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The Influence Of Safety Leadership On Safety Behavior: The Mediating Roles Of Safety Knowledge And Safety Climate At PT. Putra Albasia Mandiri

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Abstract

This study examines the effect of safety leadership on safety behavior, with safety knowledge and safety climate as mediating variables among production employees at PT Putra Albasia Mandiri. Data were collected through a questionnaire survey administered to 245 employees using a census sampling approach. The data were analysed using Structural Equation Modelling–Partial Least Squares. The findings indicate that safety leadership has a significant positive effect on safety behavior, safety knowledge, and safety climate. Furthermore, both safety knowledge and safety climate significantly enhance safety behavior. Mediation analysis demonstrates that safety knowledge and safety climate significantly mediate relationship between safety leadership and safety behavior, with safety climate exhibiting stronger indirect effect. These findings highlight the importance of effective safety leadership in promoting safe workplace behavior through the development of employees' safety knowledge and the establishment of a positive safety climate.

Keywords: Safety leadership; Safety behavior; Safety climate; Safety knowledge; Workplace safety.

INTRODUCTION

Occupational safety remains a critical issue in the manufacturing industry due to the increasing complexity of production processes and the high exposure of workers to workplace hazards. Although the manufacturing sector has significantly contributed to Indonesia's economic growth and employment opportunities, increasing production

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demands have also elevated the risk of occupational accidents (Holcroft & Punnett, 2009). Work-related accidents not only result in injuries and fatalities but also reduce productivity, disrupt operational performance, and impose substantial economic losses on organisations (Lun et al., 2017). Previous studies have suggested that occupational accidents are more closely associated with unsafe human behavior and organisational factors than with technical failures alone (Zohar & Polachek, 2014). Consequently, improving employees' Safety Behavior has become an essential strategy for enhancing workplace safety performance.

Despite continuous efforts to strengthen occupational health and safety management, occupational accidents in Indonesia have continued to increase. According to BPJS Ketenagakerjaan and the Ministry of Manpower, the number of occupational accidents increased from 297,725 cases in 2022 to 370,747 cases in 2023 and further to 462,241 cases in 2024. In addition, Central Java recorded 58,956 occupational accidents in 2024, ranking third nationally after East Java and West Java. These statistics indicate that occupational safety remains a major challenge, particularly within labour-intensive manufacturing industries characterised by high exposure to machinery, hazardous materials, excessive noise, and dust (Ford & Tetrick, 2011; Ilmansyah et al., 2020).

One company facing these challenges is PT. Putra Albasia Mandiri, a plywood manufacturing company located in Temanggung, Central Java. Its production process involves veneer processing, gluing, hot pressing, trimming, sanding, finishing, and packaging, exposing employees to various occupational hazards, including moving machinery, sharp tools, wood dust, chemical adhesives, excessive noise, electrical hazards, and manual material handling. Although the company has implemented occupational health and safety regulations and internal safety procedures, accident records between 2022 and 2026 indicate that workplace accidents have fluctuated rather than consistently declined. Internal reports further reveal recurrent incidents involving slips, machine-related injuries, electrical shocks, fire exposure, wood impact injuries, and dust-related health problems. Field observations also indicate inconsistent use of personal protective equipment (PPE), limited compliance with safety procedures, and insufficient participation in workplace safety programmes, suggesting that employees Safety Behavior has not yet reached the expected standard.

Previous studies have consistently demonstrated that Safety Leadership plays an important role in promoting employees' Safety Behavior by encouraging compliance with safety procedures and participation in safety-related activities (Elosta & Alzubi, 2024; Ariyadi, 2022; Piao & Hahn, 2025). However, Stiawan and Faidal (2024) reported that

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Safety Leadership did not significantly influence Safety Behavior, indicating inconsistent empirical findings. Furthermore, recent studies have proposed that Safety Knowledge and Safety Climate may explain the mechanism through which Safety Leadership influences Safety Behavior (Basahel, 2021; Subramaniam et al., 2023; Ningtyas, 2024). Nevertheless, contradictory evidence remains regarding the mediating role of Safety Knowledge (Soraya & Faidal, 2024), suggesting that further investigation is required, particularly within high-risk manufacturing environments.

