

## **Safety Culture Practices Level for Malaysia's Small and Medium Enterprise (SME)**

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### **Abstract**

Small and medium enterprises (SMEs) in Malaysia make up around 97.4% of the total business establishment. However, despite the large number of the workforce in SMEs, safety-related research is limited in this area in Malaysia specifically on safety culture. This study aims to assess the current safety culture level of SMEs in Malaysia. The questionnaire consisted of 37 items of six safety culture constructs based on organizational and human domains and was administered to SMEs registered in the government database. A total of 263 respondents from different sectors completed the survey. The survey result analysis shows that both employer and employee are proactive in implementing safety culture practices in the workplace. The lowest score identified among all the 6 factors was rewards and recognition in the workplace that can be improved to enhance the safety culture at the workplace. The grand mean score for SME is 3.76 which means that SME is still in the proactive stage of safety culture level at the workplace.

### **Keywords**

Safety Culture Dimension, Safety Level, SME, Hudson Model, Malaysia

### **Introduction**

As Malaysia's economy develops rapidly, driven by the significant contribution of SMEs, occupational safety in these enterprises has often been neglected (Tappura et al. 2023). SMEs account for 97.4% of Malaysia's industries (Department of Statistics Malaysia 2023), but they face challenges in adhering to formal safety management systems, laws, and regulations. SMEs often lack access to resource support and relevant risk prevention information (Lopatina, 2013). In 2012, Basic Occupational Health programmes were introduced to guide SMEs in occupational health. The Basic Occupational Health Program is implemented to identify problems of occupational diseases or poisoning among workers who have not been through any basic health screening or basic medical check-ups, particularly in SMEs. Department Of Safety and Health (DOSH) Malaysia's approaches in implementing these programs are by cooperation with the "Umbrella Program" under the Small and Medium Industries Section in State offices and by providing guidance and technical programs with an emphasis on imparting knowledge in occupational health (DOSH 2024b). The implementation of Occupational Safety and Health Administration (OSHA) standards in small and medium enterprises (SMEs) is still in its early stages compared to large enterprises. On the National Institute for Occupational

Safety and Health (NIOSH) official website, there are more detailed programs tailored to specific areas for larger enterprises (NIOSH 2024). In contrast, the programs offered for SMEs tend to be more general and cover the entire company rather than focusing on specific aspects.

Despite the significant role SMEs play in Malaysia's economy, there is a lack of injury and accident statistics from DOSH Malaysia regarding occupational safety and health levels specific to SMEs. The absence of this data is attributed to SMEs' limited resources, leading to the underestimation of the costs of occupational accidents and diseases. Additionally, underreporting of incidents due to factors like low worker education, lack of safety consciousness, informal safety procedures, and poor basic safety management further complicates the situation (Probst & Estrada, 2010; Probst et al. 2008; W. Nurfahizul Ifwah et al. 2022; Vinodkumar & Bhasi 2010). The Department of Statistics Malaysia does not analysed data by firm size, making it challenging to draw conclusive statements about SME-related accidents and costs (DOSH, 2024a). Although a study by Rahlin et al. (2018) analyzed safety incidents and Social Security Organization (SOCSO) claim trends to justify SME-related accident counts, it is outdated in the post-Covid era. There is an urgent need to address safety problems in SMEs, demonstrating that the cost of ignoring workplace safety is higher than ensuring it.

SMEs often prioritize production output over safety, which leads to insufficient safety awareness and ownership among workers and causes management to frequently disregard safety officers' concerns (Cagno & Micheli, 2014; Cheyne et al. 2002). Despite Malaysia's evolving safety policy by the Department of Occupational Safety and Health (DOSH), which is shifting from prescriptive regulations to a self-regulated Occupational Safety and Health (OSH) Act, high standards of OSH culture remain under-practiced within SMEs. This lack in safety culture contributes significantly to workplace injuries and accidents, with Hong et al., (2011) noting that 80% of incidents occur within SMEs. Hence, fostering a robust safety culture is crucial not only for protecting the workforce but also for sustaining the economic contribution of these enterprises. Management's role is pivotal in adopting safe work practices, and participation in OSH training has proven effective in improving compliance levels. Nonetheless, challenges such as inadequate funding and a lack of technical expertise continue to hinder the implementation of effective OSH practices (Al Mawli et al. 2021). To enhance safety outcomes, it is imperative to address these challenges through active managerial engagement, targeted training, and strategic interventions (Zulkifly 2018; Champoux & Brun 2003).

### **1.1 Objectives**

The objectives for this research are to determine critical factors influencing safety culture practices among employers and employees using Radar Chart. By assessing safety culture dimensions scores, the company can identify which factors to improve or prioritize for resource allocation.

