the project, totaling 50 people, who were taken as a total sample (total sampling) due to their relatively small number.

Data collection was conducted using two techniques: a Likert-scale questionnaire and field observation. The independent variable in this study was officers' perceptions of the implementation of the OHS protocol, while the dependent variable was the achievement of zero accidents. The questionnaire instrument was developed based on five indicators of the occupational safety protocol: the use of personal protective equipment (PPE), OHS training, field supervision, incident reporting, and compliance with SOPs. The zero accident indicators include the number of accidents, near-miss incidents, and perceptions of occupational safety (Wardhana, 2024), and have been adapted to the conditions. PT. Paramitha Bangun Sarana project through validity and reliability tests. Data were analyzed using descriptive analysis and simple linear regression to determine the significant influence between the perception of OHS protocols and the achievement of zero accidents.

RESULTS AND DISCUSSIONS

Research results

This study aims to determine the significant influence between the perception of OHS protocols and the achievement of zero accidents at PT. Paramitha Bangun Sarana. To support this analysis, data processing was performed using Axcel, with the output being statistical tables interpreted as follows:

Respondent Frequency Distribution Results

Table 1. Respondent age

Age	Frequency	Percentage
>18-25	21	42%
>26-33	20	40%
>34-41	5	10%
>42-49	2	4%
>50	2	4%
Total	50	100%

The majority of respondents (82%) were in the young age range (18-33 years old). This indicates that the project's workforce is dominated by the productive age group, who are generally in good physical condition, but need to improve their understanding and adherence to work safety protocols.

Table 2. Respondent gender

Gender	Frequency	Percentage
Man	47	94%
Woman	3	6%
Total	50	100%

The majority of respondents were male (94%), reflecting that the construction workforce in the field is still very much dominated by men, in accordance with the nature of the work which relies on physical and technical strength.

Table 3. Respondent aducation

Education	Frequency	Percentage
Vocational School	4	8%
SENIOR HIGH SCHOOL	41	82%
D3	1	0.02
S1	4	0.08
Total	50	100%

The majority of workers, 82%, have a secondary education (high school). This indicates that OHS training materials must be designed in a practical and easy-to-understand manner to increase awareness and compliance with OHS SOPs in the field.

Table 4. Field of work

Position	Frequency	Percentage
Fitter	5	10%
Forman	4	8%
Mechanical Piping Foreman	2	0.04
Warehouse People	1	0.02
Peter	2	0.04
Purchasing of Goods	1	0.02
Safety/HSE	1	0.02
Semi Filter	13	0.26

Position	Frequency	Percentage
Trigger	1	0.02
Welder	4	0.08
Helper	15	0.3
Warehouse Logistics Driver	1	0.02
Total	50	100%

The job distribution shows that the majority of workers are at the basic technical level, such as helpers, welders, and semi-filters, who are directly involved in construction activities. These positions have a higher level of exposure to hazards, ranging from working at heights, using heavy equipment, to contact with hazardous materials, significantly increasing the potential for workplace accidents. Therefore, companies need to provide more intensive OHS training and assistance to this group through regular training, emergency simulations, and strict field supervision. By prioritizing training and supervision for the basic technical group, companies not only protect workers from the risk of accidents but also strengthen the safety culture that is the foundation for achieving zero accidents.

Results of the Frequency Distribution of Officers' Perceptions regarding the Implementation of Occupational Safety (K3) Protocols

Table 5. Distribution of k3 protocol research data

Interval	Answer	Frequency	Percentage
42-48	Strongly agree	3	6%
34-41	Agree	47	94%
26-33	Neutral	0	0%
18-25	Don't agree	0	0%
10 to 17	Strongly Disagree	0	0%
Total		50	100%

The highest percentage of workers regarding the optimization of the OHS protocol showed 94% of respondents agreed with the implementation of the OHS protocol. This result indicates that the majority of workers assess the implementation of safety standards at PT. Paramitha Bangun Sarana has been implemented well. The high level of agreement reflects the workers' real support for the use of personal protective equipment (PPE), compliance with SOPs, and participation in OHS training. In addition, the management's consistent role in supervising and providing safety facilities also strengthens the workers' commitment to implementing the OHS protocol comprehensively. This shows that the implementation of the work safety protocol has succeeded in fostering safe work habits in the project environment. The 94% agreement level is evidence of the effectiveness of the company's strategy in socializing and implementing safety protocols, while also demonstrating the workers' high commitment to preventing workplace accidents.

