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Editorial Note

South Asian Journal of Management Research (SAJMR), is a scholarly journal that publishes scientific research on the theory and practice of management. All management, computer science, environmental science related issues relating to strategy, entrepreneurship, innovation, technology, and organizations are covered by the journal, along with all business-related functional areas like accounting, finance, information systems, marketing, and operations. The research presented in these articles contributes to our understanding of critical issues and offers valuable insights for policymakers, practitioners, and researchers. Authors are invited to publish novel, original, empirical, and high quality research work pertaining to the recent developments & practices in all areas and disciplined.

Cross-functional, multidisciplinary research that reflects the diversity of the management science professions is also encouraged, the articles are generally based on the core disciplines of computer science, economics, environmental science, mathematics, psychology, sociology, and statistics. The journal's focus includes managerial issues in a variety of organizational contexts, including for profit and nonprofit businesses, organizations from the public and private sectors, and formal and informal networks of people. Theoretical, experimental (in the field or the lab), and empirical contributions are all welcome. The journal will continue to disseminate knowledge and publish high-quality research so that we may all benefit from it.

Dr. Pooja M. Patil
Editor

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South Asian Journal of Management Research
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C O N T E N T S

The Influence of Safety Culture on Safety Performance through the Mediating Role of Employee Engagement within the Context of a Small Island & Developing State: A case Study of the Mauritian Construction Sector

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Abstract
Occupational safety and health is one of the cornerstones in sustainable development so that employees stay in good health and contribute effectively to the economy of the country. Since safety issues can have a significant negative impact on both employee well-being and businesses' success, construction companies have a strategic challenge in risk management due to its hazardous, transient and dynamic nature. This study adds to the literature on safety culture by demonstrating that a psychosocially safe culture can prevent psychological distress and even mortality in dangerous workplaces.Numerous research has been carried out in recent years to investigate the connections between worker performance, safety climate, and safety culture.The purpose of this study was to investigate how employee engagement (EE) functions as a mediator in the relationship between safety performance (SP) and safety culture (SC) among construction sector workers. Good employee engagement not only improves the working conditions but also positively influences employee behaviours towards safety, which will ultimately lower the number of accidents that occur in the workplace. Moreover, it was notedthat a lack of engagement from workers can also lead to psychological distress within an organisationData was collected from 381 participants, out of which 374 questionnaires were deemed fit and appropriate, to analyse the proposed conceptual model using structural equation modelling, or SEM.The questionnaire items were retrieved from previous studies and the meaning and significance of each questionnaire items were explained to construction workers. The results show that the relationship between safety culture and safety performance is partially mediated by employee engagement. Additionally, it was discovered that safety performance was significantly and favorably impacted by safety culture. This study also bridged the existing gap between worker safety performance and employee engagement, demonstrating that management commitment, a supportive work environment, and worker involvement were key drivers of a strong safety culture. This research is beneficial to any country or SIDS whose economic, societal, and occupational safety and health dynamics resemble that of Mauritius.

Keywords— Occupational Safety & Health, Safety Culture, Safety Performance, Employee Engagement, Mauritius

Introduction

One of the cornerstones of sustainable development is a safe & healthy workplace, one of the fundamental humans' right. The International LabourOrganisation (ILO) estimates that human errors, structural inefficiencies, a lack of safety procedures, & good managerial systems cause approximately 3 million workplace deaths each year (ILO, 2023). Furthermore, non-fatal diseases & injuries affect 374 million workers annually, costing the world's Gross Domestic Product (GDP) about 4% in terms of lost workdays. It is an undeniable fact that workers, businesses and the society at large, has put the prevention of work-related illnesses and injuries at the forefront (LaDou, London & Watterson, 2018). Corporate safety culture has been linked to various industrial accidents whereby investigations determined safety culture as one of the factors contributing to the accidents. It is now commonly accepted that businesses with a strong safety culture are more successful in preventing workplace accidents & injuries (Kok, 2017). In recent years, safety culture has become a buzzword & has garnered attention from different types of industries (Fleming et al., 2018).

A panoply of studies has been conducted over the past years to examine the interrelationship between safety culture, safety climate & performance of workers (Clarke, 2006; Erickson, 1997; Kaltehet al., 2021). Safety culture is linked to safety performance since it affects employee's behaviourand conduct. It is noted that safety culture in organisations have shifted in recent years to emphasise the human element over technological features (van Nunen et al., 2018). One of the valuable assets of an organisation is employees. Endeavors should be directed in the creation of programs & policies to ensure occupational safety, health & well-being (Chari et al., 2018). A few researchers are of the opinion that the measurement of safety culture is dependent and visible on the proactive management of safety performance, thus recommending further research (Bautista-Bernal et al., 2024). In the study of Tengilimogluet al., (2016), a model was proposed that provided evidence that workplace accidents do happen due to improper working conditions and unsafe practices. The research used safety culture as an independent variable, workers' satisfaction as mediator and safety performance as dependent variable.

According to scholars, determining the degree to which a strong safety culture would positively correlate with heightened safety levels & a lowering in workplace accidents is primordial (Aven & Ylonen, 2021). In line with previous studies (Breevaartet al., 2015; Kovjanicet al., 2013), employee engagement can be utilised as a mediator to test outcomes as related to work performance and leadership styles. Additionally, this has been reinforced in a multitude of studies where the influence of safety culture has been tested on safety performance through the mediation of employee engagement (Abeje & Luo, 2023; Quansah, Zhu & Guo, 2023). In a Chinese study, 305 manufacturing organisations were surveyed and out of the conclusion, it was confirmed that indeed employee engagement played a pivotal mediator in the link between safety culture and safety performance (Huang et al., 2019). Concerning studies related to workers' well-being, employee engagement has been used to test its effects on job performance outcomes. Adding to this, the research of Nkyaa (2023) showcased that a strong safety culture coupled with robust safety awareness programs, sound communication and reporting channels will eventually lead to employee engagement, motivation and participation.