## **2. Literature Review**

### **2.1 SME in Malaysia**

Small and medium enterprises (SME) are crucial to the business landscape in Southeast Asia, serving as the backbone of economic activity in the region (Daties & Peilouw 2023). Each ASEAN 6 countries Singapore, Malaysia, Thailand, the Philippines, Vietnam, and Indonesia has its own criteria for defining SMEs based on revenues, assets, or the number of employees (Martin 2009). In Indonesia, SMEs contribute significantly to the economy, with the highest internet economy growth and the largest GDP contribution from SMEs at 61%. The Indonesian government classifies SMEs as companies with annual sales between IDR 300 million (US \$30,000) to IDR 500 million (\$50,000) (Pratono, 2018).

In Malaysia, SMEs are overseen by SME Corp Malaysia, which aims to elevate micro, small, and medium enterprises (MSMEs) to higher levels through business transformation, internationalization, digitalization, and effective coordination. SME Corp Malaysia's strategy focuses on five key areas: value chain development in high-impact industries, internationalization, support for microenterprises and inclusive groups, digitalization and automation, and enhancing the role of the central coordinating agency. SMEs are categorized into manufacturing and services or other sectors, with SMEs making up 97.4% of business establishments in Malaysia, contributing 38.2% to GDP, and providing employment for 7.3 million people (OECD 2022). Given the significant employment provided by SMEs, it is essential to foster a strong safety culture to protect the health and welfare of workers.

### **2.2 Definitions of Safety Culture**

However, SMEs often underestimate the costs of occupational accidents and diseases, partly due to low worker education, lack of safety consciousness, informal safety procedures, and poor safety management. This situation is compounded by SMEs' focus on production over safety, leading to a culture where safety officers' concerns are frequently ignored, and workers lack a sense of ownership over safety practices. The absence of detailed and specific OSH statistics for SMEs makes it difficult to assess the true impact of accidents and injuries in this sector. Even though programs and regulations have evolved to promote self-regulation in OSH, SMEs do not widely practice high standards of safety culture. Factors such as the nature of SME operations, which prioritize productivity over safety, and the management's disregard for safety officers' advice, contribute to the poor safety culture in these enterprises (Nielsen et al. 2015).

Addressing the safety culture within SMEs is crucial for reducing accidents and improving overall safety performance. Studies indicate that managerial engagement, focused training, and government initiatives by the Department of Occupational Safety and Health (DOSH) can enhance OSH compliance in SMEs (Cigularov et al. 2010). Key challenges such as lack of funding and technical know-how must be addressed to promote positive safety outcomes. By concentrating on safety involvement and compliance, SMEs can better reduce incidents and cultivate a safety-awareness culture, thereby improving their overall safety performance.

### **3. Methodology**

The current research employed a quantitative method for data collection and analysis. Traditionally, safety climate and safety performance were assessed through a questionnaire survey (Guldenmund, 2007).

#### **3.1 Questionnaire Survey**

A popular data collection technique, the questionnaire has numerous benefits, such as cost-effectiveness and ease of analysis. The safety culture questionnaire focuses on understanding the safety perceptions of workers in small and medium enterprise (SME). This survey is comprised of three sections. The first section is designed to gather demographic information, covering personal attributes (e.g., gender, age), knowledge level (e.g., education level, profession and length of employment), work-related attributes (e.g., employee status, working level), and organizational attributes (e.g., company size, sector, region, OSH budget, ISO certification).

The safety culture of SME workers was assessed in the second section using a questionnaire developed, validated, and proven reliable by Jafri et al. (2024) which was chosen for its coverage of major safety culture factors in the specific context of Malaysia. The questionnaire comprises of six factors with a total of 37 items and utilizes a 5-point Likert scale ranging from "1=Strongly Disagree" to "5=Strongly Agree" for gauging respondents' agreement.

A straightforward 5-point Likert scale questionnaire (1 = "Strongly Disagree," 5 = "Strongly Agree") was created to examine six safety culture criteria. The use of a 5-point Likert scale was meant to minimize respondent frustration which is common when responding to lengthy surveys (Babakus & Mangold, 1992; Sachdev & Verma, 2004; Leung, 2011), while also assuring uniform and comparable data for analysis.

#### **3.2 Data Collection**

The workers in the SME sector across Malaysia were the focus of the sample. To facilitate distribution, the questionnaire was transformed into a Google Form. Subsequently, the Google link was shared with DOSH Malaysia, who then disseminated it to all SME organizations in Malaysia. A total of 263 responses were obtained from the Google link. The questionnaire survey was conducted over a period of three months from December 2023 to March 2024. IBM SPSS Version 27 was then used to generate the descriptive statistics to aid in visualizing the demography of respondents as well as to conduct mean analysis for each factor's score. Lastly, to measure Cronbach's Alpha for safety culture factors, aiming for a value above 0.7 (Nunnally 1975).