Frequency Distribution of Officers' Perceptions on Achieving Zero Accident

Table 6. Distribution of work accident research data

Interval	Answer	Frequency	Percentage
42-48	Strongly agree	2	4%
34-41	Agree	47	94%
26-33	Neutral	0	0%
18-25	Don't agree	0	0%
10 to 17	Strongly Disagree	1	2%
Total		50	100%

The percentage of workers regarding the achievement of zero accidents shows that 94% of respondents agreed with the implementation of this program at PT. Paramitha Bangun Sarana. This result indicates that the majority of workers acknowledge the company's commitment to

creating a safe work environment through various preventive measures, such as improving supervision standards, continuous technical training, and good coordination between departments. This high level of agreement reflects workers' support for the company's policy in maintaining overall workplace safety, not only through formal regulations, but also through disciplined work habits.

Linear Regression Test Results

Table 7. Linear regression test

Model	Unstandardized Coefficient		Standardized Coefficient	t	Sig.
	B	St.d Error	Beta		
(Constant)	3,341	1,924		1,736	0,000
Optimizing Occupational Safety Protocols	0,906	0,051	0,993	17,902	0,000

The results of the simple linear regression test strengthen previous findings by showing that officers' perceptions of the implementation of occupational safety protocols have a significant influence on achieving zero accidents. The regression coefficient (B) value of 0.906 indicates that every 1 unit increase in the perception score of the implementation of the OHS protocol will increase the score for achieving zero accidents by 0.906 units. The resulting regression equation model is $Y = 3.341 + 0.906X$. This means that even when officers' perceptions are at a baseline level (X value = 0), there is still an initial value of 3.341 for achieving zero accidents. The calculated t value of 17.902 with a significance value of 0.000 (<0.05) confirms that the influence is highly statistically significant. Thus, it can be concluded that officers' perceptions of the implementation of occupational safety protocols play a direct role in the success of achieving zero accidents in the work environment of this construction project.

Discussion

Respondent Characteristics

According to research results on project workers construction in PT. Paramitha Bangun Sarana, the majority of its workers are in the 18-33 age range, representing 82% of all respondents. This age group is considered productive and has good physical abilities for construction work that requires strength and endurance. However, young workers generally have limited work experience and tend to be more willing to take risks, thus requiring adequate training regarding Occupational Safety and Health (OHS) procedures. This condition requires the company to provide clear direction, intensive supervision, and structured technical guidance so that young workers can carry out their duties according to safety standards. The dominance of young workers also emphasizes the importance of a planned and sustainable OHS training program (Yani, 2025). Training that includes the use of personal protective equipment (PPE), safe work procedures, and how to recognize potential hazards in the field will help them develop safe work habits early in their careers (Sehsah et al., 2020). With the right training, young workers will not only understand OSH theory but also be able to apply it consistently in their daily activities (Martha L, 2019).

This effort will strengthen the safety culture across the project and support the company's goal of zero accidents. Furthermore, the majority of workers are high school graduates. A person's educational background will influence their perspective and attitude toward a job or the problems they encounter in the workplace (Shubchan, 2021). The higher a person's education, the higher their knowledge of the benefits of personal protective equipment (PPE), which will influence their attitudes. Therefore, if they understand the benefits and how to behave appropriately, they will also be aware of the dangers that arise from not complying with the use of PPE in the workplace. Education level also influences workers' knowledge and behavior regarding accidents (Lana Labibatul Ulya & Anik Setyo Wahyuningsih, 2023). According to research results (Febianti et al., 2021.). Low productivity is a wasteful activity for a company, reducing profits. Productivity is influenced by several factors, such as the higher a person's education level, the higher their

productivity or performance. Age significantly impacts labor productivity because it is related to a worker's physical abilities (Nugroho, 2024). Gender relates to the differences in functions, roles, and responsibilities of men and women, as agreed upon by society. Workers with work experience are expected to find jobs that align with their skills. The longer someone holds a job that aligns with their skills, the more likely they are to increase their productivity (R. C. H. Chan, 2022).

