The Investigation of Work Safety: The Role of Training and Work Experience at a Flexible Packaging Company in Surabaya

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ABSTRACT

This study aims to analyze the role of training and work experience on the work safety of factory employees at flexible packaging company in Surabaya. The research background is based on the high rate of workplace accidents that still occur despite the company having conducted training programs and implemented safety policies. The research method employed is quantitative with an associative descriptive approach. The study involved a sample of 62 respondents obtained through purposive sampling. Data were analyzed using the Partial Least Squares (PLS) method with the assistance of SmartPLS software. The results indicate that both training and work experience have a significant effect on work safety. Training material and the level of knowledge acquired through work experience were found to be the most dominant indicators. These findings reinforce the importance of aligning training materials with the needs of each department and the necessity of empowering experienced employees in creating a safe work culture.

INTRODUCTION

Work safety is a crucial aspect in ensuring productivity and the protection of the workforce in the industrial sector, particularly in manufacturing, which carries a high risk of accidents due to the use of machinery and heavy equipment. According to data from the Social Security Administrator for Employment (BPJS Ketenagakerjaan) in 2023, there were more than 200,000 cases of workplace accidents in Indonesia, the majority of which occurred in the manufacturing sector. According to Mondy and Noe (2005:360), work safety is the protection of employees from injuries caused by work-related accidents. Safety risks are aspects of the work environment that can cause fires, electric shocks, cuts, bruises, fractures, loss of body parts, and impairment of vision and hearing. Meanwhile, Mathis and Jackson (2006:245) state that work safety refers to the protection of an individual's physical well-being from work-related injuries.

As one of the manufacturing companies, it has also experienced similar issues. The company's internal data recorded 3 cases of workplace accidents in 2023, which increased to 4 cases in 2024. Most of these incidents occurred among new employees, particularly in the production and color matching divisions, involving accidents such as being trapped in machinery, cut by work tools, and operational vehicle accidents. Based on interviews with the Supervisor Division employees, it was found that lighting conditions in several work areas are still suboptimal, particularly in the main access corridor. The intensity and quality of illumination that do not meet the standards can lead to various issues, including fatigue, discomfort, and reduced alertness, all of which may increase the likelihood of workplace accidents (Efendi et al., 2024). Inadequate lighting in this area poses potential risks, such as eye strain due to limited visibility, which can ultimately diminish employees' focus and concentration while working. This condition also increases the probability of work errors, especially in tasks that require high precision, such as operating machinery or inspecting products.

On the other hand, based on training data from 2023–2024, the company has implemented several training programs, including work accident training, safety riding, and fire hazard mitigation. Nevertheless, the effectiveness of these programs has not reached an optimal level, as the training materials have not been fully aligned with the specific work characteristics of each department. Furthermore, approximately 64% of factory employees possess less than two years of work experience, which has contributed to their limited proficiency in safety procedures and their inadequate awareness of potential occupational hazards.

Previous studies have demonstrated that training has a significant effect on work safety (Ghorbani, 2023; Jozan et al., 2023; Santi et al., 2020), as does work experience, which is associated with increased awareness of risks (Putri, 2023; Nahuri et al., 2023). However, there remains a paucity of research that specifically examines the effectiveness of training materials based on the work requirements of each department, as well as the role of work experience as a foundation for safety skills within the context of the manufacturing industry.

Based on the aforementioned description, this study aims to analyze the role of training and work experience on the work safety of factory employees at a Flexible Packaging Company in Surabaya, as well as to identify the most dominant indicators of each variable in fostering improved workplace safety.

Literature Review

Training

Training is a systematic process aimed at enhancing employees' skills, knowledge, and behavior to meet job requirements (Dessler, 2020). Training contributes to improving competencies as well as understanding of safety procedures (Noe, 2020). Training is a series of learning processes undertaken by employees with the aim of performing the tasks assigned by the company in accordance with established regulations (Hendra, 2020). According to Melmambessy (2011), the indicators of training include (1) material, (2) duration, (3) method, and (4) frequency.

Work Experience

Work experience refers to the length of time an individual has been engaged in a particular job, which provides knowledge, skills, and competencies (Foster, 2023). The longer the tenure, the higher the level of caution and mastery of work procedures (Elter, 2020). The experience gained by employees during their previous tenure will enhance their knowledge and skills, enabling them to deliver good performance in the workplace (Werdati et al., 2020). According to Foster (as cited in Yahya et al., 2023), the indicators of work experience are: (1) length of service or tenure, (2) level of knowledge and skills, and (3) mastery of tasks and equipment.

