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Review Article

Impact of Work Safety Culture on Safety Measures in Construction Firms: A Systematic Review

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About Article

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ABSTRACT

The construction industry is inherently high-risk, thus requiring safety measures to protect workers from accidents and injuries. The effectiveness of these measures heavily depends on the underlying safety culture within organizations. This review explores how work safety culture affects the implementation and effectiveness of safety measures adoption and efficacy in construction firms, with the view to synthesize available evidence and providing insights.The study adhered to a systematic review framework based on the PRISMA 2020 guidelines. Relevant studies were located through searches across electronic databases such as Scopus, Web of Science, Google Scholar, and JSTOR. After the screening process, a total of sixteen (16) studies published from 2020 to 2024 were included in the review. The papers selected for the review mainly examined the connection between safety culture and safety measures within construction firms. Relevance and quality were ensured by applying specific inclusion and exclusion criteria. The review revealed that a strong safety culture greatly improves adherence to safety regulations and the implementation of effective safety measures. Construction firms that possess a strong safety culture exhibited higher rates of safety protocol implementation, reduced accident occurrences, and enhanced overall safety outcomes albeit to varied extents depending factors like management commitment, employee engagement, and resource availability. Frequently reported obstacles included inconsistent enforcement of safety measures. There is a need for CFs to focus on developing a robust safety culture by emphasizing continuous safety training, ensuring management commitment, involving employees and conducting regular assessments of safety practices. Additional research is needed to investigate how safety culture influences safety outcomes and to determine effective strategies for promoting a positive safety culture within the construction industry.

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1. INTRODUCTION

The construction industry is inherently high-risk and therefore requires strong safety precautions to guard workers from accidents and injury (Giri, 2020). According to the Bureau of Labour Statistics (2020), the United States alone accounts for nearly 20% of all workplace injuries despite construction workers representing only 6% of the workforce. In the year 2020, the construction industry witnessed a total of 150 deaths and 14,000 injuries that were not fatal, all of which were caused by accidents involving being struck by objects while on the job. These occurrences resulted in worker's compensation direct expenses amounting to $1.4 billion for non-fatal claims in which the workers were absent from work for more than five days (U.S. Bureau of Labour Statistics, 2021).

Though the effectiveness of these measures largely depends on the underlying safety culture in the industry, effective safety precautions are absolutely important (Naji *et al.*, 2021a). The increasing rate of accidents in construction underscores the need to recognise and implement an effective safety protocol. The Center for Construction Research and Training (2018) found that nonfatal injury rates in the construction industry were approximately 71% higher than the average of all industries. The safety measures of the construction industry not only influence the general strategy to control occupational safety but also the attitudes and practises of its workers.

Construction firms that practise safety culture have lower injury rates compared to those with weaker safety cultures (Naji *et al.*, 2021b), for instance, the study by Oclay *et al.* (2021) noted that a positive safety culture in construction SMEs could prevent 98% of injuries, accidents, and fatalities, noting that a lack of such culture leads to errors and violations of safety rules, highlighting management's failures to safeguard employees.

Owing to its high risk nature, the construction industry in Ghana as is common with other regions presents substantial safety concerns (Love *et al.*, 2019). Rapid urbanization together with with its corresponding increasing development projects around the country has led to a spike in the demand for construction activities leading to a rise in the danger of workplace accidents. Osei-Asibey *et al.*, 2021 contends that the construction industry in Ghana continues to record a significant number of accidents and injuries notwithstanding the introduction of different safety rules and standards in the industry.

2. LITERATURE REVIEW

In Ghana, the implementation of safety regulations and cultivation of a robust safety culture within construction businesses are still evolving. The Occupational Health and Safety (OHS) regulations in Ghana are designed to minimize workplace hazards, yet their effectiveness is largely reliant on construction companies' dedication to integrating safety culture into their operations (Kwofie *et al.*, 2020). Adzivor *et al.* (2024) discovered that construction firms in Ghana that emphasize safety culture experienced fewer workplace accidents and improved overall safety performance.

According to Kwofie *et al.* (2020) it is very important for the conduct of a thorough evaluation of the impact of work safety culture on safety measures in Ghanaian construction enterprises.