Organisational culture, industry regulations, and work demands can have an impact on the link between employee engagement and safety performance. A few experts recommend carrying out further context-specific research to gain a better understanding of the relationship between participation and safety in various situations (Pereira, Delgoulet& Santos, 2023; Pilbeam & Karanikas, 2023). The present study aims to investigate the intricate relationship between safety culture, safety performance, and employee engagement in the construction industry in Mauritius. The majority of research on safety culture and safety performance has been conducted in developed and emerging economies, such as Ethiopia (Abeje & Luo, 2023), Iran (Kaltech et al., 2021), Malaysia (Naji et al., 2021), and the United States (Morrow et al., 2014). Studies on the relationship between safety culture and safety performance in SIDS, where socioeconomic, regulatory, and cultural dynamics diverge greatly from those in larger economies, is scarce. As a SIDS, Mauritius faces particular difficulties such as limited resources, a need for imported goods, and a blend of both expatriates and local workers, all of which can definitely have varying effects on safety performance and culture. This study will extend existing knowledge on safety culture, employee engagement, and safety performance within a SIDS context, specifically within the Mauritian construction industry. It will provide empirical evidence on how employee engagement mediates the relationship, offering practical recommendations for policy-makers and industry leaders.

Literature review

Safety Culture

Over the past three decades, the concept of safety culture has been widely examined across multiple disciplines, including anthropology, psychology, management, sociology, and engineering, to better understand safety-related issues within organizations (Henriqsonet al., 2014). Despite extensive research, the definition of safety culture remains a subject of academic debate, with scholars offering diverse interpretations of the concept. The International Nuclear Safety Advisory Group (INSAG) (1991) characterizes safety culture as a set of organizational and individual attributes that prioritize nuclear plant safety based on its level of significance. More recently, Bautista-Bernal et al., (2024) extend this conceptualization by emphasizing that safety culture transcends individual attitudes and beliefs, incorporating preventive thinking, collective responsibility, effective communication, continuous training, proactive risk management, and the adoption of safe practices across all organizational levels. In high-risk industries such as construction, safety culture plays a critical role in minimizing workplace accidents (Cakit et al., 2020; Estudillo et al., 2024). By fostering a proactive approach to occupational risks, organizations can enhance safety compliance and reduce the likelihood of hazardous incidents (Benson, 2024). Furthermore, research suggests that strengthening safety culture leads to improvements in workers' safety consciousness and safety citizenship behaviors, ultimately fostering a safer work environment (Meng and Chan, 2024). These findings underscore the importance of embedding safety culture within organizational frameworks to ensure sustainable and long-term improvements in workplace safety.

Dimensions of Safety Culture

Management Commitment

Management commitment is widely recognized as a critical determinant of employees' attitudes toward safety, shaping their behaviors and adherence to organizational safety protocols (O'Toole, 2002; Rundmo and Hale, 2003; Seoet al., 2004; Su, 2021). Effective managerial involvement extends beyond mere regulatory compliance, encompassing active participation in safety initiatives, continuous monitoring, and fostering a culture of improvement within the organization (Fernandez-Muniz et al., 2007). The decision-making capabilities of managers exert both direct and indirect influences on organizational safety outcomes, reinforcing the need for leadership that prioritizes worker well-being (Fruhenet al., 2019). A safe working environment has been shown to enhance job motivation and overall performance, highlighting the direct link between safety commitment and organizational efficiency (Ismail et al., 2021). Consequently, managerial commitment plays a pivotal role in mitigating workplace accidents, with transformational leadership proving particularly effective in fostering a proactive safety culture (Levovniket al., 2025). While extensive research has examined management commitment

to safety from employees' perspectives, emphasizing its centrality to safety climate (Griffin and Curcuruto, 2016), there remains a gap in understanding management commitment from the perspective of managers themselves (Fruhen et al., 2014, 2019; Fruhen and Flin, 2016; Tappuraet al., 2017). Given that managers are key decision-makers, their perceptions of safety responsibility, organizational constraints, and leadership strategies warrant further empirical investigation. Research further underscores the impact of management commitment on workers' safety behaviors, influencing their compliance and engagement in safety-related initiatives (Lim et al., 2018; Al-Bsheishet al., 2019; Fruhenet al., 2022). This is particularly relevant in high-risk industries, where strong managerial oversight is essential to reinforce safety culture and prevent severe industrial accidents (Levovniket al., 2025).

Worker's Involvement

Worker involvement is a fundamental determinant of organizational safety culture, reflecting the extent to which employees engage, comply, and regulate workplace health and safety practices (Amirah et al., 2024). Conceptually, worker involvement encompasses both employee voice and active participation, highlighting the reciprocal relationship between organizational safety policies and frontline worker engagement (Preetha and Anand, 2024). Empirical evidence suggests that proactive worker participation in safety programs plays a pivotal role in accident prevention, reinforcing a culture of shared responsibility (Fleming et al., 2022). Beyond mere compliance, worker involvement serves as a mechanism for identifying and implementing reliable solutions that enhance occupational health and safety (OHS) standards, ensuring greater adherence to regulatory frameworks such as Occupational Safety and Health Act (OSHA) 2005 in Mauritius (OSHA, 2017).

A robust safety culture is contingent upon workers' active engagement, as their firsthand experiences and insights inform risk mitigation strategies and promote continuous safety improvements (Geller, 2017). However, many organizations fail to fully leverage worker involvement, thereby limiting the potential for sustained safety enhancements (Story and Kight, 2019). Critically, hierarchical organizational structures that enforce unidirectional communication—where safety directives flow exclusively from management to employees—serve as a barrier to an embedded safety culture (Emery and Savely, 1997). This underscores the necessity for inclusive safety frameworks, where workers are not only passive recipients of safety policies but also active contributors to the evolution of workplace safety norms.

Work Environment

The work environment is conceptualised as a set of institutional characteristics that either facilitate or impede workers' ability to perform effectively (Lake, 2002). A safe and supportive workplace fosters employee proactivity, reinforcing a culture where workers feel empowered to report safety concerns without fear of retaliation (Silla et al., 2017). In the construction industry, the dynamic nature of work environments and variability in safety culture significantly shape workers' attitudes toward risk and compliance. Lingard and Holmes (2001) highlight that individual risk tolerance is a key determinant of safety performance, underscoring the importance of organizational efforts to standardize safety practices.

