

SAFETY LEADERSHIP BEHAVIOR AS A MODERATOR OF THE EFFECT OF SAFETY CLIMATE AND SAFETY BEHAVIOR ON SAFETY PERFORMANCE IN THE PALM OIL PROCESSING INDUSTRY IN INDRAGIRI HULU REGENCY, RIAU PROVINCE***Rival Lino, Budiyanto and Agustedi**

Sekolah Tinggi Ilmu Ekonomi Indonesia, Surabaya, Indonesia

Received 16th July 2025; Accepted 18th August 2025; Published online 19th September 2025

Abstract

This study aims to investigate the role of safety leadership behavior in moderating the influence of safety climate and safety behavior on safety performance in the palm oil processing industry in Indragiri Hulu Regency, Riau Province. The sample consisted of 329 unit leaders from palm oil processing companies. Data were processed using Smart PLS. The results show that safety climate has a significant effect on safety performance, while safety behavior does not have a significant effect on safety performance. Safety leadership behavior moderates the influence of safety climate on safety performance but does not moderate the effect of safety behavior on safety performance. This study reinforces the followership theory through the safety climate variable, which is capable of improving safety performance.

Keywords: Safety Performance, Safety Leadership Behavior, Safety Climate, Safety Behavior and Followership Theory.

INTRODUCTION

Workers or employees in a company or industry are the driving force that determines whether the industry will develop or not. This study focuses on the palm oil processing industry producing Crude Palm Oil (CPO) in Indragiri Hulu Regency, Riau Province. The justification for this focus is that Indonesia is the largest CPO producer in the world, and Riau Province is the biggest producer within Indonesia. As an industrial activity, various workplace hazards can occur and affect the safety and health of workers. To minimize negative impacts, proper and effective workplace environment management is necessary. The goal of managing the work environment is for workers and companies to anticipate, identify, evaluate, and control hazard factors that may cause health disturbances, occupational safety issues, discomfort, or reduced work productivity. According to Suma'mur (1996:58), Occupational Safety and Health (OSH) is a series of activities to create a comfortable and peaceful work atmosphere for employees in the relevant industry. Safety refers to protection for workers to prevent injuries caused by workplace accidents. Health means workers are free from physical or mental illnesses related to their job. Work is a dynamic activity involving mental and physical processes aimed at achieving productive goals (Candrianto, 2020). Based on reports from the Social Security Administration Agency (BPJS Ketenagakerjaan), workplace accidents in Indonesia have increased. BPJS reported that in the last five years, from 2019 to 2024, cases of workplace accidents have risen, which forms the basis for researching safety performance. Several studies have stated that safety climate affects safety performance, as noted by Aghaei *et al.* (2020), Asad *et al.* (2021), Chen *et al.* (2017), Prinasti and Fajrianthi (2018), Jusoh and Panatik (2016), Kundu *et al.* (2016), Manapragada (2018), Nadhim (2018), Putra *et al.* (2022), Sukamani *et al.* (2021), Wu *et al.* (2008, 2011), Tayaparan (2018), Kiyani *et al.* (2019), Abeje and Luo (2023), and Froko *et al.* (2015).

However, Shaheen *et al.* (2014), Glendon and Litherland (2001), and Gathmyr (2017) argued that safety climate does not affect safety performance. Other studies have found that safety leadership influences safety performance, such as research by Atkasari *et al.* (2022), Romuty *et al.* (2017), Skeepersa Mbohwa (2015), Supardi *et al.* (2021), Wu *et al.* (2008, 2011), Rusdiana (2020), and Agustina *et al.* (2019). To date, no study has reported that safety leadership has no effect on safety performance. This study is expected to contribute to followership theory. Generally, followership is the capacity and ability of employees to behave in certain ways with the aim of actively participating in achieving shared goals or outcomes. The success of an organization depends not only on dynamic leaders but also on followers who contribute to improving the welfare of employees and the organization.

LITERATURE REVIEW**Followership Theory**

Followership theory, hereinafter referred to as followership, is a concept related to leadership introduced by Robert Kelley in his book *In Praise of Followers*, published in 1988. Kelley (1992) defines followership as the capacity and ability to behave in certain ways with the purpose of actively participating in achieving shared goals or outcomes. Kelley (1992) states that leaders contribute no more than 20% to the success of most organizations, while followers play a crucial role in 80% of organizational success. The main point in Kelley's theory is that organizational success does not solely depend on dynamic leaders but also on followers who contribute significantly to improving the welfare of employees and the organization.

The Effect of Safety Climate on Safety Performance

In principle, safety climate refers to the employees' perception of events, practices, procedures, and behaviors that are valued, supported, and expected in the work environment of a

company, so that they feel safe while working. When the safety climate is high, work can be carried out well, resulting in reduced safety incidents and increased work productivity. This statement aligns with Skeepers and Mbohwa (2015), who define safety performance as the quality of work related to safety, including organizational and management safety, safety equipment, occupational accident statistics, safety training, evaluations, and accident investigations. In a company, management that prioritizes workplace safety indicates a positive safety climate. This is reflected in fair implementation of safety efforts. Employees with commitment and active communication with colleagues and supervisors are well-managed alongside the safety system. The implementation of policies, procedures, and practices creates a positive safety climate, which acts as a stimulus and forms a positive attitude perceived by employees toward workplace safety. This positive attitude is shown by compliance with applicable policies and rules, as well as contributions to promoting workplace safety. Based on the above, it can be assumed that a positive safety climate will enhance employees' safety performance.