#### **3.3 Population size and sample design**

A random sampling strategy was employed targeted to SMEs across Malaysia. Random sampling is an essential component of statistical inference, as it ensures representative samples with accurate population parameter estimates. It involves selecting units from a population with equal probabilities and needs to be of adequate size, allowing for unbiased estimates of population characteristics (Xie 2024). Taherdoost (2018) provides a formula for calculating sample size based on a 95% confidence level, which equates to a Z value of 1.96 and an E value representing a 5% margin of error. However, an important factor, the population percentage (P), is unknown in our investigation. This

statistic represents the estimated percentage of the target population that possesses a specific trait relevant to the research topic. This paper population of interest includes all respondents who work in SMEs, at all levels, from general workers to top management. Given the uncertainty around the true P value, a neutral starting point is required to identify an appropriate sample size for this study.

$$n = \frac{P (100 - P) \times Z^2}{E^2}$$

Where,

n is the required sample size

P is the estimated percentage occurrence of a state or condition

E is the percentage maximum error required

Z is the confidence level at 95%

Researchers like Haroon et al., (2023) and Pascasie (2024) have utilized the above-mentioned equation to determine the minimum sample size required for their studies. In this research, about 800 SMEs companies were listed by DOSH, estimated only 10% of the whole company population to answer the survey due to the nature of SME having fewer employees. Based on this information, the required sample size was calculated as follows:

$$n = \frac{10 (100 - 10) \times 1.96^2}{5^2} = 138.298$$

The sample size calculation was determined as 138 as the minimum sample size required in order to achieve a 95% confidence level with a 5% margin of error. Therefore, the responses obtained in this study exceed the minimum requirement by 90%.

### **3.4 Field Survey**

Google Forms, an online survey platform, was selected for its user-friendliness and seamless integration with popular Google Workspace applications. This platform enables efficient data collection, processing, and customization for both researchers and participants (Ball 2019). Online surveys offer several benefits, including rapid global reach, efficient data collection, and lower costs through email and social media communication. They also provide the flexibility to gather large amounts of anonymous data while reducing social bias (Dillman et al. 2014; Tourangeau & Yan, 2007; Curtin et al. 2005). These advantages make Internet surveys an invaluable resource for researchers.

## **4. Results and Discussion**

The data collection period spanned three months, from December 2023 to March 2024. Out of 800 distributed surveys, 263 responses were obtained, yielding a 33% response rate. This rate is considered acceptable according to sample size calculation which only needed 140 responses to obtain a 95% confidence level with a 5% margin of error.

### **4.1 Descriptive statistics**

Descriptive analysis was conducted to understand the demographics of the respondents, including (e.g., gender, age, profession, education level, and length of employment). Table 1 shows the results summarized below:

**(Table 1. is Presented in APPENDIX -A)**

Additionally, 40.3% of respondents are between the ages of 25-34, indicating a relatively young workforce in the SMEs. Half of the respondents (50.6%) are employees, with the remainder being employers, demonstrating a balanced response between these two workforce levels. Furthermore, 46% of respondents are managers, as the questionnaire is likely received by them first before being disseminated to other workers. Both small and medium enterprises are equally represented in the survey, with 49% and 51%, respectively. The manufacturing sector contributes the most to the survey, accounting for 36.5%, aligning with Malaysia's largest economic sector.

Next is the information regarding the companies: 55.9% of respondents are from the central region, reflecting Selangor's role as the main hub of Malaysia's economy. Additionally, 33.8% of respondents' companies have ISO 9001:2015 (QMS) certification, while 35% do not have any ISO standards implemented, which may impact the quality of the products produced. Lastly, 38% of respondents have no information about their company's budget for OSH

implementation, and among respondents aware of their company's Occupational Safety and Health (OSH) budget, the highest percentage (14.8%) reported that only 1-2% of the budget is allocated to OSH initiatives.

The data was then analyzed by using IBM SPSS version 27. Internal consistency of the questionnaire was ensured through Cronbach's Alpha. The global Cronbach's Alpha value for the safety culture survey is 0.973. The high alpha score of the survey instrument demonstrates its reliability, indicating that the questions are consistently measuring the same concept; safety culture. This high level of consistency suggests that the survey is effective in reliably assessing safety culture, as supported by work Cronbach (1951) on alpha coefficients. Individually, all safety culture factors ranged between 0.919 to 0.966, indicating strong reliability as shown in Table 2. The questionnaire developed by Jafri et al., (2024) is considered valid because it was tailored to Malaysia's culture and has been verified by many regulatory bodies, DOSH, and industrial representatives in Malaysia. Therefore, the questionnaire by Jafri et al. (2024) is deemed a suitable tool for assessing the occupational safety culture of SME workers in Malaysia.

**(Table 1. is presented in APPENDIX A)**

Table 2. Reliability test score

<b>Factor</b>	<b>No of items</b>	<b>Cronbach Alpha</b>
F1	9	0.919
F2	10	0.966
F3	5	0.931
F4	3	0.925
F5	5	0.951
F6	5	0.944

The mean value for each 6 factors was then analyzed in terms of employee and employer to gauge the perception of each level. Table 3 shows where the perceptions may differ from each other and underscores critical factors for improvement.

Radar chart was constructed to easy visualize the perception of employer and employee in term of the six safety culture factors.