The broader discourse on occupational health and well-being underscores the critical role of work environments in shaping psychosocial hazards, mental health, and overall workplace safety, particularly in high-risk sectors such as construction (Loudoun et al., 2024). Given the increasing emphasis on workplace safety, scholars have extensively examined strategies to enhance working conditions and minimize occupational risks (Gray et al., 2023; Scandura and Meuser, 2022; Dimotakiset al., 2023). Notably, Wright and Sha (2024) identify a strong correlation between work environment and safety culture, particularly within healthcare settings, suggesting that organizational safety practices are context-dependent. From a managerial perspective, proactive leadership is essential in fostering safe work environments. Zou (2011) asserts that safety-oriented management must adopt preventive measures and implement systematic incident evaluations to strengthen safety culture and drive continuous workplace improvements.

Employee Engagement

Employee engagement has increasingly become a critical area of interest for both scholars and practitioners, given its well-documented association with key organisational outcomes. Empirical research consistently demonstrates that high levels of employee engagement correlate with enhanced financial performance, improved customer satisfaction, and overall organisational success (Harter et al., 2002; Schneider et al., 2018). Additionally, engagement has been shown to influence employee attitudes, behaviours, job performance, and overall well-being (Bailey et al., 2017; Crawford et al., 2010; Halbesleben, 2010; Saks, 2006). Rich et al. (2010, pp. 619) define employee engagement as the "simultaneous investment of an individual's physical, cognitive, and emotional energy in active, full work performance". This conceptualisation aligns with Kahn's (1990) foundational work, which describes engagement as the process through which employees bring their whole selves, encompassing physically, cognitively, and emotionally, into their professional roles (pp. 694). Work engagement refers to the dynamic relationship between an individual and their job role, whereas employee engagement extends beyond

this interaction to encompass the employee's broader connection with the organisation as a whole (Schaufeli, 2013). Employee engagement encompasses both emotional and cognitive dimensions, manifesting in zeal, passion, contentment, self-assurance, empowerment, and overall positive attitudes. It reflects an individual's "preferred self" in the workplace, influencing behaviours that strengthen interpersonal relationships and enhance professional interactions (Turner and Turner, 2020). Kwon et al., (2024) posit that employee engagement is closely linked to growth, with three key antecedents influencing this relationship: individual traits, social interactions, and workplace dynamics. According to a study conducted by Tong et al. (2023), psychosocial factors significantly influence workers' occupational psychological conditions, particularly burnout and engagement, which subsequently impact their safety performance. Role ambiguity, interpersonal conflict, work-family conflict, and work-related stress negatively correlate with safety performance by reducing engagement and increasing burnout. Conversely, higher levels of work engagement, lower burnout, greater autonomy, and strong social support are positively associated with improved safety performance (Tong et al., 2023).

Safety Performance

Safety performance is a measure of an organisation's degree of safety performance; poor safety performance can be shown in safety-related incidents like accidents and injuries or safety behaviours like involvement and compliance. Poor performance, in particular, can cause collateral harm and financial hardship for the company and its workers (Syed-Yahya et al., 2022). A crucial component of safety management systems, safety performance, essentially gives information on the system's quality in terms of its design, execution, and outcomes. According to Sgourou et al. (2010), safety performance evaluation thus affects decision-making about occupational safety and health issues. Retrospective or lagging indicators, as they are commonly called, are used to measure and statistically analyse incident-related data (such as the number of injuries and illnesses, accident frequency and severity rates, and accident costs) in order to assess safety performance (Sgourouet al., 2010). While lagging indicators relate to safety outcomes, specifically the frequency of worker injuries, leading indicators of safety performance measure the safety process as it applies to construction work. Both passive and active measures are included in leading indicators. Active measures are those that can start remedial action quickly, whereas passive measurements can be predictive over a long period (Hinze et al., 2013). Safety performance is also impacted by the creation of safety systems, safety practices, and safety procedures; monitoring of safety compliance; the formation of site-level safety committees; the dissemination of safety policies to site personnel; the involvement of safety officers; and the consultation between site staff and safety officers (Wong et al., 1999). Written safety incentives, safety orientation, and training, and pre-project/pre-task planning for safety are the most successful safety strategies for projects (Hinze et al., 2000). The use of new technologies in this expanding trend of technology has a significant impact on construction safety. According to Dobrucaliet al. (2024), the use of certain efficient technologies, such as wearable technology, virtual reality, artificial intelligence, and building information modeling (BIM), specifically improves safety performance.

Hypothesis Development

Relationship between Safety Culture and Employee Engagement

The existing body of literature provides substantial empirical evidence on the correlation between safety culture and employee engagement, with several studies highlighting the positive influence of a well-established safety culture on workforce participation and commitment (Biddison et al., 2016; Rahim et al., 2024). However, critical gaps persist, particularly concerning the inconsistent relationships between safety culture and employee engagement across different organizational contexts. While safety culture is widely recognized as a determinant of employee engagement, research suggests that the strength of this relationship remains contingent on the organizational environment and the extent of safety integration. Hence the following hypothesis:

H1: There is a positive relationship between Safety Culture and Employee Engagement

Incremental improvements in safety culture have been shown to enhance employee engagement, fostering a workplace climate where employees feel psychologically secure and actively contribute to safety initiatives. Given that safety culture is multi-dimensional, encompassing management commitment, worker involvement, and the broader work environment, a more nuanced examination is required to understand how these dimensions interact to shape employee engagement. Future research must therefore move beyond generalized correlations to explore the mechanisms through which safety culture translates into meaningful engagement outcomes for workers.

Nasomboon (2014) emphasizes that committed leadership within an organization exerts a profound influence on employee behaviour and engagement. When managers actively participate in safety initiatives, it fosters a culture of compliance, reinforcing employees' commitment to safety regulations. Within the construction industry, the impact of leadership on safety engagement becomes even more pronounced. As Mahfouz et al. (2019) assert, transformational leadership plays a pivotal role in cultivating a safety-oriented workforce, inspiring workers to internalize organizational values and actively contribute to safety outcomes. By prioritizing worker well-being and integrating safety into core management practices, leaders can drive engagement, enhance compliance, and ultimately foster a proactive safety culture that translates into sustainable improvements in organizational

performance.

