
Safety Climate Assessment in Marine Tourism Operations: Advancing Inclusive Safety Education and Adaptive Occupational Practices

Dina Azleema Mohamed Nor^{1*}, Tengku Azmina Engku Ibrahim², Noor Azwa Noralam³, Mohd Saiful Izwaan Saadon⁴, Ummi Naiemah Saraih⁵

¹(corresponding author), Faculty of Ocean Engineering Technology, Universiti Malaysia Terengganu, Malaysia

*dina.azleema@umt.edu.my

²Faculty of Ocean Engineering Technology, Universiti Malaysia Terengganu, Malaysia

tengkuazmina@umt.edu.my

³Malaysia Marine Department, Ministry of Transportation, Johor Bahru, 81560 Johor, Malaysia

noorazwa@marine.gov.my

⁴Faculty of Maritime Studies, Universiti Malaysia Terengganu, Malaysia

saiful.izwaan@umt.edu.my

⁵Faculty of Business & Communication, Universiti Malaysia Perlis, Malaysia

ummi@unimap.edu.my

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ABSTRACT:

Marine tourism operations are increasingly exposed to occupational safety challenges arising from dynamic environmental conditions, operational pressures, and inconsistent safety practices. Despite the rapid growth of marine tourism activities in Malaysia, empirical research examining occupational safety climate within marine tourism settings remains limited. This study assessed safety climate perceptions among marine tourism workers in selected jetty operations in Terengganu, Malaysia, with emphasis on inclusive and adaptive occupational safety practices. A cross-sectional quantitative survey was conducted involving 152 respondents comprising boat operators, deckhands, and jetty personnel from Taman Tamadun Islam (TTI), Merang, and Kuala Besut. Safety climate was measured using an adapted 25-item Nordic Occupational Safety Climate Questionnaire. The findings indicated a moderately positive overall safety climate ($M = 3.94$), with the highest scores recorded for Trust in Safety Systems, Workers' Safety Commitment, and Peer Communication and Trust. Significant inter-site differences were identified, with TTI demonstrating the strongest safety climate perceptions, while Kuala Besut recorded substantially higher Risk Acceptance scores. Risk Acceptance additionally showed weak and non-significant correlations with other safety climate dimensions, suggesting that risk-tolerant attitudes may operate independently from broader organizational safety perceptions. The

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study contributes empirical evidence to the limited literature on occupational safety climate within marine tourism operations and highlights the need for site-specific safety interventions, behavioural safety training, and adaptive occupational safety strategies to strengthen workplace safety culture in marine tourism environments.

Keywords: Safety climate, Marine tourism operations, Inclusive occupational safety, Adaptive safety practices, Risk acceptance

1. Introduction

Marine tourism has become an increasingly important component of the global blue economy, contributing significantly to economic growth, employment generation, and coastal community development. Activities such as recreational boating, island transportation, snorkeling, scuba diving, and marine ecotourism continue to expand globally due to growing demand for nature-based and coastal tourism experiences. In maritime countries such as Malaysia, marine tourism represents a strategic sector supporting local livelihoods and national tourism development agendas (Yap et al., 2023). However, the rapid expansion of marine tourism operations has simultaneously intensified occupational safety challenges for boat operators, deckhands, jetty workers, and tourism personnel who routinely operate within dynamic and high-risk marine environments (Noor Arzahan et al., 2022; Shah & Mishra, 2024; Syed-Yahya et al., 2022). These operational settings are characterised by unpredictable weather conditions, fluctuating sea states, heavy tourist movement, equipment-related hazards, and time-sensitive operational pressures, all of which increase exposure to workplace accidents and operational disruptions (Yao et al., 2026).

Within high-risk industries, safety climate has been widely recognised as an important predictor of workplace safety behaviour, accident prevention, and operational effectiveness (de Paula et al., 2025; Giovanni et al., 2023). Safety climate refers to workers' shared perceptions regarding organisational safety priorities, management commitment, communication

practices, safety training, and enforcement of safety procedures. In maritime operations, safety climate is particularly important because marine activities rely heavily on human judgement, coordination, and compliance with safety protocols under rapidly changing operational conditions. Previous maritime studies have consistently demonstrated that stronger management commitment, effective communication, worker participation, and safety training are associated with safer operational behaviour and lower accident risks (Barasa et al., 2025; Xi et al., 2021; Yorulmaz & Sevinc Basol, 2024). Conversely, weak safety cultures may contribute to unsafe practices, risk normalisation, and reduced confidence in organisational safety systems. Human and organisational factors have also been identified as major contributors to accidents in yachting tourism operations, emphasising the importance of leadership quality, supervision, and operational safety management in preventing unsafe acts (Yao et al., 2026).