Several studies have shown that safety climate influences safety performance, such as those by Aghaei *et al.* (2020), Asad *et al.* (2021), Chen *et al.* (2017), Prinasti and Fajrianti (2018), Jusoh and Panatik (2016), Kundu *et al.* (2016), Manapragada (2018), Nadhim (2018), Putra *et al.* (2022), Sukamani *et al.* (2021), Wu *et al.* (2008), Wu *et al.* (2011), Tayaparan (2018), Kiyani *et al.* (2019), Abeje and Luo (2023), and Froko *et al.* (2015). Meanwhile, Shaheen *et al.* (2014) and Gathmyr (2017) reported that safety climate does not affect safety performance. Based on these conditions, the researcher proposes the hypothesis:

H1: Safety climate has a positive and significant effect on safety performance in the palm oil processing industry in Indragiri Hulu Regency, Riau Province.

The effect of safety behavior on safety performance

The relationship of individuals' efforts to reduce or prevent disasters is known as safety behavior. Safety behavior is closely related to unsafe acts because each worker's perception of what constitutes a safe or unsafe action can vary, resulting in different habitual behaviors among workers. Unsafe acts are all actions performed by workers that can endanger themselves, others, or the surrounding environment.

According to Dessler (2005), the primary causes of accidents are unsafe conditions and unsafe behaviors. Unsafe conditions refer to physical or mechanical states that can cause accidents, such as unsecured or damaged equipment and dangerous procedures within an organization. Unsafe behavior, on the other hand, arises from human negligence, such as not using personal protective equipment, careless disposal of objects, or using unsafe tools. Heinrich (2004), in his domino theory, states that 88% of workplace accidents are caused by unsafe behavior by employees. Moreover, unsafe behavior often results from a lack of safety training, understanding, and implementation of safety procedures. Conversely, when employees demonstrate good safety behavior, the rate of workplace accidents decreases. In other words, good safety behavior positively impacts safety performance. Erickson (2000) emphasizes that organizational improvements, especially in safety responsibility, accountability,

communication, management behavior, employee involvement, and employee responses, can enhance safety performance. Vredenburg (2002) states that safety behavior is often associated with quality performance, suggesting that improved safety behavior may increase productivity. Garavan and O'Brien (2001) found that unsafe acts are the main cause of workplace injuries and accidents. Improving safety behavior reduces the frequency of work-related injuries and accidents. Similarly, Nusantara and Rusdianti (2017) assert that safety behavior is linked to performance quality and can boost productivity. Unsafe behavior is the primary cause of workplace accidents and injuries, while enhanced safety behavior reduces accident frequency. Studies by Asamani (2020), Atkasari *et al.* (2022), and Supardi *et al.* (2021) also conclude that safety behavior positively affects safety performance. Therefore, it can be concluded that employees who exhibit safe work behaviors contribute to better safety performance in their companies. To date, no studies have been found that claim safety behavior has no effect on safety performance. Based on these facts, the researcher proposes the following hypothesis:

H2: Safety behavior has a positive and significant effect on safety performance in the palm oil processing industry in Indragiri Hulu Regency, Riau Province.

The moderating role of safety leadership behavior on the effect of safety climate on safety performance

Safety leadership behavior is broadly defined as a process through which leaders influence and motivate employees to achieve safety goals (Griffin and Hu, 2013; Lu and Yang, 2010). Over the past three decades, research on safety leadership has been conducted from various perspectives to highlight its impact on workplace safety outcomes/performance (Jiang *et al.*, 2024). Effective or constructive leadership styles that prioritize safety issues have been identified as key factors contributing to the achievement of organizational safety goals (Hofmann *et al.*, 2003). Different leadership styles (e.g., transformational safety leadership and relationship-oriented leadership) have been reported to promote safety climate, safety awareness, safety compliance, and safety participation, while reducing workplace injuries and unsafe incidents (Barling *et al.*, 2002; Clarke, 2013; Griffin and Hu, 2013; Hofmann and Morgeson, 1999; Michael *et al.*, 2006; Muldoon *et al.*, 2012; Mullen and Kelloway, 2009). Conversely, dysfunctional leadership (e.g., destructive and passive leadership) impedes organizations from achieving these safety outcomes (Kelloway *et al.*, 2006; Mullen *et al.*, 2011; Nielsen *et al.*, 2016). Thus, it can be stated that leadership that supports safety is crucial, whereas leadership that neglects safety is detrimental to building a sustainable safety culture within a company. Therefore, understanding the fundamental and dynamic nature of safety leadership, as well as the emergence, development, and influence of safety leadership on company productivity, is essential. Latief *et al.* (2017) stated that safety leadership is far more important than policy because leaders' actions or decisions clearly communicate safety messages within the organization and facilitate safety-related decision-making. Skeepers and Mbohwa (2015) noted that organizations successful in managing employee safety performance tend to have leaders who effectively influence employee behavior through applied leadership behaviors. This aligns with findings from Satoto (2020), Lund and Wahab (2017), who stated that safety

leadership has a significant positive direct impact on employee safety performance. Similarly, Gunawan (2013), Fernandez-Muniz (2014), and Kapp (2012) found that safety leadership can set an example for employees to work diligently, efficiently, and responsibly to improve safety performance. Subordinates tend to follow the leader's behavior, guidance, and motivation, which prioritize workplace safety to demonstrate safety performance in their work. Lu and Yang (2008) said that when leaders emphasize safety, it sets behavioral standards, motivates employees, and highlights the importance of safety equipment and procedures.

Until now, researchers have not found studies indicating that safety leadership moderates the effect of safety climate on safety performance. However, studies by Ariyadi and Claudia (2022) and Wu *et al.* (2008, 2011) showed that safety climate acts as a mediator influencing safety leadership's effect on safety performance. Based on this empirical review, the researcher proposes the hypothesis:

H3: Safety leadership behavior moderates the effect of safety climate on safety performance in the palm oil processing industry in Indragiri Hulu Regency, Riau Province.