Accordingly, this study investigates the influence of Safety Leadership on Safety Behavior through the mediating roles of Safety Knowledge and Safety Climate** among production employees at PT. Putra Albasia Mandiri. By examining these relationships within Indonesia's plywood manufacturing industry, this study aims to enrich the occupational safety literature and provide practical insights for improving workplace safety management in high-risk manufacturing organisations.

LITERATURE REVIEW

Social Exchange Theory (SET)

This study is underpinned by Social Exchange Theory (SET), which explains that relationships between employees and organisations are based on reciprocal exchanges in which favourable organisational actions encourage positive employee responses (Blau, 1964; Cropanzano & Mitchell, 2005). Within the occupational safety context, leaders who demonstrate concern for employees' well-being, provide adequate safety support, and encourage learning create reciprocal obligations that motivate employees to work safely. Consequently, employees are more likely to enhance their Safety Knowledge, perceive a positive Safety Climate, and demonstrate higher levels of Safety Behavior (Vinodkumar & Bhasi, 2010; Xue et al., 2020). Therefore, SET provides a theoretical foundation for explaining how Safety Leadership influences employees' safety-related attitudes and behaviors through reciprocal social relationships.

Safety Behavior

Safety Behavior refers to employees' actions that support occupational safety through compliance with safety regulations and active participation in safety-related activities (Elosta & Alzubi, 2024). It is widely recognised as a key predictor of workplace safety performance because it reflects employees' willingness to perform their work safely and contribute to a safer working environment (Vinodkumar & Bhasi, 2010). Following

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Griffin and Neal (2000), Safety Behavior consists of two dimensions: (1) safety compliance and (2) safety participation.

Safety Leadership

Safety Leadership refers to a leadership approach in which leaders influence employees to achieve organisational safety goals by promoting safe working practices and demonstrating commitment to occupational safety (Fernández-Muñiz et al., 2017). Effective Safety Leadership encourages employees to comply with safety procedures, participate in safety programmes, and improve workplace safety performance (Gracia et al., 2020; Piao & Hahn, 2025). According to Wu (2008), Safety Leadership comprises three dimensions: (1) safety coaching, (2) safety caring, and (3) safety controlling.

Safety Knowledge

Safety Knowledge refers to employees' understanding of workplace hazards, safety procedures, and safe working practices required to perform their tasks safely (Elosta & Alzubi, 2024). Employees with greater Safety Knowledge are better equipped to recognise hazards, comply with safety regulations, and prevent occupational accidents (Saedi et al., 2020). The indicators adopted from Vinodkumar and Bhasi (2010) include (1) knowledge of workplace hazards, (2) knowledge of safety procedures, (3) ability to perform work safely, and (4) understanding of emergency procedures.

Safety Climate

Safety Climate reflects employees' shared perceptions of organisational policies, procedures, and management commitment regarding workplace safety (Zohar, 2010). A positive Safety Climate promotes employees' motivation to comply with safety requirements and actively participate in occupational safety activities, thereby improving organisational safety performance (Griffin & Curcuruto, 2016). The indicators of Safety Climate adopted from Zohar (2010) include (1) management commitment, (2) safety communication, (3) safety rules and procedures, (4) safety training, and (5) employee involvement.

Influence between variables

Safety Leadership promotes employees' Safety Behavior by encouraging compliance with safety procedures and participation in workplace safety activities. According to Social Exchange Theory, employees reciprocate supportive leadership by

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exhibiting positive workplace behaviors (Cropanzano & Mitchell, 2005). Previous studies consistently reported that Safety Leadership positively influences Safety Behavior (Piao & Hahn, 2025; Ariyadi Eko, 2022; Elosta & Alzubi, 2024). Therefore, the following hypothesis is proposed:

Hypothesis 1: Safety Leadership positively and significantly influences Safety Behavior.

Safety Leadership also enhances employees' Safety Knowledge through safety coaching, communication, and continuous learning. Leaders who actively promote workplace safety encourage employees to understand safety procedures and hazard prevention more effectively (Fruhen et al., 2014). This relationship has been supported by Basahel (2021), Subramaniam et al. (2023), and Elosta and Alzubi (2024). Therefore, the following hypothesis is proposed:

Hypothesis 2: Safety Leadership positively and significantly influences Safety Knowledge.