Work safety culture consists of the shared attitudes, values, and behaviours that prioritize safety in the workplace. Robust safety cultures encourage proactive safety measures and contribute to a decrease in workplace accidents. This concept highlights the importance of examining the extent to which culture influences the implementation and effectiveness of safety measures.

A positive safety culture greatly enhances adherence to safety regulations and the implementation of safety protocols. Organizations that have a strong safety culture are more inclined to enforce more effective safety measures and ensure workers comply with these practices. Abeje and Luo (2023) have demonstrated varying degrees of success in safety outcomes, indicating that the influence of safety culture on safety measures can be affected by several factors including organizational resources, employee engagement and management dedication. Understanding this relationship emphasizes the need to examine existing literature.

Figure 1 below represent a conceptual framework showing how safety culture impacts safety measures implementation in the construction industry. Research demonstrates that safety outcomes in construction emerge from complex interactions between cultural and procedural factors. Thus the framework posits that safety outcomes in construction are not merely the result of procedural compliance, but emerge from an interdependent system where organizational culture serves as the bedrock for effective safety measure implementation (Choudhry *et al.*, 2007; Zhou *et al.*, 2020). The construction industry's unique characteristics including project-based work, transient labor forces, and high-risk environments make this relationship particularly critical (Lingard & Rowlinson, 2005).

The framework presents safety culture as the independent variable directly influencing the implementation of safety measures (the dependent variable) leading to positive safety outcomes such as reduced accident rates, improved productivity and cost efficiency, and enhanced reputation and stakeholder trust. The framework acknowledges the mediating effects of; organizational policies and resources, worker attitudes and behavior, and economic and contractual pressures enabling strong safety outcomes in the construction industry. The independent variable of safety culture is anchored on five pillars including; Leadership Commitment - Proven to account for 32% of safety compliance variance (Zhou *et al.*, 2020) through visible safety participation and resource allocation (Mohamed, 2002), Employee Involvement - Workers' safety participation predicts 28% of hazard identification effectiveness (Neal & Griffin, 2006), Safety Communication - Regular toolbox talks reduce incidents by 41% (Khosravi *et al.*, 2014), and Training & Competence - Competency-based programs lower error rates by 37% (Fernández-Muñiz *et al.*, 2007).

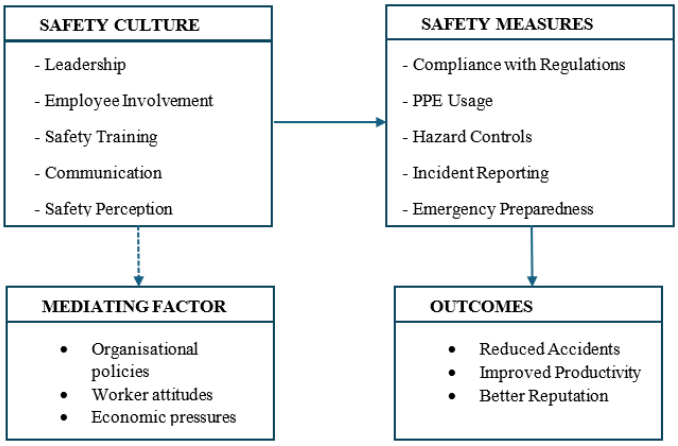

Figure 1. Conceptual Framework showing safety culture impacts on safety measures implementation
Source: Authors construct (2023)

Even though literature is replete with studies on safety culture and safety measures, there is a notable absence of a thorough review that synthesizes the findings from various contexts and approaches. Most of the existing studies presents disjointed and contradictory results, which complicates the process of reaching clear conclusions. The study of Al-Bayati *et al.* (2021) examined the impact of construction safety culture and climate on safety behaviour and motivation. Their study explored the general effects of safety culture, it however lacks a detailed discussion of how management commitment and employee engagement directly affect the implementation and effectiveness of safety measures in the construction industry. Trinh and Feng (2020) conducted a similar study in Vietnam examining the impact of project complexity on construction safety performance. Their research looked into the relationship between resilient safety culture and project complexity on performance within the context of building projects in Vietnam only. As a result it is limited in that it does not capture the diverse challenges and practices in different geographical contexts within the construction industry. Table 1 below presents a summary of these studies outlining the limitations, scope, and methodological differences.