The moderating role of safety leadership behavior on the effect of safety behavior on safety performance

Essentially, individuals who exhibit safety behavior comply with safety rules and procedures and actively participate in providing input to improve organizational safety. Behavior refers to anything an individual does (Osman *et al.*, 2015). Individuals prioritizing safety behavior influence organizational safety performance, thereby creating a safe and healthy work environment. Safety behavior can be defined as employees working with a sense of security and comfort while adhering to company rules and Standard Operating Procedures (SOPs) to prevent workplace accidents. According to Lu and Yang (2011), individuals with safety behavior follow safety rules and procedures and contribute to improving organizational safety. Individual safety behavior impacts organizational safety performance and fosters a safe working environment. Safety behavior encompasses compliance, coaching, recognition, communication, and actions largely influenced by daily culture and practices. This is supported by Ooshaksaraie and Azadehdel (2014), who found that employees actively engaged in daily safety activities achieve better safety performance at work. Leadership behavior factors have been extensively studied in various industries like air traffic, nuclear energy, and manufacturing. However, there is limited research analyzing leadership behavior combined with safety performance. Khdair *et al.* (2011) state that the relationship between leaders and safety performance is crucial, as it affects company performance. Numerous studies reveal that workplace accidents often result from low safety behavior among employees, making research on safety behavior important and ongoing. Safety performance is viewed as an organizational effort to reduce accidents, injuries, and fatalities (Abuashour and Hassan, 2019).

Until now, no studies have found that safety leadership acts as a moderator affecting the relationship between safety behavior and safety performance. Some findings, like Supardi *et al.* (2021), state that safety behavior mediates the effect of safety leadership on safety performance; whereas Atikasari *et al.* (2022) find that safety behavior does not act as a

mediator. Based on this empirical review, the researcher proposes the following hypothesis:

H4: Safety leadership behavior moderates the effect of safety behavior on safety performance in the palm oil processing industry in Indragiri Hulu Regency, Riau Province.

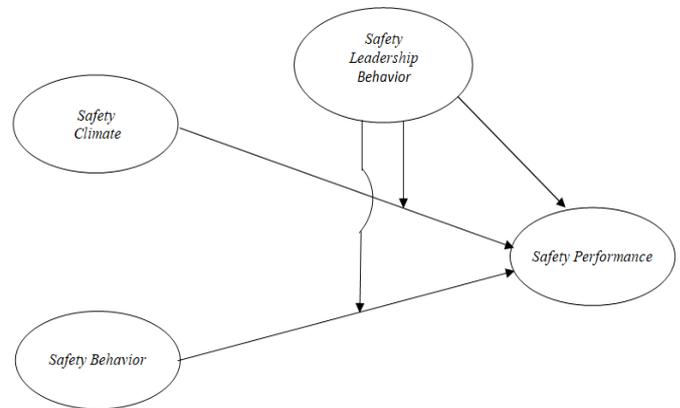


Figure 1. Conceptual Framework

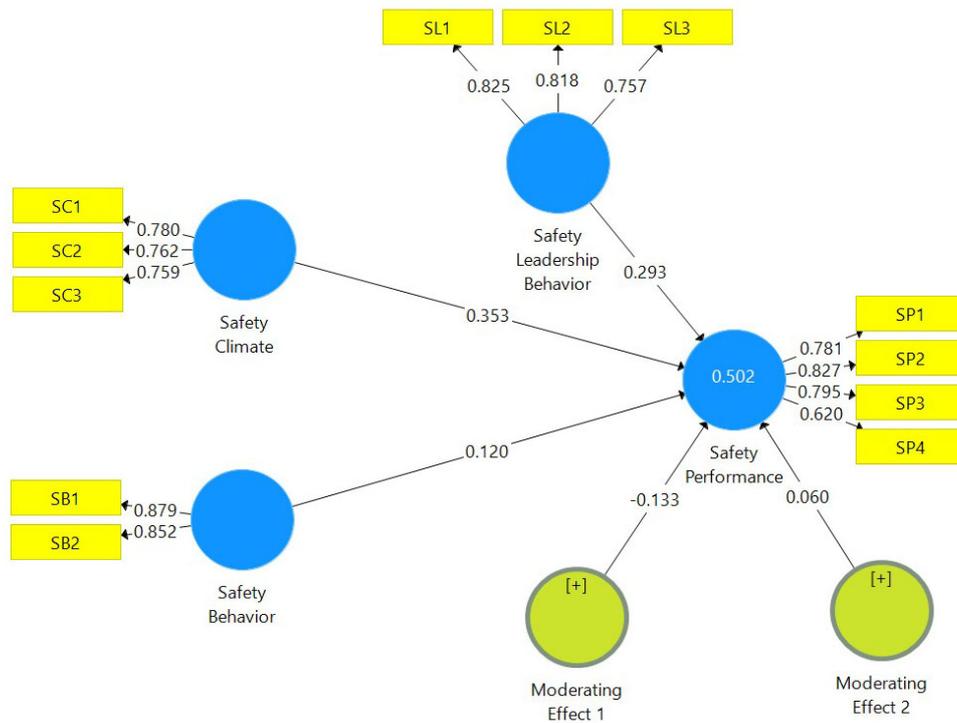
METHODS

This study uses a quantitative method aimed at examining the relationships between safety performance, safety climate, safety behavior, and safety leadership behavior in palm oil processing companies in Indragiri Hulu Regency, Riau Province, Indonesia. The sample consists of 329 unit leaders from various divisions, including administration/operations, loading ramp, processing, laboratory, engineering and maintenance, as well as occupational health and safety (K3) and environmental divisions, selected using a saturated sampling method. Data were analyzed using SmartPLS. The measurement indicators for safety performance refer to Wu *et al.* (2011), which include: safety inspection, accident investigation, safety training, and safety motivation. Safety climate measurement also follows Wu *et al.* (2011) with indicators such as commitment to safety, perceived risk, and emergency response. Safety behavior measurement refers to Lu and Yang *et al.* (2010), with indicators: safety compliance and safety participation. Safety leadership behavior measurement uses Wu *et al.* (2011) indicators, namely safety coaching, safety caring, and safety controlling.