A positive Safety Climate develops when leaders consistently demonstrate commitment to workplace safety through effective communication and enforcement of safety standards (Wu, 2008; Zohar, 2010). Previous studies confirmed that Safety Leadership significantly improves Safety Climate (Ariyadi Eko, 2022; Ningtyas, 2024). Therefore, the following hypothesis is proposed:

Hypothesis 3: Safety Leadership positively and significantly influences Safety Climate.

Employees with greater Safety Knowledge are more capable of recognising workplace hazards, complying with safety procedures, and preventing occupational accidents (Bunner et al., 2018). Previous studies consistently demonstrated that Safety Knowledge positively affects Safety Behavior (Basahel, 2021; Elosta & Alzubi, 2024; Subramaniam et al., 2023). Therefore, the following hypothesis is proposed:

Hypothesis 4: Safety Knowledge positively and significantly influences Safety Behavior.

A positive Safety Climate encourages employees to comply with safety procedures and actively participate in workplace safety programmes because safety is perceived as an organisational priority (Griffin & Curcuruto, 2016; Shen et al., 2017). This positive

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relationship has been confirmed by Xue et al. (2020), Ariyadi Eko (2022), Ningtyas (2024), and Yang et al. (2026). Therefore, the following hypothesis is proposed:

Hypothesis 5: Safety Climate positively and significantly influences Safety Behavior.

Safety Leadership may indirectly improve Safety Behavior by enhancing employees' Safety Knowledge and creating a positive Safety Climate. Leaders who provide safety guidance strengthen employees' understanding of workplace safety while fostering organisational values that prioritise safety. Previous studies confirmed the mediating roles of Safety Knowledge (Basahel, 2021; Elosta & Alzubi, 2024; Subramaniam et al., 2023) and Safety Climate (Ariyadi Eko, 2022; Ningtyas, 2024). Therefore, the following hypotheses are proposed:

Hypothesis 6: Safety Knowledge positively and significantly mediates the relationship between Safety Leadership and Safety Behavior.

Hypothesis 7: Safety Climate positively and significantly mediates the relationship between Safety Leadership and Safety Behavior.

Conceptual Framework

Based on the theoretical foundation and empirical evidence discussed above, the conceptual framework of this study is presented in Figure 1.

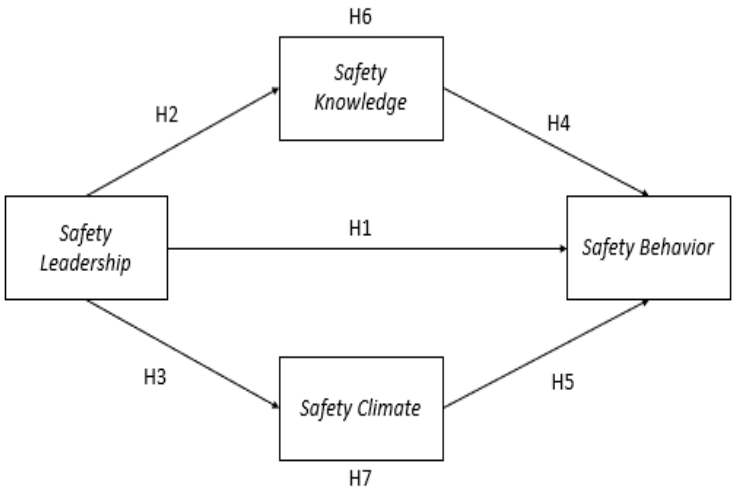


Figure 1. conceptual framework

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RESEARCH METHODS

This study employed a quantitative research design using a survey approach to examine the relationships among Safety Leadership, Safety Knowledge, Safety Climate, and Safety Behavior. Primary data were collected through a structured questionnaire distributed offline to employees of the production unit at PT. Putra Albasia Mandiri. The questionnaire was developed based on established measurement scales adopted from previous studies.

The study population comprised 245 contract employees who had worked in the production unit of PT. Putra Albasia Mandiri for more than one year. Employees with at least one year of service were selected because they were considered sufficiently familiar with the company's operational procedures, organisational culture, and workplace safety practices. Using the Slovin formula with a 5% margin of error, the minimum required sample size was 152 respondents. Participants were selected through simple random sampling to ensure that each eligible employee had an equal opportunity to participate.