Additionally, workers' involvement is a critical determinant of employee engagement, particularly in fostering a strong safety culture within organizations. As Hu, Jimmieson& White (2022) assert, workers' involvement extends beyond mere compliance with health and safety practices to active participation in shaping a safe work environment. The extent to which employees are engaged in these practices directly influences their attitudes and behaviors toward risk management, reinforcing a proactive safety culture (Abeje & Luo, 2023). From an organizational perspective, greater employee involvement in safety practices translates into higher engagement levels, fostering a collective sense of responsibility for workplace safety. This dynamic interaction between involvement and engagement enhances organizational resilience, ensuring sustained improvements in safety performance (Schneider et al., 2018).

Furthermore, empirical evidence consistently highlights a strong positive relationship between work environment and employee engagement (Hanaysha, 2016). The work environment serves as a defining characteristic of an organization, shaping employee experiences and influencing their level of commitment (Zhenjing et al., 2022). When employees perceive their workplace as secure and conducive to their well-being, they are more likely to engage in proactive safety behaviors, reinforcing a culture of engagement and risk awareness. Thus, organizations that prioritize a positive work environment can drive higher levels of employee engagement, ultimately enhancing overall workplace safety and performance.

Relationship between Employee Engagement and Safety Performance

The active involvment of employees in safety practices may consistently decrease the likelihood of human errors by enhancing their awareness of tasks, surroundings, and potential hazards, including possible human errors. Consequently, higher levels of employee engagement in safety-related activities could potentially correlate with improved safety outcomes, as indicated by conventional safety metrics such as accident frequency rates (Wachter and Yorio, 2014). Research has demonstrated a correlation between employee engagement levels and positive outcomes for organisations, including enhanced productivity, improved quality, reduced staff turnover, higher customer satisfaction, and increased profitability (Raines, 2011; Vance, 2006).

H2: There is a positive relationship between Employee Engagement and Safety performance

Organisations are increasingly focusing on employee engagement, which has been consistently associated with enhanced job performance (Rich et al., 2010). This engagement might play a crucial role in shaping employee safety behaviors. In fact, researchers in the field of safety have suggested that job engagement influences safety behaviors and outcomes (Nahrgang et al., 2011). Extending the relationship between job engagement and job performance further, engagement may also significantly impact safety performance. However, the connection between engagement and safety performance has not been adequately explored empirically in existing literature. Some safety studies have touched on engagement indirectly, for instance, Hansez and Chmiel (2010) utilized positive occupational states as a measure of job engagement. In their meta-analytic model, Nahrgang et al., (2011) conceptualized engagement as involvement, participation, and communication related to safety.

Relationship between Safety Culture and Safety Performance

The state of safety culture research was greatly advanced by a number of meta-analytic studies that were published between 2006 and 2010 and included thorough assessments of earlier safety culture studies (Christian et al., 2009, Clarke, 2006, Beus et al., 2010). The term "safety performance" is used to refer to a variety of safety outcomes that have been used as dependent variables in safety culture studies. These outcomes range from organization-level safety outcomes like accident and injury rates to observed or self-reported employee safety behaviours such as following procedures, wearing personal protective equipment, and participating in safety meetings). Measures of safety culture and other safety performance indicators should be related, according to the study's hypothesis (Morrow et al., 2014)

H3: Safety culture correlates positively on safety performance

In the context of Taiwan's railway industry, a study found that safety performance is positively impacted by a strong safety culture (Hsiang, 2011). This shows that incident prevention and worker protection can benefit from an organisational culture that actively encourages safety and is backed by tangible measures. According to Bisbey et al., (2021), enabling variables creates the framework for individual workers to embrace safety culture-informing beliefs, values, and practices. When employees as a group internalise consistent presumptions, values, and conventions, safety culture progressively becomes integrated. The behaviours of employees reflect these ideas, which in turn affects safety performance. Studies showing a successful decrease in accidents and an improvement in safety performance metrics (Kaltehet al., 2019) suggest that safety culture has a positive correlation on safety performance (Nana et al., 2020). Through the mediation of worker satisfaction, Tengilimogluet al., (2016) present a model that illustrates the beneficial impact of safety culture on safety performance and concludes that unsafe practices and working circumstances are the primary causes of workplace accidents. The extent to which a strong

safety culture would correlate with increased safety and fewer accidents is a crucial question, according to recent research (Aven and Ylönen, 2021).

Employee Engagement mediates the relationship between safety culture and its impact on safety performance

The prior studies portray that employee engagement can enhance safety culture (Amirah et al., 2024). Employee engagement and workplace safety results are linked, according to the related literature. According to Harter et al., (2009), for instance, a meta-analysis revealed that business units with the highest involvement levels (25 percent) have 49% fewer safety occurrences than those with the lowest engagement levels. High levels of involvement and absorption in their work are more likely to be found among employees who identify as engaged (Saks, 2006). An employee who is not engaged is less committed to their task and more prone to errors. The theoretical connection between safety and engagement at work is provided, and this has important ramifications for industries where safety is a crucial consideration (Whiteoak et al., 2016).

H4: Employee engagement mediates the relationship between safety culture (management commitment, worker's involvement and work environment) and safety performance (leading and lagging indicators)

Employee engagement is used in this study to mediate the relationship between safety culture and safety performance. The most widely used term to describe safety culture is "the result of individuals and groups' beliefs, attitudes, competencies, and behaviour patterns." It establishes an organisation's dedication to, approach to, and effectiveness of safety and health (S&H) management (International Atomic Energy Agency, 1991).In the new approach to improving safety performance outcomes, safety culture is a key idea. A positive work environment where employees are aware of risks and how to prevent accidents is the goal of safety culture (Arzahan, Ismail & Yasin, 2022). Nonetheless, the literature on the idea of safety performance lacks a definitive consensus. Most scholars base their interpretations on their own experiences (Yu-Jung et al., 2013; De Koster et al., 2011), for instance, safety performance is described as an organisation's ability to prevent accidents or injuries connected to the workplace. In the last few decades, safety culture and climate have gained a lot of attention due to their effect on organisational safety performance.