Table 1. Summary table of studies on safety culture in construction

Study	Scope	Methodology	Key Limitations	Geographic Focus
Giri (2020)	Hazard identification in construction	Qualitative case studies (5 sites)	No statistical generalization	Nepal
Naji *et al.* (2021a,b)	Safety culture, psychosocial hazards, performance	Quantitative (n=500, PLS-SEM)	Oil/gas sector focus	Middle East
Osei-Asibey *et al.* (2021)	Ghana construction H&S framework	Delphi study (12 experts)	Theoretical, untested	Ghana
Trinh & Feng (2020)	Project complexity & safety culture	Quantitative survey (n=347)	Limited to large projects	Vietnam
Adzivor *et al.* (2024)	Safety culture in Ghanaian SMEs	Mixed-methods (25 interviews + 150 surveys)	SME-only focus	Ghana
Abeje & Luo (2023)	Safety culture in manufacturing	Quantitative (n=412, SEM)	Not construction-specific	Ethiopia
Al-Bayati (2021)	Safety climate behavior	Quantitative (n=280, CFA/ SEM)	Cross-sectional design	US/Iraq
CPWR (2018)	Global injury comparisons	Secondary data analysis	Outdated data	International
US BLS (2020, 2021)	US injury statistics	Descriptive statistics	No causal analysis	USA

The aim of this systematic review is to harness research on the impact of work safety culture on safety measures within the construction industry. Specifically, it seeks to explore research questions on the effects of safety culture on the implementation and efficiency of Safety policies in the construction industry.

3. METHODOLOGY

This review aimed to assess the impact of work safety culture on safety measures in construction firms. It was reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) with a PRISMA flowchart.

3.1. Eligibility criteria

This review included research that directly examined the relationship between safety culture and safety measures in construction industries. The eligible articles included original research, observational studies, and review articles that were published in English Language. The research should present factual data and a concise description of the safety culture components and safety measures that were investigated. The review omitted sources that were not focused on construction industries, lacked empirical data, or were published in languages other than English.

3.2. Information sources

A search was conducted across multiple electronic databases including Scopus, Web of Science, Google Scholar, JSTOR, ProQuest and the Engineering Village for relevant studies or sources used in this work. This search spanned from May 2020 to June 2024.

3.3. Search strategy

The search employed a technique involving a combination of keywords related to occupational safety culture and safety procedures in construction companies such as "Construction firms", "Work Safety Culture", "Occupational Safety", "Safety Measures", "Safety Compliance", and "Construction Safety Practices". To optimize the retrieval of pertinent studies, the search was customized for each database. Filters were applied to restrict the search results to articles published over a decade to ensure data currency and relevance. The articles were imported into reference management software, where duplicates were removed. The titles and abstracts of the articles were screened to determine their suitability based on the established inclusion criteria. Again the articles that met the initial screening criteria were assessed based on predefined inclusion and exclusion criteria.

3.4. Selection process

Initially, articles sourced from different outlets were incorporated into reference management software to eradicate any duplicate entries. The review procedure consisted of several screening stages to guarantee a comprehensive evaluation and selection of pertinent studies. During the initial screening stage, two independent reviewers assessed the titles and abstracts of articles based on the predetermined inclusion and exclusion criteria. Articles that did not fit these specific criteria were not included, and the reasons for their absence were recorded. This preliminary screening process aided in reducing the number of possibly pertinent research. After the title and abstract screening, the two reviewers thoroughly evaluated the remaining articles according to the established criteria. Every item underwent meticulous scrutiny to guarantee its compliance with the criteria for inclusion in the systematic review. Conflicting opinions among the reviewers were resolved by engaging in discussions or seeking input from the third reviewer. The rigorous screening method ensured that only the most pertinent and top-notch publications were included in the systematic review, hence bolstering the reliability and validity of the results.