**The radar chart (Refer to Figure 1) compares two aspects:** how each factor is perceived by employers and employees and how well SME companies are currently implementing those factors. Each data point represents the six safety culture factors with six mean factor scores plotted for each factor

**Table 3.** The mean value of all 6 safety culture factors in terms of employer and employee

	<b>Level</b>	<b>Statistic</b>	
Monitoring behavior, reporting and analysis of accidents or incidents (F1)	Employee	Mean	4.123
		Std. Deviation	0.504
	Employer	Mean	4.150
		Std. Deviation	0.550
Leadership and communication (F2)	Employee	Mean	3.975
		Std. Deviation	0.677
	Employer	Mean	4.039
		Std. Deviation	0.624
Rewards and recognition (F3)	Employee	Mean	3.522
		Std. Deviation	0.796
	Employer	Mean	3.692
		Std. Deviation	0.721
Attitudes towards OSH improvements (F4)	Employee	Mean	4.070
		Std. Deviation	0.659
	Employer	Mean	4.010
		Std. Deviation	0.758
Employee's competences (F5)	Employee	Mean	3.907
		Std. Deviation	0.664
	Employer	Mean	3.889
		Std. Deviation	0.682
Education on OSH (F6)	Employee	Mean	3.907
		Std. Deviation	0.631
	Employer	Mean	3.888
		Std. Deviation	0.681

Overall, the perceptions of both employers and employees align, indicating that SMEs in Malaysia are currently implementing various safety factors effectively. This alignment suggests that these factors are well-received by both groups. However, there is an exception for Factor 3 (Reward and Recognition), where a significant disparity in perceptions exists between employers and employees. The lowest score for this factor reflects its inadequate implementation within SME companies. The limited implementation of rewards and recognition may stem from a desire to avoid fostering a culture where employees expect incentives for following safety protocols, rather than adhering to them out of a genuine commitment to safety.

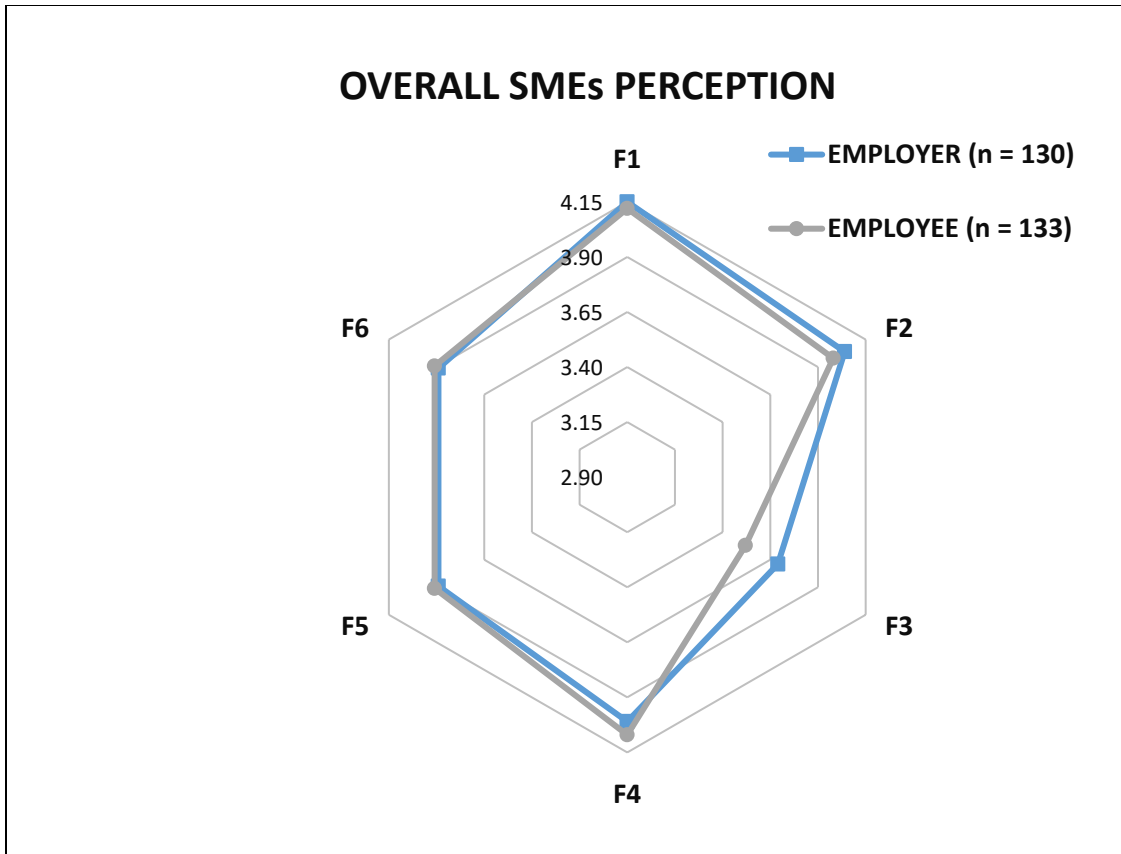


Figure 1. Radar chart in terms of employer and employee

A safety culture in the workplace should be driven by the genuine needs and desires of workers for a safe environment, rather than being motivated solely by external rewards or incentives. When safety practices are followed because employees truly want a safe workplace, it fosters a genuine and lasting commitment to safety (Ahmed & Faheem, 2021). On the other hand, if safety behaviors are motivated primarily by rewards or incentives, it can lead to a situation where employees only follow safety protocols when there's something to gain (Oswald et al. 2019). This could result in bad habits, such as neglecting safety measures when rewards are not present, or developing an expectation of always receiving something in return for following basic safety practices. Ultimately, the goal is to cultivate a fundamental motivation for safety, where workers understand and value the importance of safety measures for their own well-being and that of their colleagues.