Despite growing international attention toward maritime safety and sustainable tourism, empirical research examining safety climate specifically within marine tourism operations remains limited. Existing studies have predominantly focused on commercial shipping, offshore industries, ferry transportation, or cruise tourism rather than small-scale marine tourism settings such as recreational boating services, island transportation, and jetty operations. In addition, many tourism-related studies have concentrated on environmental sustainability, carrying capacity, or destination management without adequately examining occupational

safety perceptions among frontline marine tourism workers (Adam et al., 2024; Nurul'akla et al., 2026). This limitation is particularly evident in developing maritime tourism regions such as Malaysia, where marine tourism activities continue to expand rapidly in coastal tourism states including Terengganu. Malaysia recorded approximately 38 million international tourist arrivals in 2024, reflecting continued growth in tourism-related maritime activities and increasing operational demands on marine tourism workers. However, limited empirical evidence currently exists regarding how workers perceive management commitment, safety communication, training adequacy, trust in safety systems, and risk-related behaviour within marine tourism workplaces. This gap is significant because workers' safety perceptions directly influence operational safety behaviour, accident prevention, and organisational safety performance.

Therefore, this study assesses safety climate perceptions among boat operators and jetty workers in selected marine tourism jetty operations in Terengganu, Malaysia, using an adapted Nordic Occupational Safety Climate Questionnaire. By examining multiple dimensions of safety climate across different operational settings, the study aims to identify key strengths, vulnerabilities, and inter-site differences in workplace safety perceptions. The findings are expected to contribute empirical evidence toward strengthening occupational safety governance, improving safety management practices, and supporting safer and more sustainable marine tourism operations in Malaysia and similar developing maritime tourism contexts.

2. Methodology

2.1 Study Design and Setting

A cross-sectional quantitative survey design was employed to assess safety climate perceptions among workers involved in marine tourism operations in Terengganu, Malaysia. Data collection was conducted at three strategically

selected marine tourism jetty locations representing different operational characteristics and tourism intensities: Taman Tamadun Islam (TTI), Merang, and Kuala Besut. TTI represents the largest and most structurally organised jetty facility within the study area, while Merang operates as a smaller-scale marine tourism terminal with comparatively lower operational density. Kuala Besut serves as the principal gateway to the Perhentian Islands, one of Malaysia's major island tourism destinations with substantial daily passenger movement. The selection of these locations enabled comparison across diverse marine tourism operational environments and provided broader insight into safety climate dynamics within the sector.

2.2 Participants

A total of 152 workers participated in the study, comprising respondents from TTI ($n = 60$, 39.5%), Kuala Besut ($n = 59$, 38.8%), and Merang ($n = 33$, 21.7%). The distribution of respondents generally reflected the relative operational scale of each jetty location. The sample was predominantly male (65.8%), consistent with the traditionally male-dominated nature of the Malaysian maritime sector. Most respondents were below 50 years of age (89.5%), reflecting the physically demanding characteristics of marine tourism operations. The majority occupied non-managerial positions (90.1%), including boat operators, deckhands, and jetty support personnel, while 9.9% held supervisory or management roles.

2.3 Instrument and Validation

Safety climate was assessed using an adapted short-form version of the Nordic Occupational Safety Climate Questionnaire (NOSACQ-50) developed by (Kines et al., 2011). The original NOSACQ-50 is a widely validated instrument comprising seven dimensions related to management commitment, worker participation, communication, trust, and risk-related attitudes. To improve field administration feasibility within marine tourism operational settings, a condensed 25-item version (NOSACQ-25) was developed for the present study while retaining all seven

conceptual dimensions of the original framework.