The data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) with SmartPLS 4. The analysis was conducted in two stages. First, the measurement model was evaluated through indicator loadings, Average Variance Extracted (AVE), Composite Reliability, and Cronbach's alpha to assess validity and reliability. Second, the structural model was assessed using the coefficient of determination (R^2), model fit indices (SRMR, d_ULS, and d_G), and bootstrapping procedures to examine the significance of both direct and indirect relationships among the proposed constructs (Hair et al., 2022).

RESULT AND DISCUSSION

Respondent Characteristics

Total of 245 questionnaires were distributed to production employees at PT Putra Albasia Mandiri, and all questionnaires were returned and deemed suitable for analysis, resulting in a response rate of 100%. The complete response rate indicates that the dataset is representative of the production workforce and suitable for subsequent statistical analysis. To provide further context for the sample, the respondents' demographic characteristics, including gender, age, educational attainment, length of service, and occupational accident experience, are summarised in Table 1.

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Table 1. Respondent Characteristics

No	Respondent Characteristics	Category	Total	%
1	Gender	Women	131	53%
		Man	114	47%
	Total		**245**	**100%**
2	Age	16-25	33	13%
		26-36	85	35%
		37-45	91	37%
		46-55	36	15%
	Total		**245**	**100%**
3	Educational attainment	SMA	232	95%
		D3	6	2%
		S1	7	3%
	Total		**245**	**100%**
4	Length of service (year)	1 - 5	133	54%
		6 - 10	71	29%
		11 - 15	32	13%
		16 - 20	9	4%
	Total		**245**	**100%**
5	Occupational accident experience	0	111	45%
		1	68	28%
		2	33	13%
		3	25	10%
		4	7	3%
		5	1	0%
	Total		**245**	**100%**

Table 1 summarises the respondents' demographic characteristics. Female employees accounted for a slightly higher proportion of the sample than male employees. Most respondents were aged between 37 and 45 years, had completed senior secondary education, and had between one and five years of service. Furthermore, almost half of the respondents reported no previous occupational accident experience, although

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workplace accidents were still reported by the remaining respondents, indicating that occupational safety remains an important issue within the production unit.

Respondent Characteristics

The descriptive analysis indicates that all study variables were rated highly by respondents, with mean scores ranging from 3.54 to 3.58. Among the four constructs, Safety Behavior recorded the highest overall mean (M = 3.58), followed by Safety Leadership (M = 3.57), Safety Climate (M = 3.56), and Safety Knowledge (M = 3.54). These findings suggest that employees generally perceived safety management practices positively and demonstrated a high level of safety-related knowledge, perceptions, and Behavior within the production unit.

For Safety Leadership, the highest-rated indicator concerned supervisors handling safety issues honestly and fairly (M = 3.61), whereas the lowest mean related to emphasising compliance with standard operating procedures (M = 3.52). Although both indicators remained within the high category, the results suggest that greater emphasis on consistent adherence to safety procedures could further strengthen leadership effectiveness.

Within the Safety Knowledge construct, respondents reported the highest level of agreement regarding their ability to identify workplace hazards and appropriate preventive actions (M = 3.59). In contrast, understanding of standard operating procedures received the lowest mean score (M = 3.47), indicating that procedural knowledge could still be reinforced through continuous safety training and communication.

Regarding Safety Climate, employees expressed the strongest agreement that supervisors followed up reports of unsafe conditions (M = 3.65), reflecting positive managerial responsiveness towards workplace safety concerns. The lowest-rated item concerned consultation between supervisors and occupational health and safety personnel (M = 3.50), suggesting that closer collaboration may further enhance the organisational safety climate.

For Safety Behavior, the highest mean score was associated with following correct safety procedures during work (M = 3.65), while the lowest concerned the consistent use of all required personal protective equipment (M = 3.53). Although both indicators remained within the high category, the findings indicate opportunities to improve employees' consistency in using protective equipment during daily operations.

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Measurement Model (Outer Model)

Data were analysed using Structural Equation Modelling–Partial Least Squares (SEM-PLS). The analysis consisted of two stages: the measurement model (outer model) and the structural model (inner model). The initial step involved specifying the measurement model through the outer path model, which illustrates the relationships between the latent constructs and their respective indicators. The outer path model is presented in Figure 2.