Rewards can be considered a form of tangible motivation, often involving physical or material incentives. In contrast, recognition is more aligned with moral and ethical values, as it acknowledges and appreciates an individual's efforts and contributions in a meaningful way. Recognition fosters a deeper sense of purpose and belonging, encouraging individuals to uphold positive behaviors out of a genuine commitment to shared values and principles (Houette & Mueller-Hirth 2022). Social recognition increases workers' dignity and individual values that goes beyond a mere facade of legal compliance to truly value workers' contributions and dignity (Kusmayadi et al. 2023). Rites and ceremonies in a company offer chances for employees to be publicly acknowledged and appreciated for their commitment to safety. These events also show that safety is important to the company. By giving feedback, offering rewards, and providing social recognition, the company creates stories and examples that illustrate the importance of safety in the workplace. These stories become part of the company's culture and help reinforce the organization's commitment to maintaining a safe work environment (Fell-Carlson 2004).

#### 4.2 Mean Score Classification

Hudson's theoretical model, known as the Hudson Ladder (2001), illustrates the progressive development of an organization's safety culture in an evolutionary manner. This model is structured as a ladder with five distinct levels,

each representing a stage of maturity in terms of safety culture (Hudson 2001). As organizations ascend the ladder, they demonstrate increased trust and a more robust framework for information sharing. This model helps organizations identify their current level and provides a roadmap for fostering a more advanced and effective safety culture. There are 5 levels of the Hudson Ladder as shown in Table 4:

**Table 4.** Hudson Ladder Levels

<b>Level</b>	<b>Description</b>	<b>Scoring</b>
Reactive and Pathological	<i>Who cares as long as we're not caught.</i> At this level, the company makes little to no investment in improving safety behavior.  <i>"Safety is important, we do a lot every time we have an accident."</i> Here, the company tends to make safety improvements only after things have gone wrong.	<3.25
Calculative	<i>"We have systems in place to manage all hazards."</i> At this stage, the company pays attention to health and safety and has determined which safety rules are important. However, it is still driven by self-interest.	3.26 ≤ x ≤ 3.65
Proactive	<i>"We work on the problems that we still find."</i> Here, safety has a high priority for the organization, which has a proactive approach on safety, works on safety awareness, and constantly implements safety improvements.	3.66 ≤ x ≤ 4.06
Generative	<i>"Safety is how we do business round here."</i> At this level, safety is fully integrated into the operational processes of the organization and fully instilled in the employees' behavior.	>4.06

The final assessment (Refer Table 5) revealed distinct implementation of safety culture dimensions among the SME companies. Most factors are at the "Proactive" stage (F2, F4, F5, and F6), indicating that these companies are aware of safety issues and are progressively enhancing their safety conditions. However, one factors remain at the "Calculative" stage, reflecting lower implementation. For example, F3 (Reward and Recognition) is lagging because companies need to allocate resources to acknowledge safety efforts, which is challenging as resources are scarce and often prioritized for production. Additionally, F4 (Workers' Attitude towards Occupational Safety and Health) is also problematic since altering and developing cultural attitudes is inherently difficult. To improve these safety factors, strong commitment and support from top management are essential. Overall, Malaysia's Safety culture level is at the Proactive stage with an overall composite mean score of 3.93.



**Table 5.** Implementation Levels

No	SME OVERALL n = 263	INTERPRETATIONS BASED ON HUDSON LADDER
F1	4.14	GENERATIVE
F2	4.01	PROACTIVE
F3	3.61	CALCULATIVE
F4	4.04	PROACTIVE
F5	3.90	PROACTIVE
F6	3.90	PROACTIVE
GRAND MEAN (SAFETY CULTURE SCORE FOR MALAYSIA)	<b>3.93</b>	<b>PROACTIVE</b>

## 5. Conclusion

In conclusion, the significant impact of safety culture factors is established, particularly evident in the context of small and medium-sized enterprises (SMEs) in Malaysia. Research including insights from Jafri et al. (2024), identifies six critical factors that shape a robust safety culture within organizations: monitoring and reporting, leadership commitment, rewards and recognition, attitude towards OSH improvement, employee competencies, and education on OSH. These factors collectively cultivate an environment where safety becomes ingrained in daily operations, fostering proactive measures to prevent incidents and promote employee well-being.