Organisational indicators like work arrangements, operational indicators, lagging indicators like fatality and injury rates, and resilience-based indicators have all evolved historically in tandem with the progress of the safety approach (Reiman and Pietikainen, 2012). Throughout history, the most prevalent performance measure of organisational safety has been incidents and injuries, sometimes known as lagging indicators (Reiman and Pietikäinen, 2012; Grabowski et al., 2007).). The significance of leading indicators has been highlighted in the past ten years due to the criticisms of depending solely on lagging data (Bitar et al., 2018). It is most frequently criticised that although lagging indicators are generally easier to obtain, they do not help predict or anticipate future negative events; rather, they only provide information about negative safety events that have already happened (Bitar et al., 2018; Brauer, 2016, Hinze et al., 2013, Yorio, 2020).

As a proactive management strategy for construction safety, safety leading indicators have been studied (Xu et al., 2023). In light of this, safety leading indicators have received more media attention lately (Alruqi and Hallowell, 2019; Guo et al., 2017; Hallowell et al., 2013; Hinze et al., 2013b; Lingard et al., 2017; Xu et al., 2021). By identifying the shortcomings and strengths of management systems and potentially incident-causing circumstances, safety leading indicators concentrate on the process of organising safety procedures and evaluating safety performance (Xu et al., 2021). Guo and Yiu (2016) state that they encourage preventive measures and offer an early warning of upcoming negative outcomes. Continuous learning and an adaptive safety system are made possible by the monitoring of safety leading indicators, which might yield information beyond specific occurrences (Salas & Hallowell, 2017).

Conceptual framework for the research

Based on the literature review, a conceptual model has been developed. In Mauritius, there is no research which has been done concerning the impact of safety culture on safety performance of workers through the mediation of employee engagement in Mauritius.

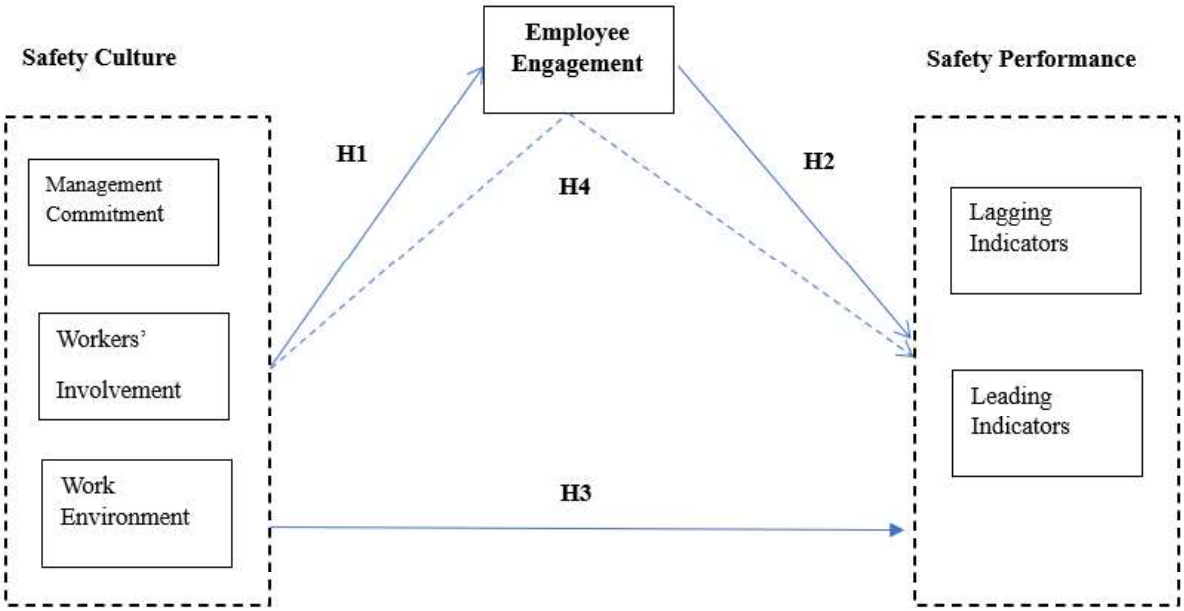

Fig 1. Proposed conceptual model of study

The independent variable in this novel study was safety culture, the dependent variable was safety performance, and the mediator was employee engagement. As a result, the conceptual framework of the final model sought to validate and estimate the model's fitness while simultaneously supporting the suggested direct and indirect influences of the mediating variable. In order to validate the results of this investigation, the suggested conceptual model, as seen in Figure 1, will eventually apply the methods of path modelling and structural equation modelling.

Specificity of construction sector within Mauritian context

Globally, the construction industry has been recognised globally as one of the hazardous sectors (Bulat, Hirose and Protic, 2018; Man, Chan, &Alabdulkarim, 2019). In addition to being regarded as one of the most important sectors for economic growth (Le et al., 2014), construction also has a substantial impact on workers' occupational safety and health (OSH) (Suazo and Jeselskis, 1993). Scholars argued that the construction sector is a unique, intricate, and hazardous to work (Sawacha, Naoum, & Fong, 1999; Kines, 2002; Tam, Zeng and Deng, 2004; Aneziris, Topali, & Papazoglou, 2012). In the context of the global market, occupational safety and health (OSH) issues in the construction sector are a worldwide problem that are not specific to any one nation. More significantly, the ongoing accidents and fatalities have made this sector one of the most dangerous in terms of safety (Hinze and Rinker, 2008). The construction sector's distinctive characteristics, such as its temporary workforce, requirement for work at height, dynamic and fluctuating risks, and extreme and demanding physical and mental requirements for the working process, which all contribute to workplace accidents (Hamid, Abd Majid, Singh, 2008).