RESULTS AND DISCUSSION

The descriptive results of the variables show that the respondents are generally male, with the majority aged between 20 and 30 years old, and most have a high school education or equivalent. Safety performance is perceived by respondents as high, with the highest indicator being safety inspection and the lowest indicator being safety motivation. Safety climate is also perceived as high, with the highest indicator being commitment to safety and the lowest indicator being emergency response. Safety behavior is perceived as high, with safety compliance as the highest indicator and safety participation as the lowest. Safety leadership behavior is perceived as high, with safety coaching as the highest indicator and safety controlling as the lowest.

The following is the path diagram result of the research model:



Source: SmartPLS 3.0

Figure 2. Research Path Model

Measurement Model Analysis (Outer Model)

Convergent validity test

The results of the convergent validity test from the data in this study are presented in Table 1:

Table 1. Loading Factor

Variable/Indicator	Factor Loading
Safety Behavior (SB)	
Safety Compliance (SB1)	0.879
Safety Partisipation (B2)	0.852
Safety Climate (SC)	
Commitment to Safety (SC1)	0.780
Perceived Risk (SC2)	0.762
Emergency Respon (SC3)	0.759
Safety Leadership Behavior (SL)	
Safety Coaching (SL1)	0.825
Safety Caring (SL2)	0.818
Safety Controlling (SL3)	0.757
Safety Performance (SP)	
Safety Inspection (SP1)	0.781
Accident Investigation (SP2)	0.827
Safety Training (SP3)	0.795
Safety Motivation (SP4)	0.620

Sources: SmarPLS 3.3 Programs

Based on the results of the convergent validity test in Table 1, if the factor loading value is less than 0.5, it must be removed from the model and the factor loading values must be re-estimated. By removing several factor loadings below 0.5, all remaining indicators used for further analysis are considered to meet convergent validity if all factor loadings are greater than 0.5. Since all factor loadings in this study are above 0.5, it means that all indicators are valid in forming the construct variables.

Discriminant Validity Test

The results of the discriminant validity test from the research data are presented in Table 2:

From Table 3 above, the model has good discriminant validity if each indicator’s loading value on its latent variable is greater than on other correlated variables. The cross-loading values in this study for each indicator are higher compared to other latent variables. This indicates that each variable has good discriminant validity.

Table 2. Discriminant Validity

	Moderating Effect 1	Moderating Effect 2	Safety Behavior	Safety Climate	Safety Leadership Behavior	Safety Perform-mance
SB1	-0.130	-0.247	0.879	0.470	0.444	0.474
SB2	-0.165	-0.193	0.852	0.551	0.545	0.432
SC1	-0.233	-0.245	0.491	0.780	0.534	0.503
SC2	-0.153	-0.164	0.403	0.762	0.435	0.462
SC3	-0.212	-0.213	0.453	0.759	0.505	0.500
SL1	-0.173	-0.172	0.489	0.532	0.825	0.498
SL2	-0.225	-0.165	0.442	0.499	0.818	0.509
SL3	-0.155	-0.172	0.434	0.514	0.757	0.446
SP1	-0.157	-0.254	0.442	0.506	0.499	0.781
SP2	-0.163	-0.232	0.459	0.563	0.546	0.827
SP3	-0.165	-0.241	0.409	0.489	0.464	0.795
SP4	-0.165	-0.228	0.238	0.346	0.282	0.620
Safety Behavior * Safety Leadership Behavior	1.000	0.618	-0.170	-0.262	-0.232	-0.210
Safety Climate * Safety Leadership Behavior	0.618	1.000	-0.255	-0.272	-0.211	-0.311

Sources: SmarPLS 3.3 Programs

Construct Reliability Test

Average Variance Extracted (AVE) has a value > 0.5 and Composite Reliability (CR) has a value > 0.7 , which means the constructed constructs are good or reliable (Hair *et al.*, 2019). Below is the Construct Reliability table:

Table3. Construct Reliability

	Composite Reliability	Average Variance Extracted (AVE)
<i>Safety Behavior</i>	0,857	0.750
<i>Safety Climate</i>	0,811	0.588
<i>Safety Leadership_Behavior</i>	0,842	0.641
<i>Safety Performance</i>	0,844	0.578

Sources: SmarPLS 3.3 Programs

Measurement Model Analysis (Inner Model) Coefficient of Determination (R²)

The R-Square values in this study are presented in Table 3 below:

Table 4. R-Square

Variabel	R Square
Safety climate	-
Safety behavior	-
Safety Performance	0,502

Sources: SmarPLS 3.3 Programs

The R² values of 0.67, 0.33, and 0.19 indicate that the model is classified as “good,” “moderate,” and “weak” respectively (Hair *et al.*, 2019). Based on Table 3, the Adjusted R-Square value for the job performance variable is 0.502, meaning that the percentage of the influence of safety climate, safety behavior, and safety leadership behavior on safety performance is 50.2%, and the model is categorized as moderate.