Our finding shows that Reward and recognition yield the lowest implementation in SMEs due to limited resources and financial support. Although reward and recognition influence safety culture, reward systems are only beneficial when decisions and protocols around the systems are deemed to be fair by those in the organization. Instead focusing on material incentives, moral values, and social recognition may uphold positive behaviors out of a genuine commitment to safety. Based on the overall safety culture score, Malaysia’s safety culture level is still on the lower side of proactive implementation. Ultimately, investing in a strong safety culture not only improves safety metrics but also enhances organizational resilience and competitiveness in the Malaysian SME sector, ensuring sustainable growth and employee satisfaction.

Our recommendation for future research is to extend the analysis by assessing the relationship between safety culture multidimensional factors and safety performance. Visualizing the relationship between safety culture and safety performance through a Structural Equation Modelling (SEM) approach will provide SMEs with a clear framework to understand the critical relationship between safety culture dimensions and its contributions on safety performance in SME context.

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## References

- Ahmed, I., & Faheem, A., How Effectively Safety Incentives Work? A Randomized Experimental Investigation. *Safety and Health at Work*, 12(1), 20–27,2021. <https://doi.org/10.1016/j.shaw.2020.08.001>
- Al Mawli, B., Al Alawi, M., Elazouni, A., & Al-Mamun, A., Construction SMEs safety challenges in water sector in Oman. *Safety Science*, 136(November 2020), 105156, 2021. <https://doi.org/10.1016/j.ssci.2020.105156>
- Cagno, E., & Micheli, G. J. L. (2014). *Developing , Implementing and Evaluating OSH Interventions in SMEs : A Pilot, Exploratory Study*. January.
- Champoux, D., & Brun, J. P., Occupational health and safety management in small size enterprises: an overview of the situation and avenues for intervention and research. *Safety Science*, 41(4), 301–318,2003. [https://doi.org/10.1016/S0925-7535\(02\)00043-7](https://doi.org/10.1016/S0925-7535(02)00043-7)
- Cheyne, A., Oliver, A., Tomás, J. M., & Cox, S., The architecture of employee attitudes to safety in the manufacturing sector. *Personnel Review*, 31(5–6), 649–670,2002. <https://doi.org/10.1108/00483480210445953>