Officers' Perceptions of the Implementation of Occupational Safety Protocols

Officers' perceptions of the implementation of occupational safety protocols showed excellent results. Of the 50 respondents, 94% agreed and 6% strongly agreed with the implementation of the OHS protocol. No respondents were neutral or disagreed. This condition confirms that the implementation of OHS at PT. Paramitha Bangun Sarana has been implemented optimally. This achievement illustrates that the majority of workers believe that the implementation of OHS SOPs, including safety training, use of personal protective equipment (PPE), field supervision, and incident reporting, has been carried out consistently and effectively. This high level of agreement also indicates that the company has succeeded in building a shared commitment between management and workers in maintaining occupational safety. Management support in the form of providing facilities, regular training, and ongoing field supervision are important factors in ensuring that OHS protocols are implemented across all lines of work. These results indicate that a safe work culture is well-ingrained, thus supporting the achievement of the zero accident target on an ongoing basis.

This is in line with the findings which emphasizes that adherence to SOPs, safety training, and the use of PPE are key factors in reducing the risk of workplace accidents. Strong management support also strengthens the OHS culture in the field, resulting in more consistent implementation of protocols across all levels of workers (Al-bayati et al., 2023). Research shows that intensive safety training and management commitment contribute significantly to a safety culture across various construction projects. For example, management support and open communication are key elements in creating a positive OHS culture (A. P. C. Chan et al., 2023).

Individual training and understanding, as well as organizational conditions, influence the results of OHS implementation. Management factors significantly influence the effectiveness of OHS implementation; the higher the management commitment, the stronger the safety culture that is formed (Series, 2024). Therefore, the results of this study indicate that the company is on the right track in optimizing OHS protocols, but still requires alignment at all levels of workers, especially those with secondary education backgrounds. In the context of Zero Incident Safety Management theory, Wang (2018) states that a strong safety management system drives the achievement of zero accidents by supporting reporting, incident learning, and strengthening internal audit systems (Wang & Griffis, 2018).

Officer Perceptions of Zero Accident Achievement

The descriptive analysis results show that 94% of respondents agreed and 4% strongly agreed with the implementation of the zero accident program at PT. Paramitha Bangun Sarana. No respondents disagreed, only 2% strongly disagreed. This high percentage indicates strong support from the majority of employees for the company's commitment to creating a safe work environment. This achievement illustrates the company's success in maintaining a stable zero accident rate through concrete steps such as strict field supervision, the provision of safety facilities, and good coordination between departments. The high level of employee agreement indicates that a safe work culture has been ingrained and practiced in daily activities. This success also reflects the effectiveness of management in integrating accident prevention programs with employee involvement at all levels. Management support is evident in the consistency of safety training, responsive incident reporting, and regular evaluations to detect potential hazards. The synergy between management commitment and employee discipline strengthens the safety culture so that the zero accident target can be achieved and maintained. These results confirm that

achieving zero accidents is not simply the absence of incidents, but the result of ongoing collaboration that places safety as a top priority throughout the work process.

This is in line with the results of the study Supriyadi et al., (2023) The HIRADC and JSA approaches can reduce risk and facilitate zero accidents in construction projects if supported by good training and procedures (Supriyadi et al., 2023). The standard deviation value of 1.648 indicates little variation in workers' views on achieving zero accidents. This is typically influenced by the extent to which individuals from various positions witness or experience OHS interventions. Furthermore, research in the sugar mill industry by (Achmad Hait Aliyumni Beknazar, 2024) shows that a strong safety culture and internal communication are key to maintaining zero accident stability, although the challenge is the availability and consistent use of PPE at all levels of workers. This condition reflects that achieving a high zero accident requires support from a system of monitoring, socialization, and regular evaluation to maintain positive perceptions at all levels. Zero accidents can only be achieved through an integrated safety management system, including risk identification, incident reporting, and consistent corrective follow-up.