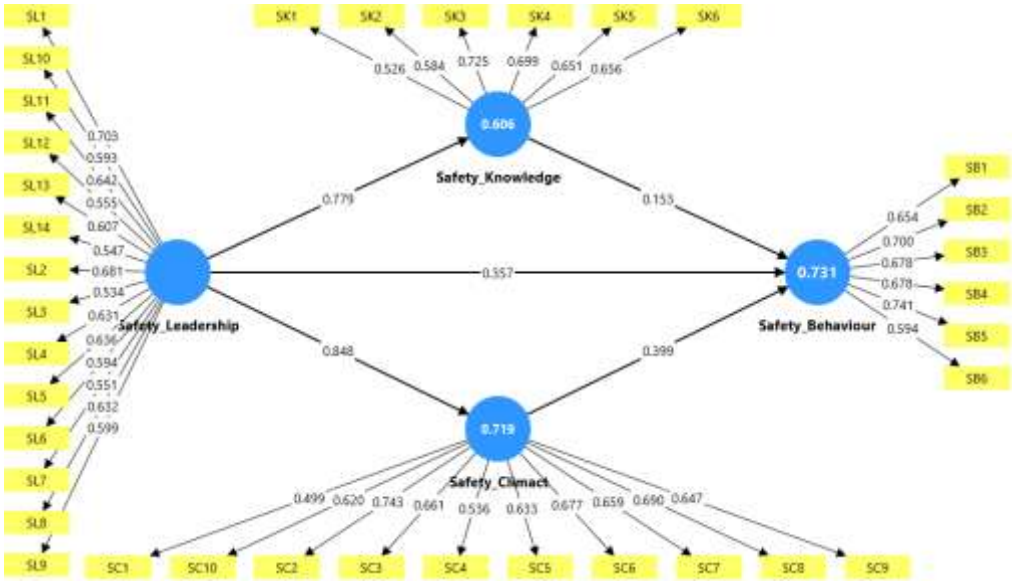


Figure 2 Path Model (outer model)

As shown in Figure 2, several indicators did not meet the recommended threshold for convergent validity, with outer loadings below 0.70. These indicators included SL3, SL5, SL6, SL7, SL8, SL9, SL10, SL12, SL13, SL14, SK1, SK2, SK5, SC1, SC3, SC4, SC5, SC9, SB4, and SB6. Consequently, these indicators were removed from the measurement model to improve construct validity. The convergent validity results after indicator elimination are presented in Table 2.

Table 2. Validity test – Outer Loading

Variable	Item	*Outer Loading*	Note
Safety Behavior (SB)	SB1	0.706	Valid
	SB2	0.710	Valid
	SB3	0.731	Valid
	SB5	0.782	Valid
	SC2	0.789	Valid

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Variable	Item	*Outer Loading*	Note
Safety Climate (SC)	SC6	0.749	Valid
	SC7	0.766	Valid
	SC8	0.708	Valid
Safety Knowledge (SK)	SK3	0.780	Valid
	SK4	0.730	Valid
	SK6	0.767	Valid
Safety Leadership (SL)	SL1	0.799	Valid
	SL2	0.721	Valid
	SL4	0.745	Valid
	SL11	0.715	Valid

Resource: PLS 4.0

Table 2 presents the convergent validity results after indicator purification. All retained indicators achieved outer loading values above the recommended threshold of 0.70, ranging from 0.706 to 0.799. These findings indicate that each indicator adequately represents its respective latent construct and satisfies the criterion for convergent validity. Following the assessment of convergent validity, discriminant validity was evaluated using the Fornell–Larcker criterion to determine whether each construct was empirically distinct from the other constructs in the model. The results of the discriminant validity assessment are presented in Table 3.