3.5. Study risk of bias assessment

Two autonomous reviewers evaluated the potential for bias in each included paper. The categorization of each domain was determined based on the defined criteria outlined by assessment tools, resulting in the classification as either "Low Risk", "High Risk" or "Unclear Risk". Any error in the evaluation undertaken by the two reviewers was handled through a careful and thoughtful procedure or, if needed, by seeking the viewpoint of the third reviewer. This method guaranteed a thorough, organised and impartial review of the study regarding the influence of work safety culture on safety measures in the construction industry, adhering to guidelines specified in the PRISMA 2020 checklist.

3.6. Synthesis methods

The data synthesis employed a thematic analysis methodology, wherein the gathered data were classified into primary themes that arose from the research. The themes encompassed elements of safety culture, the execution of safety measures, and adherence and efficacy. The components of safety culture include characteristics such as managerial dedication, staff involvement, safety education, and communication. An analysis was conducted to comprehend how these factors lead to the development of a favourable safety culture inside construction companies. An analysis was conducted to examine the execution of safety measures, focusing on the methods and practices employed to improve safety. These included safety protocols, the utilisation of personal protective equipment (PPE), and frequent safety audits. The objective of this investigation was to ascertain the precise measures implemented by companies to foster a secure working environment. The evaluation focused on assessing the impact of safety culture on adherence to safety laws and the overall effectiveness of safety measures in reducing accidents and enhancing safety performance. This evaluation involved analysing the incidence of accidents, injuries, and fatalities in correlation with the existence of a robust safety culture. A narrative synthesis was performed for each subject, which involved summarising the main findings and making comparisons across various studies. This synthesis facilitated the recognition of similarities and distinctions in the strategies employed by different construction companies and yielded insights into the efficacy of various safety culture elements and safety precautions.

4. RESULTS AND DISCUSSION

Figure 2 below presents the systematic approach of the review used in choosing the reviewed studies. 489 papers from, Scopus, Google Scholar, and JSTOR were found in the first database search. It is reveal that 109 papers were retrieved from Scopus, 91 from Web of Science, 256 from Google Scholar, and 33 from JSTOR. A total of 197 records were removed for other reasons, 152 records were identified as ineligible by automation tools, and 218 duplicate records were removed altogether. Phase two proceeded to filter 205 sources, leaving out 87. Relevance and appropriateness for the research question were among the grounds for elimination at this level, albeit the graphic does not state why. To fine-tune the selection, 118 reports were requested for comprehensive retrieval; however, 33 could not be retrieved due to accessibility issues. Eligibility was assessed based on relevancy, methodological soundness, and review scope after 85 reports were retrieved. 69 papers were not included in this evaluation because they were either out of date (35), written in a language other than English (17), or featured a population that was not appropriate (17). Just 16 studies met the rigorous screening and evaluation criteria to be included in the systematic review. This low number demonstrates the stringent guidelines that were applied to guarantee that the review addressed the study topic and was founded on the best available, most pertinent evidence.