All items were measured using a five-point Likert scale ranging from 1 (“Strongly Disagree”) to 5 (“Strongly Agree”). Four items within the Workers’ Safety Priority and Risk Non-Acceptance dimension were reverse-coded to ensure directional consistency, whereby higher scores reflected lower acceptance of unsafe work practices. Dimension scores were calculated as the arithmetic mean of constituent items. The instrument was administered in Bahasa Malaysia, and minor wording modifications were introduced to improve contextual relevance to marine tourism operations while maintaining conceptual equivalence with the original instrument.

Content validity was established through expert review involving specialists in occupational safety and health, safety management, and maritime operational safety. The review process evaluated item relevance, clarity, and contextual suitability for marine tourism operational environments. Item selection and adaptation were guided by theoretical alignment with the validated NOSAQ framework and practical applicability to the operational experiences of boat operators and jetty personnel. The adaptation process retained the essential constructs of management

safety commitment, safety empowerment, safety justice, worker safety commitment, risk non-acceptance, peer communication and trust, and trust in safety systems.

The internal consistency reliability of the adapted NOSAQ-25 was assessed using Cronbach’s alpha coefficients. The overall scale demonstrated good reliability ($\alpha = .81$), while dimension-level alpha values ranged from .63 to .77, indicating acceptable reliability for exploratory field-based research involving shortened scales. Collectively, the expert validation process, theoretically guided item selection, and empirical reliability assessment support the suitability of the adapted NOSAQ-25 for assessing occupational safety climate within marine tourism operations.

3. Results

3.1 Sample Characteristics

Demographic characteristics of participants are presented in Table 1. The distribution across sites was proportional to facility scale. The workforce was young (46.1% aged 30 or under; 43.4% aged 31–49; 10.5% aged 50 or above) and male-dominated (65.8%), consistent with broader patterns in Malaysian maritime operations. Nearly all participants (90.1%) were non-management personnel.

Table 1. Demographic Characteristics of Participants (N = 152)

Characteristic	n	%
Jetty Location		
TTI	60	39.5
Merang	33	21.7
Kuala Besut	59	38.8
Age Group		
30 years and below	70	46.1
31–49 years	66	43.4
50 years and above	16	10.5
Gender		

Male	100	65.8
Female	52	34.2
Management Position		
Non-management	137	90.1
Management/supervisory	15	9.9

3.2 Item-Level Descriptive Statistics

Table 2 presents item-level descriptive statistics for the NOSAQ-25. Overall, respondents reported generally favourable safety perceptions, with most items recording mean scores above 4.00. The highest-rated items were related to workers' safety commitment and trust in safety

systems, particularly teamwork in achieving high safety standards and confidence in safety inspections. In contrast, the lowest-rated items were concentrated within the Risk Non-Acceptance dimension, indicating comparatively higher acceptance of unsafe practices and greater variability in attitudes toward workplace risk.

Table 2. Item-Level Descriptive Statistics for the NOSAQ-25 (N = 152)

Item	M	SD	Mdn
Management Safety Priority, Commitment and Competence			
Work to rules even when schedule is tight	4.11	0.91	4.00
All receive safety information	4.09	0.84	4.00
Prioritise safety over productivity	4.03	0.92	4.00
Confident management handles safety well	4.18	0.81	4.00
Management Safety Empowerment			
Design meaningful safety routines	4.11	0.92	4.00
Everyone influences safety	4.11	0.83	4.00
Workers encouraged to make safety decisions	3.95	0.93	4.00
Management Safety Justice			
Listen carefully during accidents	4.21	0.81	4.00
Seek cause rather than blame individuals	4.06	0.83	4.00
Treat workers involved in accidents fairly	4.00	0.87	4.00

Workers' Safety Commitment			
Work together to achieve high safety (highest item)	4.31	0.72	4.00
Mutual responsibility for a tidy workplace	4.18	0.78	4.00
Help each other work safely	4.28	0.76	4.00
Workers' Safety Priority and Risk Non-Acceptance (reverse-coded)			
Accept dangerous behaviour if no accidents (R) — lowest item	2.55	1.36	2.00
Accept risk-taking at work (R)	2.69	1.35	3.00
Regard minor accidents as normal (R)	2.70	1.44	2.00
Do not accept risk even when schedule is tight	2.92	1.43	3.00
Peer Safety Communication, Learning and Trust			
Find solutions to safety problems	4.22	0.73	4.00
Feel safe working together	4.18	0.77	4.00
Trust one another to ensure safety	4.13	0.83	4.00
Learn from experience to avoid accidents	4.30	0.72	4.00
Trust in Efficacy of Safety Systems			
Safety representatives prevent accidents	4.25	0.86	4.00
Safety training important to prevent accidents	4.29	0.73	4.00
Inspections detect serious hazards	4.30	0.68	4.00
Safety goals are clear and important	4.27	0.75	4.00

Note. $N = 152$. (R) = reverse-coded item. Responses measured on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). M = Mean; SD = Standard Deviation; Mdn = Median.