Work Safety

Safety refers to the protection of workers from injuries caused by workplace accidents. Work is a dynamic activity of value, involving the use of mental and physical processes to achieve certain productive goals (Candrianto, 2020). According to Slamet (2021), work safety is the condition of avoiding hazards in the workplace, as essentially no one desires accidents to occur during work activities. Mondy (2008) defines work safety as the protection of employees from injuries caused by workplace accidents. According to Mangkunegara (2020), the indicators of work safety include the (1) workplace, (2) employees, and (3) tools and machinery.

Hypothesis Development

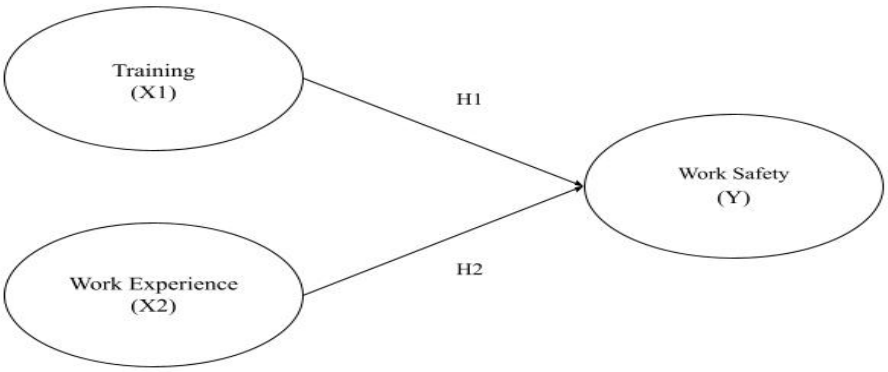

Figure 1. Conceptual Framework
Source: Data Processed, 2025

The Effect of Training on Work Safety

Training has a significant influence on work safety because, through training, employees acquire the knowledge, skills, and work attitudes that support the implementation of safety procedures in the workplace. Effective training can increase awareness of potential hazards, strengthen compliance with standard operating procedures, and equip employees with preventive measures to avoid accidents. Kao et al. (2020) stated that efforts to improve work safety can be carried out in various ways, including providing safety training, involving workers in safety programs, and enhancing employees' safety knowledge. Huang et al. (2020) mentioned that safety training can predict and improve safety behavior among manufacturing employees and serves as a key factor in maintaining and changing workers' attitudes toward work safety.

H1 : Training has a positive effect on Work Safety

The Effect of Work Experience on Work Safety

Work experience has a significant influence on work safety because the longer an employee is engaged in their job, the higher their level of understanding of safety procedures, potential hazards, and how to handle them. Employees with longer tenure are more likely to have encountered various situations in the field, thereby acquiring practical skills in anticipating risks and taking preventive measures. In addition, work experience also fosters vigilance, discipline, and safe work habits, which directly contribute to reducing accident rates. Nahuri et al. (2023) state that work experience is highly essential in a company, as it enables individuals to perform their tasks more effectively. An employee with work experience will possess greater knowledge, skills, and abilities, and will exercise greater caution in their work to prevent accidents.

H2: Work Experience has a positiveeffect on Work Safety

RESEARCH METHOD

This study employed a quantitative method with a descriptive-associative approach, aiming to examine the effect of training and work experience on the occupational safety of factory employees at a flexible packaging company in Surabaya. Data were collected through a questionnaire distributed via a Google Form link. The variables were measured using a five-point Likert scale. The sampling technique used was purposive sampling, with a total of 62 respondents who met specific criteria, such as having 0–5 years of work experience and working in departments where workplace accidents had occurred. Data

analysis was conducted using the PLS-SEM method with the assistance of SmartPLS version 3 to assess validity, reliability, and the relationships among the research variables.