- Cigularov, K. P., Chen, P. Y., & Rosecrance, J., The effects of error management climate and safety communication on safety: A multi-level study. *Accident Analysis and Prevention*, 42(5), 1498–1506,2010. <https://doi.org/10.1016/j.aap.2010.01.003>
- Cronbach, L. J., Coefficient alpha and the internal structure of tests. *Psychometrika*, 16(3), 297–334,1951. <https://doi.org/10.1007/BF02310555>
- Daties, D. R. A., & Peilouw, J. S. F., ASEAN Charter and Regional Micro, Small and Medium Enterprises Development. *Balobe Law Journal*, 3(2), 42,2023. <https://doi.org/10.47268/balobe.v3i2.1521>
- Department of Statistics Malaysia., Micro, Small & Medium Enterprises (MSMEs) Performance 2022 . *Department of Statistics Malaysia*, 2–80,2023. <https://www.dosm.gov.my/portal-main/release-content/micro-small-medium-enterprises-msmes-performance-2022>
- DOSH. (2024a, April 4). *Official Website Department of Occupational Safety and Health - DOSH Profile*. <https://www.dosh.gov.my/index.php/about-us/dosh-profile>
- DOSH. (2024b, April 4). *Official Website Department of Occupational Safety and Health - Small & Medium Industries*. DOSH. <https://www.dosh.gov.my/index.php/small-medium-industries#>
- Fell-Carlson, D., Rewarding Safe Behavior. *AAOHN Journal*, 52(12), 521–529,2004.
- Guldenmund, F. W., The use of questionnaires in safety culture research - an evaluation. *Safety Science*, 45(6), 723–743,2007. <https://doi.org/10.1016/j.ssci.2007.04.006>
- Haroon, W., Arsalan Khan, M., Ilyas, Z., Almujiabah, H. R., Ashfaq, M., & Hmaza, M., *Analyzing Travelers' Perception and Impacts of Carpooling on Traffic Sustainability*. July, 2023. <https://doi.org/10.3390/sul16146098>
- Hong, K. T., Surienty, L., & Hung, D. K. M. , Occupational Safety and Health ( OSH ) in Malaysian Small and Medium Enterprise and Effective Safety Management ... *International Journal of Business and Technopreneurship*, 1(November), 321–338,2011.
- Houette, B., & Mueller-Hirth, N., Practices, preferences, and understandings of rewarding to improve safety in high-risk industries. *Journal of Safety Research*, 80, 302–310,2022. <https://doi.org/10.1016/j.jsr.2021.12.013>
- Hudson, P., Aviation safety culture. *Safeski*, 1–23,2001.
- Kusmayadi, Y., Ronda, A. M., & Seran, A. ., Understanding the Recognition of Occupational Safety and Health: A Critique of Corporate Culture. *Indonesian Journal of Social Science Research*, 4(2), 236–244,2023. <https://doi.org/10.11594/ijssr.04.02.12>
- Lopatina, E. Y., Problems of SME risks' identification and systematization. *World Applied Sciences Journal*, 23(11), 1548–1554,2013. <https://doi.org/10.5829/idosi.wasj.2013.23.11.13166>
- Martin, S. , *How Are Smes Defined in Current Research ? 2005*, 983–997,2009. [https://researchbank.swinburne.edu.au/file/2f2a940e-6486-4ce2-93b9-ac666ae6edd2/1/PDF \(Published version\).pdf](https://researchbank.swinburne.edu.au/file/2f2a940e-6486-4ce2-93b9-ac666ae6edd2/1/PDF%20(Published%20version).pdf)
- Nielsen, K. J., Kines, P., Pedersen, L. M., Andersen, L. P., & Andersen, D. R., A multi-case study of the implementation of an integrated approach to safety in small enterprises. *Safety Science*, 71, 142–150,2015. <https://doi.org/10.1016/j.ssci.2013.11.015>
- NIOSH. , *Course Programmes*. Kementerian Kesihatan Malaysia,2024. <http://www.niosh.com.my/course-programmes#competency-programmes>
- Oswald, D., Sherratt, F., & Smith, S., How safety rewards can help and hinder : a case study. *Professional Safety (American Society of Safety Engineers)*, 1–17,2019. <https://www.research.ed.ac.uk/en/publications/how-safety-rewards-can-help-and-hinder-a-case-study>
- Pascasie, N. , *Empowering Learners to Improve English Language Performance through Group Discussion Strategy in Selected Secondary Schools in Rwanda*. 5, 84–93,2024.
- Probst, T. M., Brubaker, T. L., & Barsotti, A. , Organizational Injury Rate Underreporting: The Moderating Effect of Organizational Safety Climate. *Journal of Applied Psychology*, 93(5), 1147–1154,2008. <https://doi.org/10.1037/0021-9010.93.5.1147>
- Probst, T. M., & Estrada, A. X. , Accident under-reporting among employees: Testing the moderating influence of psychological safety climate and supervisor enforcement of safety practices. *Accident Analysis and Prevention*, 42(5), 1438–1444, 2010. <https://doi.org/10.1016/j.aap.2009.06.027>
- Rahlin, N. A., Mustafa, M., & Majid, A. H. A., The estimation trend of Malaysian SME occupational safety and health statistic. *International Journal of Occupational Safety and Health*, 6(1), 18–25,2016. <https://doi.org/10.3126/ijosh.v1i1.14773>
- Taherdoost, H., Sampling Methods in Research Methodology; How to Choose a Sampling Technique for Research. *SSRN Electronic Journal*, September, 2018. <https://doi.org/10.2139/ssrn.3205035>

- Tappura, S., Susanna, M., & Elli, K., Cooperation Between the Employer and Employees in Developing Safety, Health and Well-Being in Small and Medium Sized Enterprises. *Occupational and Environmental Safety and Health V. Studies in Systems, Decision and Control*, 492, 479–488,2023. [https://doi.org/doi.org/10.1007/978-3-031-38277-2\\_39](https://doi.org/doi.org/10.1007/978-3-031-38277-2_39)
- Vinodkumar, M. N., & Bhasi, M. , Safety management practices and safety behaviour: Assessing the mediating role of safety knowledge and motivation. *Accident Analysis and Prevention*, 42(6), 2082–2093, 2010. <https://doi.org/10.1016/j.aap.2010.06.021>
- W. Nurfahizul Ifwah, W. A., Mohamed, Z., Sakinah, M. Z., Abdullah, I. H. T., & Rosfatihah, C. M., Factors Influencing Safety Performance of Bumiputera SMEs In Malaysia. *International Journal of Accounting, Finance and Business (IJAFB)*, 7(41), 155–165, 2022. <https://doi.org/10.55573/IJAFB.074114>
- Xie, G. (2024). Random sampling is a mathematical necessity beyond debate or opinion for valid statistical inferences. *Australian Statistical Conference and Australian Conference on Teaching Statistics*, 1. <https://doi.org/doi.org/10.31235/osf.io/xswv4>
- Zulkifly, S. S., WORPLACE SAFETY IMPROVEMENT IN SME MANUFACTURING : A GOVERNMENT INTERVENTION. *International Journal of Science and Technology*, 4(2), 27–39,2018. <https://doi.org/10.20319/mijst.2018.42.2739>

## Biographies

**Puteri Mawardati Binti Yasir** is a Master of Science (Industrial Engineering) student at Universiti Teknologi Malaysia, Johor, Malaysia. Have three years of experience as an Industrial Engineer during her time working in a contract manufacturing company in Seberang Jaya, Penang. Most of her job scope involves improving production layout, overseeing GEMBA Walk and process improvement. Decided to enroll into Master degree to enhance knowledge and the technical understanding of industrial engineering.