3.3 Safety Climate Dimensions: Descriptive Statistics and Reliability

Table 3 presents the descriptive statistics, reliability coefficients, and normality test results for the NOSAQ-25 dimensions. The overall scale demonstrated good internal consistency ($\alpha = .81$), while dimension-level reliability coefficients

ranged from .63 to .77, indicating acceptable reliability for exploratory field-based research. Among the seven dimensions, Trust in Safety Systems recorded the highest mean score ($M = 4.28$), followed by Workers' Safety Commitment ($M = 4.25$) and Peer Communication and Trust ($M = 4.21$), suggesting generally favourable safety perceptions among respondents. The overall

safety climate mean was 3.94 (SD = 0.40), indicating a moderately positive safety climate across the studied marine tourism operations. In contrast, Risk Acceptance recorded the lowest mean score (M = 2.72) and the highest variability, indicating comparatively greater acceptance of

unsafe practices and inconsistent attitudes toward workplace risk. Normality tests were statistically significant for all dimensions ($p < .001$), supporting the use of non-parametric statistical procedures.

Table 3. Safety Climate Dimensions: Descriptive Statistics, Internal Consistency, and Normality (N = 152)

Dimension	M	SD	Min	Max	Skew	Kurt	K-S	α
Management Safety Priority	4.10	0.61	1.50	5.00	-1.15	2.54	.157** *	.66
Management Safety Empowerment	4.05	0.68	2.00	5.00	-0.60	0.03	.185** *	.63
Management Safety Justice	4.09	0.66	1.00	5.00	-1.35	3.33	.209** *	.68
Workers' Safety Commitment	4.25	0.59	1.67	5.00	-1.34	2.97	.183** *	.70
Risk Acceptance	2.72	1.07	1.00	5.00	0.60	-0.72	.168** *	.77
Peer Communication & Trust	4.21	0.56	2.00	5.00	-1.21	2.90	.210** *	.71
Trust in Safety Systems	4.28	0.58	1.75	5.00	-1.34	4.01	.153** *	.77
Overall Safety Climate	3.94	0.40	1.96	5.00	-0.93	5.60	—	.81

Note. M = Mean; SD = Standard Deviation; Skew = Skewness; Kurt = Kurtosis; K-S = Kolmogorov-Smirnov statistic; α = Cronbach's alpha. *** $p < .001$. All K-S and Shapiro-Wilk statistics significant at $p < .001$.

3.4 Comparison Across Jetty Locations

TTI recorded the highest scores on five of the seven dimensions. Workers' Safety Commitment was particularly strong at TTI (M = 4.42, SD = 0.27), where no participant scored below 4.00, a notably narrow range reflecting high within-site consensus. TTI also led on Management Safety Justice (M = 4.29) and Management Safety Empowerment (M = 4.20). The consistently low standard deviations at TTI indicate that safety

perceptions are both stronger and more uniformly shared at this site. Merang achieved the lowest scores on management-related dimensions, with Management Safety Empowerment (M = 3.85, SD = 0.81) and Management Safety Justice (M = 3.84, SD = 0.84) falling below the 4.00 threshold. The wider standard deviations characteristic of Merang across all dimensions suggest inconsistent safety practices or mixed experiences of management

behaviour. Kuala Besut showed moderate overall performance, recording the highest overall safety climate mean ($M = 4.02$), but this masked a

markedly elevated and highly variable Risk Acceptance score ($M = 3.40$, $SD = 1.00$) which is the highest of the three sites.