Hypothesis Analytics

The hypothesis testing results are presented in Table 5 below:

Table 5. Hypothesis Testing Results

Hypothesis	Original Sample (O)	T Statistics ((O/STDEV))	P Values	Description
Safety Climate -> Safety Performance	0.353	5.408	0.000	Hipotesis accepted
Safety Behavior -> Safety Performance	0.120	1.745	0.082	Hypothesis rejected
Moderating Effect 1 -> Safety Performance	-0.133	2.303	0.022	Hipotesis accepted
Moderating Effect 2 -> Safety Performance	0.060	0.970	0.332	Hypothesis rejected

Sources: SmarPLS 3.3 Programs

Hipotesis pertama yang berbunyi safety climate berpengaruh terhadap safety The hypothesis regarding safety climate's effect on safety performance is accepted because the p-value is less than 0.05 and the t-statistic is greater than 1.96, indicating that safety climate influences the improvement of safety performance. This finding is consistent with studies by Aghaei *et al.* (2020), Asad *et al.* (2021), Chen *et al.* (2017), Prinasti and Fajrianti (2018), Jusoh and Panatik (2016), Kundu *et al.* (2016), Manapragada (2018), Nadhim (2018), Putra *et al.* (2022), Sukamani *et al.* (2021), Wu *et al.* (2008), Wu *et al.* (2011), Tayaparan (2018), Kiyani *et al.* (2019), Abeje and Luo (2023), and Froko *et al.* (2015).

The second hypothesis stating that safety behavior influences safety performance is rejected because the p-value is greater than 0.05 and the t-statistic is less than 1.96. This means that

safety behavior does not significantly improve safety performance. This result aligns with the studies by Derman (2025); Aisyah and Yudianto (2024); Sugma (2022); Daud *et al.* (2021).

The third hypothesis stating that safety leadership behavior moderates the effect of safety climate on safety performance is accepted because the p-value is less than 0.05 and the t-statistic is greater than 1.96. This means safety leadership behavior partially mediates the influence of safety climate on safety performance.

The fourth hypothesis stating that safety leadership behavior moderates the effect of safety behavior on safety performance is rejected because the p-value is greater than 0.05 and the t-statistic is less than 1.96. This means safety leadership behavior does not moderate the influence of safety behavior on safety performance.

Conclusion

The results of the study show that Safety Climate has a positive and significant effect on Safety Performance, while Safety Behavior does not show a significant effect on Safety Performance. Additionally, Safety Leadership Behavior acts as a moderator that strengthens the influence of Safety Climate on Safety Performance, but does not moderate the relationship between Safety Behavior and Safety Performance. These findings align with Followership theory, which emphasizes the importance of the roles of leaders and followers in shaping workplace culture and behavior. Effective safety leadership can enhance awareness and commitment to safety, so a good safety climate can positively impact safety performance. However, without the involvement and support of followers, individual safety behavior alone is not sufficient to significantly improve safety performance. Overall, this study concludes that to achieve optimal safety performance in the palm oil processing industry, there needs to be synergy between a conducive safety climate and strong safety leadership, in line with the principles of Followership theory.

Acknowledgements

Thanks are extended to the management of the palm oil processing company in Indragiri Hulu Regency, Riau Province, who have kindly agreed to be the subject of this research.

REFERENCES

- Aghaei.H, Z.S. Asadi, M.M. Aliabadi. 2020. The Relationships Among Occupational Safety Climate, Patient Safety Climate, and Safety Performance Based on Structural Equation Modeling. *J Prev Med Public Health*; 53:447-454.
- Abbasi, M. *et al.* (2015) 'Evaluation of workers unsafe behaviors using safety sampling method in an industrial