The construction industry is one of the hazardous industries whereby the rate of fatalities is alarming and these incidents require immediate notification to the Ministry of Labour and Training upon occurrence (ISO, 2022). This is in line with the findings of other studies which point out the inherent hazardous specificities of the industry (Masi and Cagno, 2015; Bulat et al., 2018; Lucas et al., 2020). The high surge of workplace incidents suggest that workplace safety and health differ greatly across industry and it demands focused interventions in the construction sector for reduction of workplace accidents (Chetty et al., 2024). In Mauritius, safety and health legislation have been strengthened in the construction sector with more stringent regulations as a result of the numerous accidents on construction sites. In a study of Kuyoki and Smallwood (2017), employees suffered injuries on construction sites because of their ignorance on how to use personal protective equipment appropriately. In furtherance to this, other reasons such as socio-economic, cultural and religious beliefs, and insufficient safety training were stated as grounds for unsafe work practices in the construction industry.

Methodology

Research Design

The aim of the research design approach is to meet the objectives of this study and to validate the findings with regard to the research questions set. Workplace safety and health is of paramount importance in the construction industry due to its high rate of incidents and fatalities, as previously mentioned, hence this research based on safety culture, safety performance and employee engagement is crucial. A quantitative research method will be adopted to examine the relationship between safety culture and safety performance as well as the role that employee engagement plays in mediating this relationship.An increasing amount of study has focused on the relationship between safety culture, and more specifically safety climate, and its impact on safety outcomes, of which safety performance is a component. A panoply of studies has examined how safety culture can be a precursor of safety performance (Cheyne & Cox, 2000; Kasim, et al., 2019).

Sampling Techniques and Data Collection

The population size of employees in the construction section is estimated as 40, 100 as per Statistics Mauritius (2022). The Raosoft calculator was used to confirm the sample size. Based on a 95% confidence level, 5% margin error and a 50% response rate, the calculated sample size was shown to be 381 as per the formula of Saunders, Lewis and Thornhill (2009). Selection of respondents on construction sites was done on a random basis so as to ensure unbiased and equal distribution of respondents. Respondents were informed of the survey, their consent was asked and after obtaining the same, they were explained the meaning of the question due to their education level on construction sites which is low. Further to distribution of the 381 questionnaires on various construction sites, 374 questionnaires were collected and data analysis done through SPSS/ SMARTPLS statistical tools.

Measures

To examine the different variables at play, this study has adopted validated sources of questions that were modified from earlier studies. The dependent, independent, and mediating factors were evaluated using a five-point Likert scale, yielding three construct variables and forty statement questions. This thorough approach made it easier to comprehend the topic in a more nuanced manner.

Table 1. Sources of instruments used

Constructs	Dimensions	Number of items	Sources
Safety Culture (SC)	Management Commitment (MC)	9	Cox and Cheyne, 2000; Vinodkumar and Bhasi, 2010
	Workers' Involvement (WorkInv)	5	
	Work Environment (WorkEnv)	5	
Employee Engagement (EE)		7	Macey and Schneider, 2008; Harter, Schmidt, and Hayes; 2002
Safety Performance (SP)	Lagging Indicators (LaggInd)	5	Sheehan et al., 2016; Shamim, 2019
	Leading Indicators (LeadInd)	4	

The sources from which each measure was adopted and tailored as displayed in Table 1. All measures were assessed using a five-point Likert scale (**1 - Strongly Disagree; 2 - Disagree; 3 -Neutral; 4 -Agree; 5 - Strongly Agree**).

RESULTS

Demographic Data Analyses

374 valid questionnaires were retrieved after elimination of a small proportion of invalid questionnaires, indicating a high response rate from the participants. Table 2 shows the demographic profile of the respondents with the percentage of male and females being 79.6% and 20.4% respectively. Concerning the gender structure, the data shows that there were more men than women which is quite peculiar about construction industries in Mauritius. Based on the age range of the respondents, 27.8% of the total respondents were between the age of 40-49 years, 18.7% between the age of 30-39 50-59 years, followed by 1.9% of respondents who were in the age range of above 60 years old as displayed in the below table. Most respondents were married (69.3%), followed by a small proportion being single (27.0%) and 3.7% were divorced. In terms of education, a comparatively high percentage of individuals had secondary and vocational training, which is consistent with the characteristics of workers in the construction sector. In terms of job experience, the majority of the staff members had 16–20 years of experience.

Table 2. Demographics characteristics of respondents

Variable	Sub-Category	% Within population
Gender	Male	79.6
	Female	20.4
Age (years)	20-29	18.7
	30-39	18.7
	40-49	27.8
	49-50	13.9
	50-59	18.7
	Above 60	1.9
Work Experience	1-5	13.9
	6-10	16.8
	11-15	20.6
	16-20	33.2
	21 and above	15.5
Marital Status	Single	29.0
	Married	69.3
	Divorced	3.7
Level of Education	Post Graduate/ Graduate	3.7
	Secondary	18.7
	Primary	3.7
	Vocational	73.8

Source: Primary Data

Structural Equation Modelling Using Partial Least Squares (PLS-SEM)

Structural Equation Modelling (SEM) applies a multivariate technique for evaluating the reliability of competing hypotheses and collects data based on a context or idea (Kecklundet al., 2001, Reimer et al., 2007). There are essentially two main approaches to SEM which are covariance-based structural equation modelling (CB-SEM) and partial least squares and structural equation modelling (PLS-SEM) (Kecklundet al., 2001; Ghaleb et al., 2021). In comparison, PLS-SEM offers much more flexibility compared to CB-SEM in defining the relationship between items and constructs (MacKinnon, 2011). SEM has been applied in various spheres such as construction, manufacturing industry, hotel management, the physical environment, amongst others (Lei and Wu, 2007, Williams, Vandenberg, and Edwards, 2009).

Reliability and Validity Test of the Measurement Model

To evaluate the study's measurement model, tests for reliability and validity were performed. The reliability assessment involved examining four key indicators: standardised indicator loadings (SIL), Cronbach's Alpha (CA), Composite Reliability (CR), and Average Variance Extracted (AVE) as displayed in Table 3.