Table 3. Validity test – Fornell–Larcker criterion

Variabel	SB	SC	SK	SL
Safety Behavior	**0.733**			
Safety Climate	0.738	**0.754**		
Safety Knowledge	0.660	0.636	**0.759**	
Safety Leadership	0.696	0.693	0.647	**0.746**

Resource: PLS 4.0

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Table 3 presents the discriminant validity assessment based on the Fornell–Larcker criterion. The results indicate that the square root of the average variance extracted (AVE) for each construct exceeded its correlations with the other constructs. Specifically, the diagonal values for Safety Behavior (0.733), Safety Climate (0.754), Safety Knowledge (0.759), and Safety Leadership (0.746) were greater than the corresponding inter-construct correlations. Following the discriminant validity assessment, Average Variance Extracted (AVE) and reliability were evaluated to confirm the validity and internal consistency of the measurement model. The results are presented in Table 4.

Table 4. Reliability test

Variabel	*Composite reliability (rho_c)*	*Cronbach's alpha*	AVE
Safety Behavior	0.823	0.713	0.537
Safety Climate	0.840	0.747	0.568
Safety Knowledge	0.803	0.633	0.577
Safety Leadership	0.833	0.734	0.556

Resource: PLS 4.0

Table 4 indicates that all constructs demonstrated satisfactory reliability. Composite Reliability values ranged from 0.803 to 0.840, exceeding the recommended threshold of 0.70. Although the Cronbach's alpha value for Safety Knowledge (0.633) was slightly below 0.70, its Composite Reliability remained above the acceptable level. Therefore, all constructs were considered sufficiently reliable for subsequent structural model analysis (Hair et al., 2021).

Structural model (Inner Model)

The second stage involved assessing the structural model (inner model) to examine the relationships among the latent constructs. The assessment included the inner path model, R^2, model fit, and path coefficient analysis. The Path model (structural model is presented in Figure 3.

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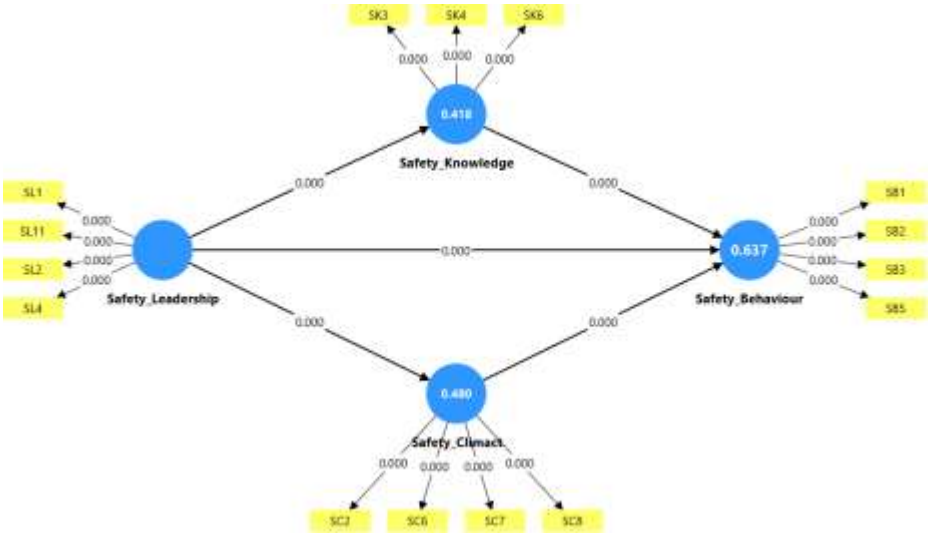


Figure 3. Path Model (inner model)

Figure 3 illustrates the structural model, showing the relationships among the latent constructs and their corresponding path coefficients. The values within the endogenous constructs represent the coefficient of determination (R^2), indicating the proportion of variance explained by the predictor constructs. The structural model was subsequently evaluated using R^2, model fit, and hypothesis testing. The results of the R^2 are presented in Table 5.

Table 5. Coefficient of determination (R^2)

Variable	*R-square*	*R-square adjusted*
Safety_Leadership	0.637	0.632
Safety_Climate	0.480	0.478
Safety_Knowledge	0.418	0.416

Table 5 shows that the adjusted R^2 values were 0.416 for Safety Knowledge, 0.478 for Safety Climate, and 0.632 for Safety Behavior. These results indicate that the proposed model explains 41.6%, 47.8%, and 63.2% of the variance in the respective endogenous constructs. The next step involved assessing the model fit, the results of which are presented in Table 6.