The success of achieving zero accidents in this company can be seen from several important aspects. First, management implements regular safety training so that every worker understands safe work procedures, how to use personal protective equipment (PPE), and emergency actions when facing potential hazards (Judijanto & Fatimah, 2025). Second, the existence of rapid incident reporting and systematic follow-up ensures that each incident can be analyzed and prevented from recurring. Third, two-way communication between workers and management facilitates the identification of risks in the field so that preventive measures can be implemented immediately. The combination of these steps creates a strong safety culture, so that achieving zero accidents is not simply the absence of incidents, but rather evidence of ongoing collaboration and a shared commitment to placing safety as a top priority throughout the work process. This is supported by research results from Which states that the success of zero accidents is closely related to employee involvement at all levels, from planning to evaluation of occupational safety. The implementation of internal audits, continuous training, and two-way communication between management and employees has been proven to increase awareness of potential hazards and strengthen commitment to safety. This is in accordance with conditions in the field, where PT. Paramitha Bangun Sarana employees have demonstrated relatively good compliance with SOPs and the use of PPE, thus supporting the achievement of the zero accident target. Achieving zero accidents cannot be separated from the role of a consistent monitoring system (Ahamad et al., 2022).

Good supervision not only ensures worker compliance with SOPs but also serves as a control mechanism that can detect potential hazards early. In addition to supervision, management commitment also plays a significant role in the success of zero accidents. This commitment is reflected in the provision of safety facilities such as PPE, ongoing training, and communication forums between management and workers. Management involvement in a safety culture has been shown to increase worker motivation to comply with safety regulations. Therefore, the success of zero accidents can be seen as a result of the synergy between worker compliance and management support. Achieving zero accidents also has strategic implications for company sustainability. An accident-free work environment not only protects workers but also improves operational efficiency and reduces accident costs. Research by (Ragil Gilang Maulani, 2023)) shows that implementing a zero accident program can significantly reduce company costs while improving the organization's image among stakeholders. In the case of PT. Paramitha Bangun Sarana, successfully maintaining zero accidents can be a crucial asset for gaining client trust and expanding future project opportunities. Therefore, zero accidents are not only an indicator of OHS success but also part of a sustainable business strategy.

The Influence of Perception of the Implementation of Occupational Safety Protocols on the Achievement of Zero Accidents

Based on the frequency distribution table of perceptions of the implementation of the OHS protocol and the frequency distribution table of achieving zero accidents, 94% of respondents stated that they agreed with the implementation of the OHS protocol and the zero accident program. The high score of workers' perceptions of the implementation of the OHS protocol indicates that the majority of the workforce has a good awareness and acceptance of safety culture. This positive perception reflects the level of worker trust in the effectiveness of OHS procedures, from the use of PPE to incident reporting. These results strengthen the regression findings that show a significant influence of perceptions of the implementation of OHS protocols on achieving zero accidents. In other words, the higher the positive perception of workers towards the OHS protocol, the greater the company's success in maintaining a safe and accident-free work environment.

This condition confirms that the perception factor is not only a supporter, but also an integral part of a sustainable safety culture. The results of a simple linear regression strengthen this perception with a regression coefficient $B = 0.906$ ($\text{sig.} = 0.000$), which indicates that every one unit increase in the perception score of the implementation of the OHS protocol will increase the zero accident score by 0.906 units. The equation $Y = 3.341 + 0.906X$ illustrates that even without high perception ($X = 0$), there is a baseline of achieving zero accidents of 3.341. The very high t-value of 17.902 indicates a strong and statistically significant influence, as this finding is consistent with the SEM model system analysis of the Thai construction study which showed that safety culture and behavior interventions explain approximately 60% of the variance in worker safety behavior and performance (Kurakaew & Hadikusumo, 2025). This indicates that the OHS protocol variable is a strong predictor of outcome Y (zero accidents), emphasizing the urgency of consistent and comprehensive protocol implementation. The success of zero accidents is not only the technical aspects of OHS protocol implementation, but also the active involvement of all levels of workers.