- Company', *Indian Journal of Science and Technology*, 8(28), pp. 1–6. doi: 10.17485/ijst/2015/v8i28/84816.
- Ahammad, T. (2015) 'Safety Management in the Business-Industry', *Journal of Academic Reviews*, 1(1), pp. 41–53.
- Ajmal, M. A., Isha, A. and Nordin, S. (2021) 'Safety Management Practices and Occupational Health and Safety Performance: An Empirical Review', *Jinnah Business Review*, 9(2), pp. 15–33. doi: 10.53369/dtoc3606.
- Alberto, P. A. and Troutman, A. C. (2013) Applied behavior analysis procedures for teachers. Troutman, A. C.: Prentice Hall.
- Armstrong M., 2001. 'A Handbook of Human Resource Management Practice', *Work Study*, 50 (4): 982, doi: 10.1108/ws.2001.07950dae.003.
- Asamani, L. (2020) 'Promote Safety Culture and Enhance Safety Performance through Safety Behaviour', *European Journal of Business and Management Research*, 5(4), pp. 1–11. doi: 10.24018/ejbmr.2020.5.4.405.
- Askew, W. *et al.* (2016) Safety Management Systems Handbook, Risk-based, Management-led, Audit-driven, Safety Management Systems. Canada: ACI World Safety and Technical Standing Committee. doi: 10.1201/9781315394220-3.
- Barling, J., Loughlin, C., Kelloway, E.K., 2002. Development and test of a model linking safety-specific transformational leadership and occupational safety. *Journal of Applied Psychology* 87 (3), 488–496.
- Brand, L. M. (2010). Exploring a model of psychological fitness for work: are individual difference variables relevant in a model of safety performance? (Doctoral dissertation, James Cook University).
- Çakıt, E. *et al.* (2019) 'Assessment of the perceived safety culture in the petrochemical industry in Japan: A cross-sectional study', *PLoS ONE*, 14(12), pp. 1–18. doi: 10.1371/journal.pone.0226416.
- Clarke, S. 2012. 'Safety leadership: A meta-analytic review of transformational and transactional leadership styles as antecedents of safety behaviors', *J. Occup. Organ. Psychol.*, 86 (1): 22–49, Mar. 2013, doi: 10.1111/j.2044-8325.2012.02064.x.
- Grill, M. *et al.* (2017) 'Safety leadership at construction sites: The importance of rule-oriented and participative leadership', *Scandinavian Journal of Work, Environment and Health*, 43(4), pp. 375–384. doi: 10.5271/sjweh.3650.
- Hilgers, R.-D., Heussen, N. and Stanzel, S. (2018) 'Statistik, deskriptive', in *Lexikon der Medizinischen Laboratoriumsdiagnostik*. doi: 10.1007/978-3-662-49054-9_2900-1.
- Clarke, S. 2006. The Relationship between Safety Climate and Safety Performance: A Meta-analytic Review. *Journal of Occupational Health Psychology*, 11(4), 315–327.
- Cooper, M. D., dan R.A. Phillips. 2004. Exploratory Analysis of the Safety Climate and Safety Behavior Relationship. *Journal of Safety Research*, 35(5), 497-512. <https://doi.org/10.1016/j.jsr.2004.08.004>.
- Chen, W. T., C. W. Weng., S. T. Tu, dan N. H. Pan. 2018. The Impact of safety culture on Safety performance-A Case Study of Taiwan's Construction Industry. *The International Journal of Organizational Innovation* 11(1): 1- 15.
- Clarke, S. dan K. Ward. 2006. The Role of Leader Influence Tactics and Safety Climate in Engaging Employees' Safety Participation. *Risk Analysis*, 26(5): 1175-1185.
- Curcuruto, M., Conchie, S. M., Mariani, M. G., dan Violante, F. S. 2015. The role of prosocial and proactive safety behaviours in predicting safety performance. *Safety Science*, 80, 317–323. <https://doi.org/10.1016/j.ssci.2015.07.032>
- Dov, Z. 2008. Safety Climate and Beyond: A Multi-level Multi-climate Framework. *Safety Science*, 46(3), 376–387.
- Cooper, D. 'Effective safety leadership: Understanding types & styles that improve safety performance', *Prof. Saf.*, 60 (2): 49–53, 2015, [Online]. Available: http://www.behavioral-safety.com/articles/effective_leadership-cooper_0215.pdf.
- DeJoy, D.M., 1994. Managing safety in the workplace. An attribution theory analysis and model. *Journal of Safety Research* 25, 3–17.
- Fernández, M. B., J. M. Montes-Peón, dan C. J. Vázquez-Ordás. 2009. Relation Between Occupational Safety management And Firm Performance. *Safety Science* 47(7): 980-991.
- Flin, R., K. Mearns, P. O'Connor, dan R. Bryden. 2000. Measuring Safety Climate: Identifying the Common Features. *Safety Science*, 34(1-3), 177–192.
- Geller, S. E. 2016. *The Psychology of Safety Handbook*. Boca Raton : Lewis Publishers.
- Green, L. 2000. *Communication and Human Behaviour*. New Jersey: Prentice Hall.
- Grill, M., A. Pousette, K. Nielsen, R. Grytnes, dan M. Törner. 2017. Safety Leadership at Construction Sites: The Importance of Rule-Oriented and Participative Leadership, *Scandinavian Journal of Work, Environment and Health* 43 (4): 375–84.
- Griffin, M. A. dan A. Neal. 2000. Perceptions of safety at work: a framework for linking safety climate to safety performance, knowledge and motivation. *Journal of Occupational Health Psychology* 5 (3): 347-358.
- Grill, M. *et al.* (2017) 'Safety leadership at construction sites: The importance of rule-oriented and participative leadership', *Scandinavian Journal of Work, Environment and Health*, 43(4), pp. 375–384. doi: 10.5271/sjweh.3650.
- Guldenmund, F.W.; Guldenmund, F.W. *Understanding and Exploring Safety Culture*; BOXPRESS: Washington, DC, USA, 2010; ISBN 978-90-8891-138-5.
- Hilgers, R.-D., Heussen, N. and Stanzel, S. (2018) 'Statistik, deskriptive', in *Lexikon der Medizinischen Laboratoriumsdiagnostik*. doi: 10.1007/978-3-662-49054-9_2900-1.
- Hofmann, D. A., F.P. Morgeson, dan S.J. Gerras. 2003. Climate as a Moderator of the Relationship between LMX and Content-specific Citizenship Behavior: Safety Climate as an Exemplar. *Journal of Applied Psychology*, 88(1), 170–178. DOI:10.1037/0021-9010.88.1.170.
- Hofmann, D. A., dan A. Stetzer. 1996. A Cross-level Investigation of Factors Influencing Unsafe Behaviors and Accidents. *Personnel Psychology*, 49(2), 307–339.
- Hofmann, D. A., F.P. Morgeson, dan S.J. Gerras. 2003. Climate as a Moderator of the Relationship between LMX and Content-specific Citizenship Behavior: Safety Climate as an Exemplar. *Journal of Applied Psychology*, 88(1), 170–178. DOI:10.1037/0021-9010.88.1.170.
- Hogan, J., dan J. Foster. (2013). Multifaceted personality predictors of workplace safety performance: More than conscientiousness. *Human Performance*, 26(1), 20-43.
- Hair, J. F., G. T. M. Hult, C. M. Ringle, dan M. Sarstedt. 2017. *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Sage: Thousand Oaks.
- Huang, Y.H., G. S. Smith, M. Ho, dan P.Y. Chen. 2006. The relationship between safety climate and injury rates across