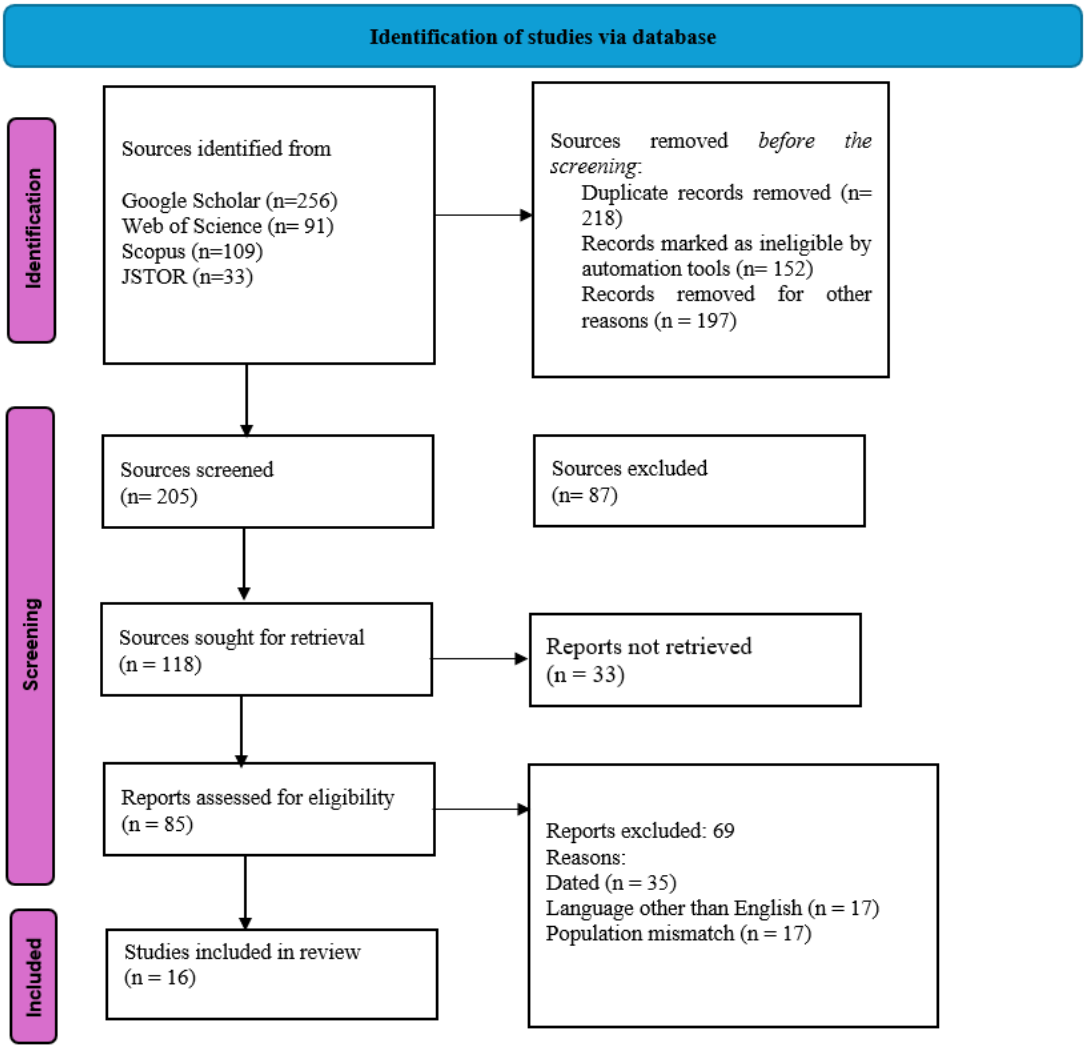

Figure 2. PRISMA process chart of the study.
Source (Authors construct, 2023)

4.1. Thematic analysis

The impact of work safety culture on safety measures in construction enterprises was comprehensively understood through the integration of findings from numerous studies through a thematic analysis technique used in the synthesis of the results in this systematic literature review. The three primary themes that framed the synthesis were compliance and efficacy, safety measure implementation, and safety culture components. Table 2 presents a summary of these themes. Every theme was examined to find recurring tactics, results, and difficulties that were mentioned in the papers that were included.

Table 2. Summary of thematic analysis

Main themes	Safety culture components	Safety protocols	Compliance and effectiveness
Sub themes	Management Commitment	Use of Personal protective equipment	Accident rates
	Employee Engagement	Regular safety audits	Safety compliance
	Safety Training	Safety communication	Overall safety performance
	Communication	Communication	Reduction in workplace injuries

4.2. Discussion

4.2.1. Safety culture components

i. Management commitment: Management dedication is crucial for cultivating a favourable safety culture in construction companies. Research has consistently demonstrated that when management actively engages in and gives priority to safety, the overall safety performance of the organisation is enhanced. The study Naji *et al.* (2021) showed that a high level of management commitment results in a substantial decrease in workplace accidents and injuries. This commitment encompasses establishing explicit safety objectives, allocating essential resources for safety programmes, and demonstrating

leadership via personal conduct.

ii. Employee engagement: Employee engagement is an essential element of a robust safety culture. Employees who are actively involved and committed to their work are more inclined to follow safety procedures and promptly notify authorities about possible dangers. Oclay *et al.* (2021) observed that the inclusion of employees in safety decision-making processes has the potential to mitigate up to 98% of injuries, accidents, and fatalities in small and medium-sized construction enterprises (SMEs). This engagement cultivates a feeling of possession and accountability in regards to upholding a secure work environment.