Individual awareness in using PPE, reporting incidents, and complying with SOPs will have a direct impact on the effectiveness of safety protocols. A study by (Kurnia Adi & Kushartomo, 2023) This study shows that the level of worker compliance with OSH Standard Operating Procedures (SOPs) is an important mediator in linking management policies with the achievement of zero accidents. In other words, no matter how well the OSH system is designed, if workers are not disciplined in implementing it, the goal of zero accidents will be difficult to achieve. Therefore, the integration of management policies, supervision, and worker discipline is key. Furthermore, the achievement of zero accidents at PT. Paramitha Bangun Sarana can be understood as the result of synergy between structural factors (regulations, SOPs, internal audits) and cultural factors (safety culture, motivation, and communication). A strong safety culture has been shown to encourage workers to remind each other and maintain a safe work environment. Research by Törner & Pousette (2024) shows that learning from minor incidents (near misses) is an effective means of strengthening safety culture. In the context of this project, this is consistent with the high average result of zero accidents, indicating the success of the reporting and follow-up system. Other studies have found similar patterns, for example, a safety culture built through management involvement and effective communication has been shown to have a positive effect on worker safety behavior (Al-Bayati, 2021). Thus, the sustainability of zero accidents can be maintained if companies consistently internalize a safety culture in every line of work. From a macro perspective, the successful implementation of occupational safety protocols to support zero accidents also contributes to the achievement of Sustainable Development Goal (SDG) point 8, namely decent work and economic growth. Safe working conditions increase productivity, reduce accident costs, and build a positive company reputation in the construction sector. Therefore, the perception of the implementation of OHS protocols not only impacts individual worker safety but also provides added economic value and sustainability for the organization.

Furthermore, the finding that most young workers are concerned about the long-term sustainability of OSH culture in companies has important implications. This shows that the

younger generation is critically aware of the importance of sustaining workplace safety systems. These concerns can be an indicator of the need for a more adaptive and long-term OSH strategy, in order to keep up with the dynamics of the new generation of workers, technological developments, and changes in work patterns in the construction industry. Companies need to strengthen safety policies that not only focus on formal compliance but also instill safety values as part of the organization's identity. In addition, young workers' attention to the sustainability of K3 culture can become social capital that encourages innovation in safety systems, strengthens cross-generational communication, and ensures the continuity of workplace safety culture in the future.

CONCLUSION

Based on the results of statistical analysis and discussion, it can be concluded that the perception of the implementation of occupational safety protocols has a significant effect on the achievement of zero accidents at PT. Paramitha Bangun Sarana. The average worker perception of the implementation of the OHS protocol is considered good, although there is slight variation between respondents. The results of the linear regression test prove that every increase in the implementation of the OHS protocol directly increases the achievement of zero accidents significantly. In addition, the high positive perception of workers towards the implementation of the OHS protocol plays an important role in strengthening this relationship, confirming that the success of zero accidents is not only determined by the technical aspects of OHS implementation, but also by workers' awareness and acceptance of the safety culture in the work environment.

This research provides a tangible contribution to company policy in designing more adaptive and sustainable OSH programs. The results provide a basis for management to strengthen a participatory safety culture through continuous training, communication, and supervision. The understanding that worker perceptions have a significant impact on zero accidents encourages companies to adjust their policies to be more responsive to field conditions. Further research is recommended in the form of longitudinal or comparative studies between construction companies to assess the effectiveness and best practices of OSH implementation.

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Management is advised to continue strengthening the implementation of occupational safety protocols through regular training, increased supervision, and strengthening the safety culture so that the zero accident target can be maintained sustainably.

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