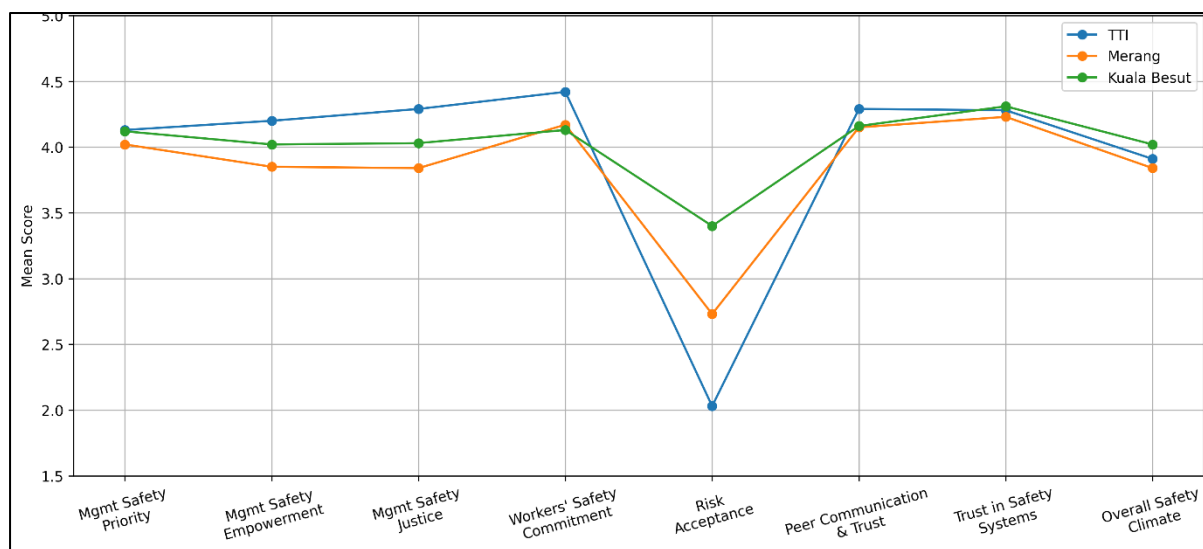


Figure 1. Safety climate dimensions by jetty location

3.6 Correlations Among Safety Climate Dimensions

Spearman's rho analysis indicated significant positive correlations among most safety climate dimensions ($\rho = .221-.470$, $p < .01$), suggesting a generally coherent safety climate structure. The strongest associations were observed between Management Safety Priority and Management Safety Empowerment ($\rho = .470$, $p < .001$), and between Management Safety Justice and Workers' Safety Commitment ($\rho = .462$, $p < .001$). In contrast, Risk Acceptance showed weak and non-significant correlations with all other dimensions, indicating that risk-tolerant attitudes may operate independently from the broader safety climate construct.

4. Discussion

This study provides one of the first empirical assessments of safety climate within Malaysia's marine tourism jetty sector using an adapted NOSAQ-based instrument. Overall, the findings indicate a moderately positive safety climate across the studied locations, with an overall mean score of 3.94. High scores recorded for Trust in Safety Systems, Workers' Safety Commitment,

and Peer Communication and Trust suggest that workers generally perceived existing safety systems, teamwork, and peer support positively. These findings are consistent with previous maritime safety studies which reported that worker cooperation, communication, and confidence in organizational safety systems contribute significantly to safer operational behaviour and improved safety outcomes (Barasa et al., 2025; Mallam et al., 2019).

Despite these generally favourable perceptions, the findings also revealed several important operational vulnerabilities. Most notably, Risk Acceptance recorded substantially lower mean scores and showed weak, non-significant correlations with all other safety climate dimensions. This pattern suggests that risk-tolerant attitudes may operate relatively independently from the broader safety climate structure. Within marine tourism operations, workers are frequently exposed to operational pressures associated with passenger demands, weather variability, and schedule constraints, which may contribute to the normalization of unsafe practices. Previous maritime studies have similarly highlighted that hazardous attitudes, risk

tolerance, and behavioural adaptation can significantly influence safety behaviour even within organizations reporting otherwise positive safety climates (Xi et al., 2021; Yao et al., 2026). Consequently, improving general safety management practices alone may not be sufficient to reduce unsafe risk-taking behaviour unless targeted behavioural interventions are also implemented.