iii. Safety Training: Consistent safety training is essential to ensure that employees are knowledgeable about the latest safety regulations, policies and protocols. The Centre for Construction Research and Training (2018), reports that companies that invest in regular safety training programmes experience lower instances of nonfatal injuries. The training ought to be comprehensive and tailored to specifically tackle the risks linked to different construction activities.

iv. Communication: Effective communication is critical for the sharing of safety information and for making sure that all personnel understand the safety measures. Studies show that clear and consistent communication from supervisors to their teams enhances compliance safety protocols and reduces the chances of accidents caused by misunderstandings (Naji *et al.*, 2021). Communication channels should be readily available and inclusive, enabling feedback from employees.

4.2.2. Implementation of safety measure

i. Safety protocols: Implementing safety measures is essential for preventing workplace mishaps. The evaluated research suggest that companies that have clearly defined safety standards have a lower incidence of accidents. Giri (2020) discovered that the implementation of thorough safety standards, when adhered to carefully, substantially reduces the probability of accidents in hazardous construction settings.

ii. Use of personal protective equipment: Following the proper use of personal protective equipment (PPE) is another vital safety measure. The studies reviewed emphasize the importance of providing appropriate personal protective equipment (PPE) and ensuring that workers use it properly. According to the Bureau of Labour Statistics (2020), the use of Personal Protective Equipment (PPE) can greatly decrease the likelihood of the occurrence of injuries in the construction industry.

iii. Regular safety audits: Frequent safety audits help identify possible hazards and ensure compliance with safety regulations. According to Naji *et al.* (2021), construction firms that perform regular safety audits exhibit enhanced safety outcomes and lower accident rates. These audits should be carried out systematically and include assessments performed both internally and externally.

iv. Safety communication: Safety communication involves sharing safety-related information and fostering a culture of safety awareness among employees. Effective safety communication ensures that all workers understand the safety protocols and the importance of adhering to them. The reviewed studies highlight that frequent safety meetings and briefings can enhance compliance with safety regulations (Oclay *et al.*, 2021).

4.2.3. Compliance and effectiveness

i. Accident rates: Accident rates are a key measure of how effective safety measures are. The reviewed studies consistently show that companies with a strong safety culture and well-implemented safety protocols experience lower accident rates. For instance, according to a study conducted by the Centre for Construction Research and Training in 2018, companies with strong safety cultures had considerably lower rates of nonfatal injuries compared to the average rate in the industry.

ii. Safety compliance: Safety compliance refers to the degree to which personnel adhere to established safety protocols. Studies indicate that construction firms with strong safety cultures generally exhibit higher levels of safety compliance. Research by Giri (2020) revealed that companies that emphasize safety compliance through continuous training and effective communication are more inclined to achieve positive safety results.

iii. Overall safety performance: The overall safety performance involves several metrics such as accident rates, compliance with safety regulations, and employee safety conduct. The research assessed reveal that companies boasting a strong safety culture and efficient safety procedures exhibit outstanding safety performance. According to Naji *et al.* (2021a) these companies not only decrease accidents but also enhance overall worker morale and productivity.

4.2.4. Reduction in workplace injury

The primary objective of installing safety measures is to mitigate workplace injuries. The studies repeatedly indicate that the establishment of a robust safety culture results in a substantial decrease in both fatal and nonfatal injuries. Oclay *et al.* (2021) shown that construction small and medium enterprises (SMEs) who possess a favourable safety culture have the ability to avert as much as 98% of occupational injuries and fatalities.

5. CONCLUSION

This systematic review highlights the significance of safety culture in the workplace in enhancing safety measures and outcomes in construction firms. The key findings indicate that strong elements of safety culture, including management commitment, employee involvement, regular safety training, and efficient communication, significantly reduces workplace accidents and improves compliance. The consistency of these findings across various studies highlights the importance for integrating safety culture into the operations and activities of construction firms. The review highlights that developing a strong safety culture not only lessens risks but also fosters a safer workplace, leading to enhanced overall safety performance. These findings are essential for construction firms, safety managers, and policymakers seeking to improve safety standards within the industry.