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Table 6. Goodness of fit

Model Fit	Estimated Value	95% CI	Recommended Criterion (Henseler et al., 2016)	1,5 x CI	Interpretation
SRMR	0,085	0,073	SRMR ≤ 0.08 → *Good fit*	-	*Marginal fit*
d_ULS	0,865	0,637	- *Estimated* ≤ CI → Fit - *Estimated* > CI < 1.5×CI → *Moderate Fit* - *Estimated* ≥ 1,5× CI → *Poor Fit*	0,956	*Moderate fit*
d_G	0,281	0,226	- *Estimated* ≤ CI → Fit - *Estimated* > CI < - 1.5×CI → *Moderate Fit* - *Estimated* ≥ 1,5× CI → *Poor Fit*	0.339	*Moderate fit*

Source: PLS 4.0

The model fit assessment indicates that the proposed model demonstrates an acceptable level of fit with the empirical data, as presented in Table 6. The SRMR value of 0.085 indicates a marginal fit, as it is only slightly above the recommended threshold of 0.08. Likewise, the d_ULS and dG values fall within the moderate fit range, suggesting that the structural model provides an adequate representation of the observed data. Having established an acceptable model fit, the next stage involves hypothesis testing through the evaluation of path coefficients, as presented in Table 7.

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Hypothesised Relationships	Original sample (O)	(|O/STDEV|)	P-values
Direct Effect			
SC -> SB	0.408	5.282	0.000
SK -> SB	0.230	3.735	0.000
SL -> SB	0.265	4.461	0.000
SL -> SC	0.693	17.801	0.000
SL-> SK	0.647	14.320	0.000
Indirect Effect			
SL -> SK -> SB	0.148	3.621	0.000
SL-> SC -> SB	0.283	4.927	0.000

Note: SL = Safety Leadership; SC= Safety Climate; SK= Safety Knowledge; SB= Safety Behavior

Source: PLS 4.0

The path coefficient results presented in Table 7 indicate that all hypothesised relationships were statistically significant, with t-values exceeding 1.96 and p-values below 0.05. Safety leadership had a significant positive effect on safety behavior (β = 0.265, t = 4.461), safety knowledge (β = 0.647, t = 14.320), and safety climate (β = 0.693, t = 17.801). In addition, both safety knowledge (β = 0.230, t = 3.735) and safety climate (β = 0.408, t = 5.282) exerted significant positive effects on safety behavior, supporting the proposed direct relationships within the structural model.

The mediation analysis further demonstrated that safety knowledge and safety climate significantly mediated the relationship between safety leadership and safety behavior. The indirect effect through safety knowledge was significant (β = 0.148, t = 3.621, p < 0.001), while the indirect effect through safety climate was stronger (β = 0.283, t = 4.927, p < 0.001). These findings confirm that effective safety leadership enhances safety behavior both directly and indirectly by strengthening employees' safety knowledge and fostering a positive safety climate.

DISCUSSION

The findings of this study demonstrate that Safety Leadership has a positive and significant effect on Safety Behavior among production employees at PT. Putra Albasia Mandiri. This finding suggests that supervisors who consistently provide guidance, demonstrate concern for employees' wellbeing, and enforce occupational safety

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procedures are able to encourage employees to comply with safety regulations and actively participate in workplace safety activities. Effective Safety Leadership therefore serves as an important managerial approach for fostering a safer working environment and promoting positive Safety Behavior.

This finding is reflected in employees' responses, which indicate that Safety Leadership within the production unit is perceived to be at a high level. Respondents particularly acknowledged that their supervisors handle safety-related issues honestly and fairly, suggesting that employees perceive management as being genuinely committed to workplace safety rather than merely complying with organisational requirements. Such leadership practices strengthen employees' confidence in management and encourage them to respond by behaving more safely during daily production activities. This interpretation is further supported by the reduction in workplace accidents recorded within the production unit between 2025 and April 2026.

These findings support the Social Exchange Theory proposed by Blau (1964), which explains that positive treatment received from leaders encourages employees to reciprocate through positive work-related behaviors. Within the context of occupational safety, employees who perceive consistent support and commitment from their supervisors are more likely to demonstrate higher levels of Safety Behavior as a form of reciprocal exchange. The present findings are also consistent with previous studies conducted by Elosta and Alzubi (2024), Piao and Hahn (2025), and Ariyadi Eko (2022), all of which concluded that Safety Leadership significantly enhances Safety Behavior.