Significant inter-site differences further demonstrate that safety climate perceptions are influenced by local operational environments and management practices. TTI consistently recorded the strongest scores across most safety climate dimensions, particularly for Workers' Safety Commitment, Management Safety Justice, and Management Safety Empowerment. The comparatively low variability observed at TTI additionally suggests stronger consistency in safety perceptions among workers. In contrast, Merang demonstrated comparatively weaker perceptions on management-related dimensions, while Kuala Besut recorded substantially higher Risk Acceptance scores despite achieving the highest overall safety climate mean. These findings indicate that positive general safety perceptions may coexist with elevated tolerance toward unsafe operational practices under certain operational conditions. Given Kuala Besut's role as the primary gateway to the Perhentian Islands with high passenger movement during peak tourism periods, operational pressures may influence workers' attitudes toward risk and procedural compliance.

The findings also highlight the importance of management-related dimensions in shaping worker safety commitment. The strong correlation observed between Management Safety Justice and Workers' Safety Commitment suggests that workers are more likely to demonstrate positive safety behaviour when management is perceived as fair, supportive, and non-punitive during incident investigations. Previous safety climate research similarly emphasizes that management commitment, procedural fairness, and open communication contribute significantly to stronger worker

participation in safety-related practices (de Paula et al., 2025; Giovanni et al., 2023). The present findings therefore reinforce the importance of organizational trust and fair management practices within high-risk maritime operational environments.

The significant gender difference identified for Management Safety Priority represents another notable finding. Female workers perceived management safety priority more positively than male workers, although no gender differences were observed for the remaining safety climate dimensions. While the marine tourism sector remains predominantly male-dominated, this finding may reflect differences in safety sensitivity, task exposure, or communication experiences between worker groups. Nevertheless, the absence of significant differences between management and non-management employees suggests that safety climate perceptions were relatively consistent across organizational levels. This may indicate that safety-related communication and organizational safety values were broadly shared throughout the workforce rather than being isolated within management structures.

The observed correlations among most safety climate dimensions further support the multidimensional and interconnected nature of occupational safety climate within marine tourism operations. Strong associations between Management Safety Priority, Management Safety Empowerment, and Workers' Safety Commitment indicate that improvements in management practices may positively influence broader worker safety behaviour and communication. Similar interrelationships have been reported in previous maritime and occupational safety studies, where management leadership, empowerment, and communication were identified as important predictors of organizational safety performance (Barasa et al., 2025; Yorulmaz & Sevinc Basol, 2024). However, the comparatively distinct behaviour of the Risk Acceptance dimension suggests that behavioural attitudes toward operational risk may require separate intervention strategies focusing on risk

awareness, behavioural safety training, and operational monitoring.

Overall, the findings demonstrate that marine tourism operations possess unique safety climate characteristics shaped by organizational practices, operational demands, and behavioural risk perceptions. The study contributes empirical evidence to the limited literature on occupational safety climate within marine tourism settings, particularly in developing maritime tourism contexts such as Malaysia. From a practical perspective, the findings highlight the need for site-specific safety interventions, strengthened behavioural safety programmes, and enhanced management engagement in promoting safe operational practices. Future studies may further explore causal relationships among safety climate dimensions using advanced analytical approaches such as structural equation modelling or longitudinal analysis to better understand how organizational and behavioural factors interact over time within marine tourism operations.

5. Conclusion

This study establishes a quantitative baseline for safety climate in Terengganu's marine tourism jetty sector. While the overall safety climate is moderately positive, three key vulnerabilities were identified: (1) an elevated and structurally

independent Risk Acceptance dimension that is unlikely to respond to general safety climate improvement alone; (2) significant inter-site disparities, particularly Kuala Besut's markedly higher risk acceptance and Merang's weaker management-related perceptions; and (3) a gender difference in Management Safety Priority perception that points to differential safety experiences within the workforce. These findings provide the empirical groundwork for the development of a site-differentiated occupational hazards checklist and an AI-driven hazard assessment system. Interventions at Kuala Besut should specifically address risk normalisation behaviours, particularly in the context of operational pressures during peak tourist seasons. Merang would benefit from targeted improvements in management fairness and empowerment practices. TTI, while the strongest performer, presents a model from which lessons may be drawn for the other sites.