Respondent Information

This study

Table 1. Characteristics of Respondents

No	Length of service	*Frequency*	Presentation
1	1-2	37	59,7%
2	3-4	12	19,4%
3	5	13	21%

Source: Questionnaire data processed by researchers, 2025

Table 2. Characteristics of Respondents

No	Department	*Frequency*	Presentation
1	Production	50	80,6%
2	Engineering	6	9,7%
3	Color Matching	6	9,7%

Source: Questionnaire data processed by researchers, 2025

Based on the results of the study, the majority of respondents had a length of service of 1–2 years, totaling 37 people or 59.7%, and came from the production department, totaling 50 people or 80.6%. This distribution indicates that most respondents are relatively new employees who are still in the early stages of adapting to work and safety procedures. This condition is relevant to the study's findings that employees with relatively short work experience tend to have lower levels of safety knowledge and skills compared to more experienced workers. Furthermore, the dominance of respondents from the production department reflects the high level of occupational risk in this area, which requires consistent implementation of safety procedures to minimize the potential for accidents.

RESULTS AND DISCUSSION

Outer Model (Measurement Model and Indicator Validity)

Table 3. Table of Convergent Validity Test Results (Outer Loading)

	Work Safety (Y)	*Training (X1)*	Work Experience (X2)
X1.1		0,934	
X1.2		0,932	
X1.3		0,922	
X1.4		0,918	
X2.1			0,896
X2.2			0,919
X2.3			0,912
Y1.1	0,943		
Y1.2	0,920		
Y1.3	0,930		

Source: Questionnaire data processed by researchers, 2025

Based on the test results in table 3, all indicators on the variables of work safety, training, and work experience have an outer loading value above 0.7. This indicates that each indicator is considered valid and able to accurately represent its variable construct. Thus, all indicators are suitable for use in the next analysis process.

Table 4. Table of Discriminant Validity Test Results (Cross Loading)

	Work Safety (Y)	Training (X1)	Work Experience (X2)
X1.1	0,749	0,934	0,364
X1.2	0,754	0,932	0,366
X1.3	0,721	0,922	0,410
X1.4	0,695	0,918	0,308
X2.1	0,700	0,444	0,896
X2.2	0,595	0,260	0,919
X2.3	0,656	0,347	0,912
Y1.1	0,943	0,718	0,736
Y1.2	0,920	0,718	0,642
Y1.3	0,930	0,766	0,628

Source: Questionnaire data processed by researchers, 2025

Based on the cross loading results, all indicators on work safety, training, and work experience variables have a higher loading value on their respective variables compared to other variables. This finding shows that each indicator is able to clearly distinguish between constructs, so that discriminant validity has been met and all indicators are declared valid.

Table 5. Table of Discriminant Validity Test Results (AVE)

	Average Variance Extracted (AVE)
Work Safety (Y)	0,867
Training (X1)	0,859
Work Experience (X2)	0,826

Source: Questionnaire data processed by researchers, 2025

Based on the Average Variance Extracted (AVE) value, all variables in this study, work safety, have a value of 0.867, training 0.859, and work experience 0.826. The results of this value have met the convergent validity criteria becauseeach has an AVE value above 0.5. This indicates that the indicators on each variable are able to represent the measured construct adequately and consistently.

Table 6. Table of Composite Reliability Test Results (Reliability and Construct Validity)

	Composite Reliability
Work Safety (Y)	0,951
Training (X1)	0,961
Work Experience (X2)	0,934

Source: Questionnaire data processed by researchers, 2025

Based on Table 6, all variables in this study, namely worksafety, training, and work experience, have a Composite Reliability (CR) value ≥ 0.7. The CR value of occupational safety is 0.951, training is 0.961, and work experience is 0.934. This value indicates that the instrument used has met the reliability

criteria. This means that the indicators on each variable show high internal consistency and can be relied upon to measure the intended construct.

Table 7. Latent Variable Correlations

	Work Safety (Y)	Training (X1)	Work Experience (X2)
Work Safety (Y)	1,000	0,788	0,719
Training (X1)	0,788	1,000	0,391
Work Experience (X2)	0,719	0,391	1,000

Source: Questionnaire data processed by researchers, 2025

Based on the Latent Variable Correlations Table, the average correlation between variables in the model is classified as strong, with the highest value between the Training and Work Safety variables of 0.788. This shows Training has the most dominant influence on Work Safety compared to other variables. In contrast, the Work Experience variable shows a lower correlation, so its contribution to occupational safety is considered less significant in this model.

Inner Model

Table 8. R-Square

	Composite Reliability
Work Safety (Y)	0,821

Source: Questionnaire data processed by researchers, 2025

According to the results shown in the table, the R-Square value for the customer satisfaction variable is 0.821, meaning that 82.1% of the variation in customer satisfaction is explained by the training and work experience variables. The remaining 17.9% is due to other factors outside the model. This high R-Square value indicates strong explanatory power, suggesting that the model is highly effective and reliable in capturing the impact of training and work experience on work safety.