RECOMMENDATIONS

The requirements for establishing a robust safety culture

include continuous safety training, strong management commitment, and direct employee participation. There is the need for Construction firms to periodically organise training programmes for their personnel to be updated on the newest safety standards and protocols. The commitment of management to safety via serious investments in safety, adherence to safety protocols, and prioritising safety in all operational decisions is key. Encouraging employee engagement in safety conversations and decision-making processes promotes a sense of ownership and responsibility for a safe working environment.

With respect to Policymakers and industry leaders, it is recommended for the implementation of policies aimed at fostering a positive safety culture. Regular safety audits are critical for identifying possible hazards and ensuring compliance with safety standards. Incentives for safety compliance, such as recognition programmes or money prizes, can encourage employees and management to follow safety guidelines. Furthermore, incorporating safety culture into organisational goals ensures that safety is a core value that is continually prioritised at all levels of the organisation.

Future research examining the specific ways in which safety culture influences safety results is needed. Longitudinal studies can shed light on the long-term impact of safety culture reforms. Identifying best practices for fostering a positive safety culture could be advantageous to the construction industry. Investigating the impact of technological advancements, such as safety management software and wearable safety devices, may also enhance safety culture. Cross-country and organizational size comparative studies could offer valuable insights into the contextual factors that affect the implementation and efficiency of safety cultures.

LIMITATIONS

This systematic review has some limitations. The findings may have been affected by potential publication bias, as studies with positive results are more often published. Variations in study designs, along with the exclusion of studies in languages other than English, might limit the general applicability of the conclusions. The differences in study designs, combined with the exclusion of non-English studies, may restrict the conclusions' generalizability. The differences among the included studies also prevented the use of meta-analyses, which could have produced more precise estimates of effects, hence a further limitation.

Future research should concentrate on longitudinal studies that investigate the long-term impact of safety culture on safety outcomes in construction companies. Such studies may provide further information on the long-term viability and effectiveness of safety culture reforms. Furthermore, research should look at the particular mechanisms by which safety culture influences safety behaviours and results, as well as identify best practices for cultivating a positive safety culture in a variety of construction settings. Investigating the role of technical improvements, like as safety management software and wearable safety equipment, in improving safety culture may also be beneficial. Furthermore, comparison studies across different geographical regions and organisational sizes could provide useful information about the contextual elements that influence the implementation and effectiveness of safety culture initiatives.

REFERENCES

Abeje, M., & Luo, F. (2023). The Influence of Safety Culture and Climate on Safety Performance: Mediating Role of Employee Engagement in Manufacturing Enterprises in Ethiopia. *Sustainability, 15*(14), 11274. https://doi.org/10.3390/su151411274

Adzivor, E., Emuze, F., Ahiabu, M., & Kusedzi, M. (2024). Scaling up a Positive Safety Culture among Construction Small and Medium-Sized Enterprises in Ghana. *International Journal of Environmental Research and Public Health, 21*(7), 817. https://doi.org/10.3390/IJERPH21070817

Al-Bayati, A. J. (2021). Impact of Construction Safety Culture and Construction Safety Climate on Safety Behaviour and Safety Motivation. *Safety, 7*(2), 41. https://doi.org/10.3390/safety7020041

Center for Construction Research and Training (CPWR). (2018). *Fatal and non-fatal injuries by industrial country*. CPWR Data Center. Retrieved from https://www.cpwr.com/research/data-center/the-construction-chart-book/interactive-7th/injuries-illnesses-health/fatal-and-nonfatal-injuries-by-industrial-country

Choudhry, R. M., Fang, D., & Mohamed, S. (2007). The nature of safety culture: A survey of the state-of-the-art. *Safety Science, 45*(10), 993-1012. https://doi.org/10.1016/j.ssci.2006.09.003

Fernández-Muñiz, B., Montes-Peón, J. M., & Vázquez-Ordás, C. J. (2007). Safety culture: Analysis of the causal relationships between its key dimensions. *Journal of Safety Research, 38*(6), 627-641. https://doi.org/10.1016/j.jsr.2007.09.001