**Jafri Bin Mohd Rohani** is an Associate Professor at Faculty of Mechanical Engineering, Universiti Teknologi Malaysia, Skudai, Johor. He graduated PhD from Universiti Teknologi Malaysia (UTM) in 2014, obtained his M.Sc (Industrial Systems Engineering) from Ohio University, USA in 1995 and B.Sc (Industrial Engineering), New Mexico State University, USA, in 1988. He has been teaching at UTM specializing Industrial Engineering courses for more than 30 years.

**Erialdi Bin Syahrial** is a senior lecturer at the Faculty of Business and Economics, Universiti Malaya (UM), Malaysia, he specializes in Operations Management, Supply Chain Management, and Quality Management. With a strong foundation in engineering, he holds a PhD in Engineering from Keio University, Japan in 2018, obtained his MSc (Manufacturing System Engineering) from Universiti Putra Malaysia (UPM). He is actively involved in the academic community, serving as a Green Manager at UTM, a member of the Board of Engineers Malaysia (BEM), an active project member with Faculty of Mechanical Engineering (Department of Industrial and Manufacturing Engineering), and participated in various conferences including the 27<sup>th</sup> Annual Conference of the Production and Operations Management Society (POMS) in Florida, USA. In 2022, he chaired the 3<sup>rd</sup> Asia Pacific Conference on Industrial Engineering and Operations Management 2023 as well as being appointed as panel speaker and session chairperson during 14<sup>th</sup> International Conference on Industrial Engineering and Operations Management 2024 in Dubai, UAE.

**Yuhvendrra Shrii Kumar** is an assistant project manager of Singapore based marine outfitting design, manufacturing and sales company, working to drive the success of global projects and manufacturing processes at all levels of the organization. He is also actively involved in safety culture related research consultancy with Department of Safety and Health Malaysia (DOSH). He graduated M.Sc (Industrial Engineering) from Universiti Teknologi Malaysia (UTM) in 2023, and obtained his B.Eng (Hons) in Mechanical Engineering from Universiti Tunku Abdul Rahman (UTAR) in 2013. He was one of the speakers in 6<sup>th</sup> Scientific Conference on Occupational Safety and Health (SCICOSH) in Kuala Lumpur, Malaysia, and won the best research paper award (platinum).

APPENDIX -A

Table 1. Demographic Result

Demographic	Categories	Frequency	Percentage
Gender	Male	138	52.5%
	Female	125	47.5%
Age	18-24	5	1.9%
	25-34	106	40.3%
	35-44	85	32.3%
	45-54	45	17.1%
	55-64	19	7.2%
	65 above	3	1.1%
Level	Employee	133	50.6%
	Employer	130	49.4%
Profession	General Worker	62	23.6%
	Supervisor	71	27.0%
	Manager	121	46.0%
	Business Owner	9	3.4%
Educational Level	Basic Education	34	12.9%
	Hands-on Training	24	9.1%
	Tertiary Studies	179	68.1%
	Advanced Degrees	26	9.9%
Length of Employment	Less than 1 year	19	7.2%
	1 - 5 years	87	33.1%
	6 - 10 years	66	25.1%
	More than 10 years	91	34.6%
Company Size	Small Enterprise	129	49.0%
	Medium Enterprise	134	51.0%
Sector	Automotive	7	2.7%
	Metals and Metal Product	25	9.5%
	Electric and Electronic	12	4.6%
	Rubber	6	2.3%
	Beauty	1	0.4%
	Manufacturing (Production, Assembly etc)	96	36.5%
	Food and Beverages	50	19.0%
	Furniture	6	2.3%
	Plastic	12	4.6%
	Textile and Apparel	4	1.5%
	Other	44	16.7%
Region	Northern	40	15.2%
	Central	147	55.9%

<b>Demographic</b>	<b>Categories</b>	<b>Frequency</b>	<b>Percentage</b>
	Eastern	40	15.2%
	Southern	3	1.1%
	Sabah	20	7.6%
	Sarawak	13	4.9%
Organization Certification	ISO 14001:2015 (EMS)	3	1.1%
	ISO 9001:2015 (QMS)	89	33.8%
	ISO 45001:2018 (SMS)	5	1.9%
	ISO 14001:2015 (EMS), ISO 45001:2018 (SMS)	1	0.4%
	ISO 14001:2015 (EMS), ISO 9001:2015 (QMS)	26	9.9%
	ISO 9001:2015 (QMS), ISO 45001:2018 (SMS)	1	0.4%
	ISO 14001:2015 (EMS), ISO 9001:2015 (QMS), ISO 45001:2018 (SMS)	24	9.1%
	No ISO standard	92	35.0%
	No information about ISO standard	22	8.4%
Organization OSH Budget	1 - 2%	39	14.8%
	3 - 4%	28	10.6%
	5 - 6%	31	11.8%
	7 - 8%	13	4.9%
	9 - 10%	21	8.0%
	More than 10%	31	11.8%
		No information about budget	100

Table 1 shows that 52.5% of the respondents are male, while the remaining 47.5%