Table 3. Reliability and Validity Test

Path Relationships	Standardised Indicator Loadings	Cronbach Alpha	Composite Reliability	Average Variance Extracted
SC		0.859	0.890	0.589
MC1←SC	0.655			
MC3← SC	0.692			
MC5 ←SC	0.634			
MC8←SC	0.710			
MC9←SC	0.778			
Work Inv1 ←SC	0.778			
Work Inv2←SC	0.768			
Work Inv3←SC	0.624			
Work Env1←SC	0.786			
Work Env2←SC	0.670			
Work Env3←SC	0.609			
Work Env6←SC	0.650			
EE		0.887	0.890	0.689

Path Relationships	Standardised Indicator Loadings	Cronbach Alpha	Composite Reliability	Average Variance Extracted
Mgt Com←EE	0.658			
Work Invol←EE	0.777			
Work Env←EE	0.768			
Safety Performance		0.90	0.914	0.565
LagInd1←SP	0.865			
LagInd2←SP	0.833			
LagInd3←SP	0.875			
LagInd4←SP	0.694			
LagInd5←SP	0.776			
LeadInd1←SP	0.750			
LeadInd2←SP	0.758			
LeadInd3←SP	0.771			
LeadInd4←SP	0.820			

Source: Primary Data

According to established guidelines, the values for CA (Mikalef, and Pateli, 2017), CR (Aboelmaged, 2018), and SIL (Zeng, Huang, &Hueng, 2016) should exceed 0.70, while each construct's AVE value should surpass 0.5 (Henseler, Ringle & Sarstedt, 2015; Kineber, 2020). The results indicated that AVE values ranged from 0.565 to 0.689 (>0.500), CR values spanned from 0.890 to 0.914 (>0.700), CA values fell between 0.859 and 0.90 (>0.700), and SIL values were between 0.609 and 0.875. Although a few values were below 0.70, they remained within acceptable limits (Love et al., 2011). It is important to mention that some sub-variables within the constructs of Management Commitment, Work Environment, and Employee Engagement were eliminated to achieve satisfactory reliability and validity levels.

Structural Model

R2 values (predictive power), t-values, and b-values are used in a "bootstrapping technique of 5,000 samples" to assess the structural model, as done in previous research (Ghaleb et al., 2021; Hair et al., 2014). In accordance with Kaufmann &Gaeckler (2015), the effect size f2 and Q2 values must also be reported. According to Sullivan &Feinn (2012), a "p-value" can showcase if there is a significant influence, however, it will not report on the magnitude of effect. In research, it is primordial to report and understand the relationship between effect size and statistical significance (p-value). Additionally, the model's predictive relevance (Q2) was examined using a blindfolding test, which is only calculated for dependent variables (DV). Only endogenous (dependent) constructs with one or more components are suitable for use, and Q2 validates that the observed relationships are both statistically significant and useful (Geisser, 1975).

The R^2 values of the employee engagement (0.898), safety lagging indicators (0.812) and safety leading indicators (0.861) showed that the model had good predictive power in Table 4.

Table 4. Findings of Hypothesis Testing

Hypothesizes	**H1**	**H2**	**H3**
Item Relations	SC→EE	EE→SP	SC→SP
Path Coefficients, β	0.919	0.671	0.328
STDEV	0.127	0.012	0.017
T-Value	27.557	85.118	53.148
P-Value	0.000	0.000	0.000
f2	0.382	0.389	0.308
Significance Level	***	***	***
Results	Supported	Supported	Supported

Constructs	**R^2**
Employee Engagement	0.898
Safety Leading Indicators	0.861
Safety Lagging Indicators	0.812

Source: Primary Data

Another means of showing the predictive power was the Q2 values whereby the values for employee engagement (0.898), safety lagging indicators (0.812) and safety leading indicators (0.861) were more than zero thus

demonstrating good predictive power. The magnitude of the influence f2 for employee engagement with notable safety lagging indicators and safety leading indicators is shown in Table 4. The effect of f2 was large on the variables except for the relationship (Work Inv -> EE) which had a small effect. In the final structural model, employee engagement served as the mediating variable. A redundant indicator technique was employed to identify the latent variables for each of the higher-order constructs, which included management commitment, employee involvement, work environment, and safety performance indicators.

Analysis of Mediation Effect

In order to check for the mediation influence, the bootstrapping technique was applied in this study (Mooney, Duval and Duvall, R., 1993). Such indirect effects have been examined in earlier studies, and this study approach has been employed and recommended by a number of researchers (Al-Mekhlafiet al., 2020; Cheung & Lau, 2008; Preacher & Hayes, 2004). Additionally, bootstrap findings are claimed to have accuracy in probability estimates because of this method's aid in overcoming mediation challenges and the absence of a confidence interval for the mediator and outcome variables (Ortiz et al., 2013). Consequently, this approach must be employed for two reasons. On a first instance, the method of bootstrapping serves as a practical tool which can be used in a wide range of situations to establish the significance and confidence intervals. The mediation relationship is established with the evidence of an indirect relationship between X and Y and the 95% confidence level exceeds zero. The assumptions of the bootstrapping method with regard to mediation is rather accurate.

Table 5. Mediation analysis for direct and indirects effect.

Mediation Impact	Path Coefficient, β	STDEV	T-Value	95% LL	95% UL	Results
H4: SC-EE-SP	0.367	0.022	16.823	0.31	0.393	Partial Mediation

If **P < 0.01; STDEV, Standard Deviation; LL, Lower Level; UL, Upper Level;
H4, Hypotheses.
Source: Primary Data

The indirect effect findings, as shown in Table 5, show that the mediation relationship of both, direct and indirect effects, was supported.