- industries: The need to adjust for injury hazards. *Accident Analysis and Prevention* 38(3): 556–562.
- Hsiang, C.Y. 2011. Safety culture, Safety behavior and Safety performance in Railway companies. *Word Congress Railway Research*, 22-26 May 2011: 1- 21.
- Joubert, C. G., dan J.A. Feldman. 2017. The effect of leadership behaviours on followers' experiences and expectations in a safety-critical industry. *South African Journal of Economic and Management Sciences* 20(1): 1- 11.
- Kapp, A., M.J. Smith, T.W. Loushine, dan P. Hoonakker. 2003. Safety and quality management systems in construction: Some insight from contractors. *Journal of Management and Engineering*, 13(5): 70–75
- Kim, T. E. dan A. H. Gausdal. 2017. Leading for safety: A weighted safety leadership model in shipping. *Reliability Engineering and System Safety* 165: 458–466.
- Leaver, M. P. and Reader, T. W. (2019) 'Safety Culture in Financial Trading: An Analysis of Trading Misconduct Investigations', *Journal of Business Ethics*, 154(2), pp. 461–481. doi: 10.1007/s10551-017-3463-0.
- Larsson, S., A. Pousette, dan M. Torner. 2008. Psychological climate and safety in the construction industry-mediated influence on safety behaviour. *Safety Science* 46(3): 405–412.
- Liu, X., G. Huang, H. Huang, S. Wang, Y. Xiao, dan W. Chen,. 2015. Safety climate, safety behavior, and worker injuries in the Chinese manufacturing industry. *Safety Science*, 78, 173–178.
- Lun, C. J. dan S. R. A. Wahab . 2012. The Effects of Safety Leadership on Safety performance in Malaysia. *Saudi Journal of Business and Management Studies* 2(1): 12-18.
- Makaske, I. 2015. The effect of leadership behavior on work climate and team effectiveness. *International Proceeding of Political Science*, published on Semantic Scholar.org
- Mihrez, A. A. H. E. dan Armanu. 2014. The Importance of Leadership Behavior and Motivation In Creating Employee Performance: A Study at the Faculty of Economics and Business, University of Brawijaya. *Asia-Pacific Management and Business Application* 3(2): 86-105.
- Malik, M. I. et al. 2020 'Ethical Leadership and Safety Performance: Does Team Cohesiveness Mediate?', *Journal of Southwest Jiaotong University*, 55(5), pp. 1–11.
- McMahon, J. F. 2021. Effects of Transformational Leadership on Safety Performance in the United States Commercial Trucking Industry. Louisiana Tech University.
- Mukesh, R. and Lingadurai, K. 2014 'The Impact of Organizational Culture on Organizational Performance', *Australian Journal of Basic and Applied Sciences*, 8(17), pp. 476–482.
- Murphy, L. A., Huang, Y. Hsiang, Lee, J., Robertson, M. M., dan Jeffries, S. 2019. The Moderating Effect of Long-Haul Truck Drivers' Occupational Tenure on the Relationship between Safety Climate and Driving Safety Behavior. *Safety Science*, 120 (09), 283–289.
- OSHAcademy (2021) Introduction to Safety Management. Oregon: Geigle Safety Group, Inc. doi: 10.1016/b978-0-08-054809-8.50003-4.
- O'Dea, A., Flin, R., 2003. The Role of Managerial Leadership in Determining Workplace Safety Outcomes. Research Report 044, Health & Safety Executive, UK.
- Nahrgang, J. D., F. P. Morgeson, dan D.A. Hofmann. 2007. Predicting Safety performance: A Meta-analysis of Safety and Organizational Constructs. Poster session presented at the 22nd Annual Conference of the Society for Industrial and Organizational Psychology, New York, NY.
- Neal, A., Griffin, M.A., Hart, P.M., 2000. The impact of organizational climate on safety climate and individual behavior. *Safety Science* 34, 99–109.
- _____, 2002. Safety climate and safety behavior. *Australian Journal of Management* 27, 67–76.
- Lu, C. S., dan C.S. Yang. 2011. Safety Climate and Safety Behavior in the Passenger Ferry Context. *Accident Analysis & Prevention*, 43(1), 329–341. <https://doi.org/10.1016/j.aap.2010.09.001>.
- Liu, X., Huang, G., Huang, H., Wang, S., Xiao, Y., dan Chen, W. 2015. Safety climate, safety behavior, and worker injuries in the Chinese manufacturing industry. *Safety Science*, 78, 173–178.
- Siu, O. L., D.R. Phillips, dan T.W. Leung. 2004. Safety Climate and Safety Performance among Construction Workers in Hong Kong: The Role of Psychological Strains as Mediators. *Accident Analysis & Prevention*, 36(3), 359–366. [https://doi.org/10.1016/S0001-4575\(03\)00016-2](https://doi.org/10.1016/S0001-4575(03)00016-2).
- Neal, A. Dan M.A. Griffin. 2006. A study of the lagged relationships among safety climate, safety motivation, safety behavior, and accidents at the individual and group levels, *J. Appl. Psychol*, 946–953
- Pousette, A., M. Torner, dan S. Larsson. 2003. Associations between safety climate, psychosocial work environment and self-reported safety behaviour. In: The Nordic Ergonomic Society 35th Annual Conference, Reykjavik, Iceland: 10–13.
- Pratama, A.K. 2015. Hubungan Karakteristik Pekerja Dengan Unsafe Action Pada Tenaga Kerja Bongkar Muat Di PT. Terminal Petikemas Surabaya. *The Indonesian Journal of Occupational Safety and Health* 4(1): 64–73.
- Quartey. 2017. Examining Employees' Safety Behaviours: An Industry-Level Investigation From Ghana. *Personnel Review* 46(8): 1915-1930.
- Republik Indonesia. 2015. Peraturan Menteri Ketenagakerjaan Republik Indonesia Nomor 26 Tahun 2015 Tentang Tata Cara Penyelenggaraan Program Jaminan Kecelakaan Kerja, Jaminan Kematian, Dan Jaminan Hari Tua Bagi Peserta Penerima Upah.
- Rosalita, N. A. D, Ratmawati, dan T. S. Agustina. 2015. Mediasi Safety Knowledge Dan Safety Motivation Pada Pengaruh Safety management Practices Terhadap Safety performance Pegawai Bagian Produksi PT.Petrokimia Gresik. *Jurnal Manajemen Teori dan Terapan* 8(3): 201-215.
- Shen. 2017. The Impact of Transformational Leadership on Safety Climate and Individual Safety behavior on Construction Sites. *International Journal of Enviromental Research and Public Health* 14(15): 1-27.
- Shen, Y., T.Y. Koh, S. Rowlinson, dan A.J. Bridge. 2015. Empirical investigation of factors contributing to the psychological safety climate on construction sites. *Journal of Construction Engineering and Management* 141(11):25-37
- Skeepers, N. C., dan C. Mbohwa. 2015. A Study on the Leadership Behaviour, Safety Leadership, and Safety Performance in the Construction Industry in South Africa. *Procedia Manufacturing*, 4, 10–16. <https://doi.org/10.1016/j.promfg.2015.11.008>.
- Sllil, E, K. Iyiola , A. Alzubi dan H.Y. Aljuhmani. 2025. Impact of Safety Leadership and Employee Morale on Safety Performance: The Moderating Role of Harmonious