The analysis further indicates that Safety Leadership positively and significantly influences Safety Knowledge among production employees at PT. Putra Albasia Mandiri. This finding demonstrates that supervisors who actively communicate safety expectations, provide coaching, and reinforce safe working procedures contribute substantially to improving employees' understanding of workplace safety. Consequently, Safety Leadership not only shapes employees' attitudes towards safety but also enhances their knowledge of safety protocols and safe working practices.

The respondents' evaluations suggest that Safety Leadership has been effectively implemented throughout the production unit. Supervisors are perceived not only as production managers but also as educators who continuously provide instruction regarding safe machine operation, the correct use of personal protective equipment, compliance with standard operating procedures, and the identification of workplace hazards. Such continuous guidance enables employees to better understand safety requirements and apply them during production activities. Given that manufacturing

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operations involve exposure to machinery, wood dust, noise, and other occupational hazards, adequate Safety Knowledge becomes essential for preventing operational errors and reducing workplace accidents. The declining accident records observed between 2025 and April 2026 further supports this interpretation.

These findings are consistent with the Social Exchange Theory, which suggests that employees tend to reciprocate organisational support by responding positively to opportunities for learning and development. When supervisors invest time and effort in providing safety education and coaching, employees reciprocate by acquiring and applying the Safety Knowledge required to perform their work safely. Similar findings have been reported by Piao and Hahn (2025), Elosta and Alzubi (2024), and Subramaniam et al. (2023), all of whom concluded that Safety Leadership plays a significant role in improving employees' Safety Knowledge.

The findings also reveal that Safety Leadership has a positive and significant influence on Safety Climate among production employees at PT. Putra Albasia Mandiri. This result indicates that leadership behaviors characterised by consistent communication, supervision, and commitment to occupational safety contribute directly to employees' perceptions of the organisational safety environment. When supervisors consistently prioritise safety in their daily interactions, employees are more likely to perceive that workplace safety represents a genuine organisational value.

Employees generally perceived Safety Leadership to be highly effective, indicating that supervisors consistently remind employees to comply with safety procedures and firmly enforce occupational health and safety regulations. Such leadership behaviors reinforce employees' confidence that management is committed to protecting their wellbeing rather than merely fulfilling regulatory obligations. As a result, employees develop a stronger Safety Climate, whereby safety becomes a shared organisational priority. This interpretation is further supported by the declining number of workplace accidents experienced within the production unit during the observation period.

These findings are in accordance with the Social Exchange Theory, which proposes that supportive leadership encourages employees to develop positive perceptions of their organisation. Leaders who consistently demonstrate concern for employees' safety foster reciprocal trust, resulting in a stronger Safety Climate throughout the workplace. The present findings are consistent with those reported by Zhao et al. (2022), Ningtyas (2024), and Ariyadi Eko (2022), who likewise found that Safety Leadership positively influences Safety Climate.

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CONCLUSION

This study examined the influence of Safety Leadership on Safety Behavior, with Safety Knowledge and Safety Climate acting as mediating variables among production employees at PT. Putra Albasia Mandiri. The findings demonstrate that Safety Leadership has a positive and significant effect on Safety Behavior, Safety Knowledge, and Safety Climate. In addition, both Safety Knowledge and Safety Climate positively and significantly influence Safety Behavior. The mediation analysis further confirms that Safety Knowledge and Safety Climate significantly mediate the relationship between Safety Leadership and Safety Behavior, indicating that effective leadership enhances employees' safe work practices by improving their safety-related knowledge and fostering a positive organisational safety climate.

These findings highlight the importance of strengthening Safety Leadership within manufacturing organisations to improve workplace safety performance. Managers and supervisors should consistently reinforce safe working practices through effective safety coaching, clear communication, continuous training, and active support for safety initiatives. Future research is encouraged to include broader industrial sectors, larger sample sizes, and additional variables, such as safety motivation, safety culture, or work engagement, to provide a more comprehensive understanding of factors influencing Safety Behavior. Longitudinal or mixed-methods research designs may also provide deeper insights into changes in workplace safety over time.

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