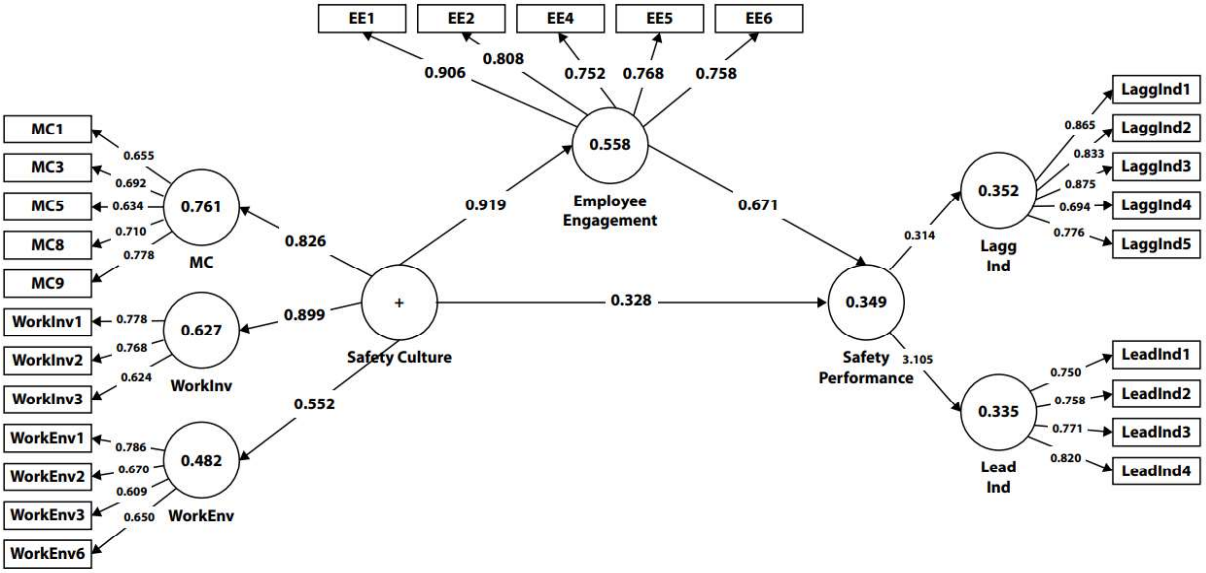

Fig 2. Final Structural Results (PLS Results)

Discussion

This research investigated how safety culture influences safety performance in the Mauritian construction industry, focusing on the role of employee engagement. Since it highlights the importance of employee engagement and safety culture in improving workplace safety and safety performance in the construction sector, the findings have significant national and international implications. The findings do not apply only to Mauritius but also to any other nation or SIDS that has similar specificities in ensuring worker safety. This study emphasizes the need of cultivating a safety culture and establishing a favourable safety climate in order to enhance worker

safety performance. This study also emphasises how crucial it is to involve employees in safety-related activities in order to improve safety performance, work environment, and safety culture. This finding is in line with previous studies that highlight the importance of safety climate and culture in influencing actions and improving safety performance (Jilcha&Kitaw, 2017; Mosly; 2022; Suprapto, Pujawan, & Dewi, 2022).

This study contributes to the body of literature on safety culture by showing that, even in hazardous workplaces, psychological suffering and death can be avoided with a psychosocially safe culture. Few studies have examined this relationship in high-risk situations like accidents and fatalities with a SIDS context (Feng et al., 2014; Mirza et al., 2022; Rassolet al., 2020; Zadow & Dollard, 2015). Furthermore, the majority of past studies on injuries were used as indicators of workplace safety, and a lack of study has been done on the relationship between worker safety performance and safety employee engagement. This study fills this major gap in regarding workplace safety and health. This research revealed that when employees are exposed to a good safety culture through management commitment, a conducive work environment and involvement of workers in decision-making, the safety performance and employee engagement both improve (Stemnet al., 2019; Yang et al., 2009).
Consequently, the present study makes a substantial contribution to the body of knowledge in this field. The results of the study showed that the organisational context and management implications has an impact on how successful a safety culture is. The results showed how safety culture impacted employee engagement which further affected safety-based outcomes. It is worthy to note that a lack of engagement from workers can also lead to psychological distress within an organisation. The conclusions of this study support the need for great visibility while implementing effective development on a broad scale. Moreover, this study establishes the framework for further research in this field by analysing the efficacy of different components of safety culture in diverse organisations and cultural contexts. Both negative and positive outcomes of a poor safety culture could be added to the model to check for further implications in a SIDS context.

Conclusion

This study underscores the pivotal role of employee engagement in mediating the relationship between safety culture and safety performance within the Mauritian construction industry. A strong safety culture, reinforced by a positive safety climate, directly enhances workers' safety performance, emphasising the need for organisations to prioritise safety initiatives. There is no doubt that this will not only enhance their commitment to safety protocols but will also foster a more engaged and proactive workforce. Furthermore, this study bridges the existing gap between worker safety performance and employee engagement, demonstrating that management commitment, a supportive work environment, and worker involvement are key drivers of a strong safety culture. When employees perceive that their safety concerns are valued and that they have a voice in decision-making, their engagement levels increase, ultimately leading to improved safety outcomes. The study also highlights that a lack of workers involvement can contribute to psychological strain, further reinforcing the need for organisations to adopt a holistic approach to workplace safety. To build on these insights, a new framework for analysing safety culture across different organisational and cultural contexts is proposed. This would allow for a more nuanced understanding of how various components of safety culture interact, ultimately leading to more effective safety strategies tailored to a diverse work environment.

Implications

This study has important national and international implications which contribute to amend or bring changes in the policy decision pertaining to diverse health and safety domains. These hazardous industries can benefit from this novel framework and will thus improve the safety culture in their respective workplaces. It is important for employers to reinforce safety culture in their workplaces, specifically paying attention to Management Commitment, Workers' Involvement and Work Environment. Thus, managers working in hazardous industries need to implement safety culture policies and encourage employees to favour the same. The more workers are involved in safety culture, they are prone to comply with occupational health and safety standards and regulatory framework such as Occupation Safety and Health Act (OSHA) 2005. A positive work environment reinforces safety culture as it shapes workers attitudes towards risk and compliance and thus enhancing the wellbeing of workers. It is worth noting that safety culture also leads to employee engagement which ultimately contributes to safety performance. Employee engagement can improve both lagging and leading indicators. Lagging indicators can be used to obtain information about negative safety events whereas leading indicators can be used to identify strengths and weaknesses of the management system. This implies that management should consider leading and lagging indicators when reinforcing safety performance for workers. Hence, organisations should consider the positive influences of safety culture in promoting safety performance.

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