- Safety Passion. *Buildings* 15 (186): 1-23. <https://doi.org/10.3390/buildings15020186>
- Sugiyono. 2013. *Metode Penelitian Kuantitatif*. 2nd ed.: Airlangga University Press. Surabaya.
- Supardi, S., G. Chandrarin, dan Sunardi. 2021. The Role of Safety Leadership and Safety Culture in improving Safety Performance. *East African Scholars Journal of Economics, Business and Management* 4 (4) : 55-62.
- Suyono, K.Z. dan E. D. Nawawinetu. 2013. Hubungan Antara Faktor Pembentuk Budaya Keselamatan Kerja Dengan Safety behavior Di PT Dok Dan Perkapalan Surabaya Unit Hull Construction. *The Indonesian Journal of Occupational Safety and Health* 2(1): 67–74.
- Salminen, S., Gyekye, S. A., dan Ojajarvi, A. (2013). Individual and organizational factors of safe behaviour among Ghanaian industrial workers. *Engineering Management Research*, 2(1), 98.
- Schopf, A. K., Stouten, J. and Schaufeli, W. B. (2021) 'The role of leadership in air traffic safety employees' safety behavior', *Safety Science*, 135(2), pp. 25–36. doi: 10.1016/j.ssci.2020.105118.
- Sugiyono (2012) *Metode Penelitian Kuantitatif*. 2nd edn. Jakarta: Airlangga University Press.
- Tao, J. *et al.* (2020) 'Analysis of safety leadership using a science mapping approach', *Process Safety and Environmental Protection*, 140, pp. 244–257. doi:10.1016/j.psep.2020.04.031.
- Wiley, J. F. *et al.* (2015) 'Chapter 8: Descriptive Statistics and Exploratory Data Analysis', in *Beginning R*. doi: 10.1007/978-1-4842-0373-6_8.
- Wang, H., A. S. Tsui, dan K. R. Xin. 2011. CEO Leadership Behaviors, Organizational Performance, And Employees' Attitudes. *The Leadership Quarterly* 22(1): 92–105.
- Wang, M., Sun, J., Du, H., dan Wang, C. 2018. Relations between Safety Climate, Awareness, and Behavior in the Chinese Construction Industry: A Hierarchical Linear Investigation. *Advances in Civil Engineering*, 1 - 8.
- Wu. T.C., C. W. Liu, dan M. C. Lu. 2007. Safety climate in university and college laboratories: Impact of organizational and individual factors. *Journal of Safety Research*, 38(1): 91–102.
- Wu, T.C., C. H. Chen, dan C. C. Li . 2008. A correlation among safety leadership, safety culture and Safety performance. *Journal of loss prevention in the process industries* 21(3): 307-318.
- Yusoff, Y. M., Ariffin, S. K., Omar, K., dan Madero-Gomez, S. M. 2017. Safety Performance in the Workplace: A Proposed Model for Understanding the Influencing Factors on Safety Climate. *Advanced Science Letters*, 23(11), 10660– 10663(4).
- Zohar, D., 1980. Safety climate in industrial organizations: theoretical and applied implications. *Journal of Applied Psychology*, 12, 78 - 85.
- Zohar, D. 2000. A Group-level Model of Safety Climate: Testing the Effect of Group Climate on Microaccidents in Manufacturing Jobs. *Journal of Applied Psychology*, 85(4), 587–596. <https://doi.org/10.1037/0021-9010.85.4.587>.
- Zohar, D., 2003. The influence of leadership and climate on occupational health and safety. In: Hofmann, D.A., Tetrick, L.E. (Eds.), *Health and Safety in Organizations*. John Wiley & Sons, San Francisco, CA, US, pp. 201–230.
- Zou, P. X. W., dan R.Y. Sunindijo. 2015. Strategic safety management in construction. In *Strategic Safety Management in Construction*. <https://doi.org/10.1002/9781118839362>