Hypothesis Testing

Table 9. Path Coefficients (Mean, STDEV, T-Value, P-Value)

	Sample Original (O)	T Statitistic (|O/STDEV|)	P Values	Result
Training (X1) -> Work Safety (Y)	0,599	0,555	0,000	Accepted
Work Experience (X2) -> Work Safety (Y)	0,485	0,068	0,000	Accepted

Source: Questionnaire data processed by researchers, 2025

Based on the Table path coefficients, it can be concluded that hypothesis testing in this study shows the following results:

H1: Training has a positive effect on work safety

The effect of training on work safety can be accepted, with a path coefficient of 0.599 and a T-Statistic value of 10.786 > 1.96 (based on the Zα table value = 0.05) or a P-Value of 0.000 < 0.05, indicating a significant (positive) result. This is in line with previous research conducted by Ramadhani et al. (2020) entitled *"The Effect of Work Safety and Health Training on Reducing Workplace Accident Rates"*, which revealed that training has a positive and significant effect on work safety.

The better the quality of the training materials provided, the greater the likelihood that employees will work safely and in accordance with standard operating procedures. Supporting this conclusion, the *material* indicator had the greatest influence on the work safety of factory employees at a flexible packaging company in Surabaya. The training programs organized by the company, such as workplace accident prevention training, safety riding, and fire hazard mitigation, provide an essential foundation for employees to gain a comprehensive understanding of workplace safety principles. The materials delivered emphasize the use of personal protective equipment (PPE), identification of potential hazards in the work environment, and adherence to standard operating procedures (SOP).

The uniformity of understanding built through these training sessions helps create a safe work culture across all departments, enabling employees to consistently apply safety procedures in every work activity. The significant influence of the material indicator shows that training plays a role in shaping work behaviors that are more vigilant and structured in addressing risks. The fundamental knowledge gained through training serves as an important asset for employees to adapt its application according to the characteristics of their respective jobs, thereby contributing to the reduction of potential workplace accidents.

H2 : Work Experience has a positive effect on work safety

The effect of work experience on work safety can be accepted, with a path coefficient of 0.485 and a T-Statistic value of 7.171 > 1.96 (based on the Zα table value = 0.05) or a P-Value of 0.000 < 0.05, indicating a significant (positive) result. This finding is consistent with previous research by Liska Putri (2023) entitled *"The Effect of Work Experience and Work Supervision on Employee Safety at PT Satria Perkasa Agung Serapung Riau"*, which revealed that work experience has a positive and significant effect on work safety.

The longer employees have been working, the greater their understanding of work procedures, potential hazards, and applicable safety protocols. Supporting this conclusion, the knowledge level indicator had a substantial influence on the occupational safety of factory employees at a flexible packaging company in Surabaya. This knowledge level is closely related to the number of training sessions attended. Employees with longer tenure tend to have participated in more training sessions than new employees. This accumulation of training enables them to acquire more advanced technical skills, a deeper understanding of the proper use of personal protective equipment (PPE), and a quicker ability to anticipate risks.

In the context of each department, work experience also provides specific benefits that directly impact workplace safety. For example, in the Color Matching Department, experienced employees have a deep understanding of how to operate color mixing machines, including adjusting speed and pressure safely, thereby reducing the risk of being caught in machinery or exposed to chemical splashes. In the Technical Department, work experience allows employees to better understand safe procedures for maintaining and repairing production machines, including the application of the lockout-tagout system to prevent machines from operating during repairs, which can help avoid serious injuries. Meanwhile, in the Production Department, long-serving employees tend to operate printing and laminating machines with greater speed and precision, while also recognizing hazardous points on the equipment, enabling them to anticipate potential accidents such as being trapped or burned due to machine heat.

Therefore, work experience not only develops technical skills but also enhances employees' vigilance toward department-specific hazards, ultimately contributing to the reduction of workplace accident rates.

CONCLUSION

Based on the research conducted, the results obtained from the PLS analysis on The Investigation of Work Safety: The Role of Training and Work Experience at a Flexible Packaging Company in Surabaya indicate that Training contributes positively to improving employee work safety. In addition, Work Experience also has a significant contribution in supporting better workplace safety in the factory environment. Therefore, both variables play an important role in the company's efforts to minimize the risk of workplace accidents and to foster a safe work culture.

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