Giri, O. P. (2020). Factors Causing Health and Safety Hazards at Construction Sites. *Technical Journal, 2*(1), 68–74. https://doi.org/10.3126/tj.v2i1.32841

Khosravi, Y., Asilian-Mahabadi, H., Hajizadeh, E., Hassanzadeh-Rangi, N., Bastani, H., & Behzadan, A. H. (2014). Factors influencing unsafe behaviors and accidents on construction sites: A review. *International Journal of Occupational Safety and Ergonomics, 20*(1), 111-125. https://doi.org/10.1080/10803548.2014.11077023

Kwofie, T. E., Aigbavboa, C., & Thwala, W. (2020). Understanding Communication in Construction Project Delivery. *Effective Construction Project Delivery*, 13–25. https://doi.org/10.1007/978-3-030-49374-5_2

Lingard, H., & Rowlinson, S. (2005). *Occupational health and safety in construction project management*. Taylor & Francis.

Love, P. E. D., Teo, P., Smith, J., Ackermann, F., & Zhou, Y. (2019). The nature and severity of workplace injuries in construction: engendering operational benchmarking. *Ergonomics, 62*(10), 1273–1288. https://doi.org/10.1080/0014

0139.2019.1644379

Mohamed, S. (2002). Safety climate in construction site environments. *Journal of Construction Engineering and Management, 128*(5), 375-384. https://doi.org/10.1061/(ASCE)0733-9364(2002)128:5(375)

Naji, G. M. A., Isha, A. S. N., Mohyaldinn, M. E., Leka, S., Saleem, M. S., Rahman, S. M. N. B. S. A., & Alzoraiki, M. (2021a). Impact of safety culture on safety performance; mediating role of psychosocial hazard: An integrated modelling approach. *International Journal of Environmental Research and Public Health, 18*(16). https://doi.org/10.3390/ijerph18168568

Naji, G. M. A., Isha, A. S. N., Mohyaldinn, M. E., Leka, S., Saleem, M. S., Rahman, S. M. N. B. S. A., & Alzoraiki, M. (2021b). Impact of Safety Culture on Safety Performance; Mediating Role of Psychosocial Hazard: An Integrated Modelling Approach. *International Journal of Environmental Research and Public Health, 18*(16). https://doi.org/10.3390/IJERPH18168568

Neal, A., & Griffin, M. A. (2006). A study of the lagged relationships among safety climate, safety motivation, safety behavior, and accidents at the individual and group levels. *Journal of Applied Psychology, 91*(4), 946-953.

Olcay, Z. F., Temur, S., & Sakalli, A. E. (2021). A research on the knowledge level and safety culture of students taking occupational health and safety course. *Cypriot Journal of Educational Sciences, 16*(1), 187–200. https://doi.org/10.18844/CJES.V16I1.5519

Osei-Asibey, D., Ayarkwa, J., Acheampong, A., Adinyira, E., Amoah, P., Osei-Asibey, D., Ayarkwa, J., Acheampong, A., Adinyira, E., & Amoah, P. (2021). Framework for Improving Construction Health and Safety on Ghanaian Construction Sites. *Journal of Building Construction and Planning Research, 9*(2), 115–137. https://doi.org/10.4236/JBCPR.2021.92009

Trinh, M. T., & Feng, Y. (2020). Impact of Project Complexity on Construction Safety Performance: Moderating Role of Resilient Safety Culture. *Journal of Construction Engineering and Management, 146*(2). https://doi.org/10.1061/(ASCE)CO.1943-7862.00017

United States Bureau of Labour Statistics (2020). *Employer-reported workplace injuries and illnesses.* https://www.bls.gov/spotlight/2022/workplace-injuries-and-job-requirements-for-construction-laborers/home.htm

United States Bureau of Labour Statistics (2021). *Construction-industry-fatality-injury.* https://www.jacksonlewis.com/insights/bureau-labor-statistics-releases-2021-construction-industry-fatality-injury-data

Zhou, Z., Goh, Y. M., & Li, Q. (2020). Overview and analysis of safety management studies in the construction industry. *Safety Science, 72*, 337-350.