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References

- Adam, S. M., Mohammad Afandi, S. H., Ling, S. M., & Mohd Yusof, M. J. bin. (2024). Assessment of Marine Tourism Carrying Capacity: A Case Study at Kapas Island Marine Park, Malaysia. *International Journal of Academic Research in Business and Social Sciences*, 14(1). <https://doi.org/10.6007/IJARBS/v14-i1/18129>
- Barasa, L., Simanjuntak, M., & Syafitra, B. W. (2025). Factors affecting the safety climate of the ship's crew: Empirical evidence from shipping companies in Indonesia. *Asian Journal of Shipping and Logistics*, 41(2), 75–82. <https://doi.org/10.1016/j.ajsl.2025.02.001>
- de Paula, J. A. P., Lisciotto, L., Sertã, C. S. B., & Diniz, F. L. B. (2025). A Framework for Climate Risk Assessments and Application to Offshore Assets. *2025 Spring Meeting and 21st Global Congress on Process Safety Gcps 2025*.
- Giovanni, A., Fathimahhayati, L. D., & Pawitra, T. A. (2023). Risk Analysis of Occupational Health and Safety Using Hazard Identification, Risk Assessment and Risk Control (HIRARC) Method (Case Study in PT Barokah Galangan Perkasa). *IJIEM - Indonesian Journal of Industrial Engineering and Management*, 4(2), 198. <https://doi.org/10.22441/ijiem.v4i2.20398>

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- Kines, P., Lappalainen, J., Mikkelsen, K. L., Olsen, E., Pousette, A., Tharaldsen, J., Tómasson, K., & Törner, M. (2011). Nordic Safety Climate Questionnaire (NOSACQ-50): A new tool for diagnosing occupational safety climate. *International Journal of Industrial Ergonomics*, 41(6), 634–646. <https://doi.org/10.1016/j.ergon.2011.08.004>
- Mallam, S. C., Ernsten, J., & Nazir, S. (2019). Safety in Shipping: Investigating Safety Climate in Norwegian Maritime Workers. *Proceedings of the Human Factors and Ergonomics Society*, 63(1), 1844–1848. <https://doi.org/10.1177/1071181319631007>
- Noor Arzahan, I. S., Ismail, Z., & Yasin, S. M. (2022). Safety culture, safety climate, and safety performance in healthcare facilities: A systematic review. In *Safety Science* (Vol. 147). Elsevier B.V. <https://doi.org/10.1016/j.ssci.2021.105624>
- Nurul'akla, C. M., Boer, M., Yulianda, F., & Taryono. (2026). Carrying Capacity and Restricted Models in Marine Tourism: A Systematic Literature Review of Global Practices and Governance Implications. *Journal of Marine and Island Cultures*, 15(1). <https://doi.org/10.21463/jmic.2026.15.1.10>
- Shah, I. A., & Mishra, S. (2024). Artificial intelligence in advancing occupational health and safety: An encapsulation of developments. *Journal of Occupational Health*, 66(1). <https://doi.org/10.1093/joccu/uhad017>
- Syed-Yahya, S. N. N., Idris, M. A., & Noblet, A. J. (2022). The relationship between safety climate and safety performance: A review. *Journal of Safety Research*, 83, 105–118. <https://doi.org/10.1016/j.jsr.2022.08.008>
- Xi, Y., Zhang, Q., Hu, S., Yang, Z., & Fu, S. (2021). The effect of social cognition and risk tolerance on marine pilots' safety behaviour. *Maritime Policy and Management*, 48(1), 1–18. <https://doi.org/10.1080/03088839.2020.1847338>
- Yao, Y., Zhao, Y., Li, C., Sumaila, U. R., & Parmak, M. (2026). Human factors in yachting tourism accidents: an integrated human factors classification framework with statistical and network analysis. *Scientific Reports*. <https://doi.org/10.1038/s41598-025-33808-8>
- Yap, J. B. H., Lee, K. P. H., & Wang, C. (2023). Safety enablers using emerging technologies in construction projects: empirical study in Malaysia. *Journal of Engineering, Design and Technology*, 21(5), 1414–1440. <https://doi.org/10.1108/JEDT-07-2021-0379>
- Yorulmaz, M., & Sevinc Basol, F. (2024). Yacht crews' perceptions of ethical climate, safety climate, psychological capital and psychological well-being in Türkiye. *Maritime Business Review*, 9(2), 113–127. <https://doi.org/10.1108/MABR-07-2023-0057>
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