

Safety Culture, Risk Management Practices, and Employee Involvement in a Land Transportation Company in Bacolod City

Reymar John T. Aldeguer, Carmen C. Menes

La Consolacion College Bacolod

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ABSTRACT

Occupational Safety and Risk Management Program is a multidisciplinary area that entails identifying, preventing, and controlling hazards in the workplace in order to improve worker's health, which is one of the enhancement programs. In any aspect of human endeavor, there is a genuine concern for occupational safety. This study assessed the workers' safety on land transportation company and develop procedures to reduce the likelihood of unpleasant incidents occurring. Descriptive-comparative and correlational research design were used. A survey questionnaire was used to collect data, which was then statistically analyzed. The majority of workers are in a safe environment at work. The land transportation workers' safety, risk management practices and employee involvement significantly vary when they were grouped according to age, sex, educational attainment, and classification. To strengthen and enhance the safety and risk management practices, a training program may be designed and implemented to improve workers' safety culture, risk management practices and employee involvement for the better management of risk that employees face at work.

Keywords: Safety Culture, Risk Management Practices, Employee Involvement, Land Transportation, Descriptive-Correlational Design, Philippines

INTRODUCTION

Transportation is vital to modern society as it enables the efficient movement of people and goods across local and international boundaries, strengthening economic performance and productivity. It further facilitates tourism and cultural interaction, underscoring its crucial role in global growth and development (Ashraf & Idrisi, 2024) and in terms of politics, the economy, society, and defense and security, transportation is essential (Simanjuntak et al., 2023). Since buses are accessible in the majority of cities, they can be regarded as the mainstay of public transportation. For all kinds of individuals, buses are the most sustainable and accessible form of transportation (Al Suleiman et al., 2023).

Workplace safety is of utmost importance because work-related accidents not only harm employees but also lead to productivity losses and damage to an organization's reputation (Khasanah et al., 2019). Establishing a strong safety culture is essential in ensuring a safe working environment, particularly in high-risk industries such as construction, where a well-developed safety culture is critical to maintaining optimal safety conditions (Al-Bayati, 2021). Moreover, workplace health and safety conditions significantly influence employees across various sectors, including the remote health workforce (Wright et al., 2024). Implementing a strong safety culture and fostering positive employee relations enable organizations to prevent workplace hazards and protect their reputation (Bautista-Bernal et al., 2024). A robust safety culture reduces accidents, enhances efficiency, and builds trust, despite challenges in implementation (Harahap & Cahaya, 2025; Odu et al., 2022). Through regular and effective safety programs, a strong workplace safety culture ensures a secure working environment (Odu et al., 2023) and improves workers' safety performance by reducing psychological hazards (Naji et al., 2021). In the Philippine context, protecting employee health and safety improves productivity and job satisfaction while ensuring compliance with regulatory standards (Bedonio & Andaya, 2025). Furthermore, effective communication and sound human resource management practices play a crucial role in promoting workplace safety and reducing physical strain among workers (Morales & Estioko, 2020; Santos et al., 2022).

As countries increasingly recognize the importance of occupational safety and health, many major sectors are integrating safety and health measures into their operations (Lu, 2022). Everyday workplace risks are best managed through the use of a universal safety framework and the development of a strong safety culture, which help organizations prevent accidents and mishaps (Omidi et al., 2022; Pascarella et al., 2021; Rampini et al., 2019; Sherratt et al., 2025). Although risk analysis plays a vital role in preventing workplace injuries, it often lacks precise hazard identification, limiting its effectiveness (Wang et al., 2021). Moreover, workplace accidents from hazardous tasks persist globally, highlighting the need for hazard identification, risk assessment, and effective control measures (Ilmi, 2025; Izyati et al., 2023). Furthermore, employees are continually exposed to various dangers and hazards in the course of their work (Conda et al., 2024).

Safety culture is influenced by organizational structure, management practices, and workplace conditions, while access to wellness services and supervisor support enhances employee involvement (Al-Mekhlafi et al., 2025; Altman et al., 2023; Claxton et al., 2022; Wagner et al., 2020). Employee involvement refers to workers' active contribution to organizational goals through their knowledge, creativity, and participation in decision-making processes (Yangailo, 2024). Such involvement is strengthened by organizational commitment and effective leadership, which foster collaboration and innovation within the workplace (Mamasarogan & Tan, 2024). A strong safety climate has been shown to improve safety behavior and reduce workplace accidents, highlighting the importance of safety training and worker involvement in promoting safety compliance (Hertanto et al., 2023; Rizki et al., 2020). However, despite ongoing safety initiatives, limited research has explored the reasons employees hesitate to report safety concerns (Ansori et al., 2021). This gap is particularly evident in the construction sector, where labor safety remains a major issue due to persistent awareness and behavior-related challenges (Ha, 2024).

Safety is crucial for both worker protection and increased productivity in organizations in Bacolod City (Cena, 2025). Conversely, effective risk management and staff support also depend heavily on leadership, which plays a key role in promoting safe workplace practices (Matti & Condes, 2025). In support of this, Cagbaleño and Palic (2025) emphasized the need to strengthen safety culture in government offices in Negros Occidental through improved facilities and consistent safety programs. However, despite strong compliance in risk management practices, government offices showed only moderate performance in rehabilitation and recovery efforts (Yusay III & Caelian, 2022). These highlight the vital role of a strong safety culture in protecting workers and enhancing productivity, as consistent safety programs and adequate support facilities contribute to a safer and more efficient workplace in Negros Occidental.

In the land transportation industry, workplace safety extends beyond driver behavior and road safety. Administrative personnel, maintenance employees, dispatchers, and terminal personnel are likewise exposed to operational risks, ergonomic hazards, stress-related concerns, and safety compliance issues. Transportation companies operating in Bacolod City must continuously strengthen their internal safety systems to reduce operational disruptions, improve employee well-being, and comply with occupational safety regulations. While previous studies examined safety culture in construction, manufacturing, healthcare, and public institutions, very few studies have simultaneously examined safety culture, risk management practices, and employee involvement within private land transportation organizations. Furthermore, little empirical evidence exists regarding how these variables interact in transportation companies operating in Western Visayas.

The identified research gap focuses on the limited studies examining safety culture, risk management practices, and employee involvement in land transportation offices, particularly in Bacolod City. Therefore, this study investigated employees' perceptions and practices while considering demographic factors such as age, sex, educational attainment, and job position. The findings are expected to provide insights into how organizational practices can enhance safety performance in the transportation sector.

Statement of the Problem

Generally, the purpose of the study was to measure, compare and correlate the safety culture, risk management practices, and employee involvement on safety in a land transportation company in Bacolod City.

FRAMEWORK

Supporting this study are three theoretical foundations which are Cooper's Reciprocal Safety Culture Model, the Systems Theory of Accident Causation, and the Job Demands–Resources (JD-R) Model. Together, these frameworks explain the interplay among safety culture, risk management practices, and employee involvement in shaping workplace safety. Cooper's Reciprocal Safety Culture Model (2000) conceptualizes safety culture as the continuous interaction between employees' safety attitudes, their behaviors, and the organization's safety management systems (Giraldi et al., 2023). Restuputri et al. (2023) utilized Cooper's model to demonstrate that safety culture emerges from the reciprocal relationship among situational (safety management), behavioral (safety behavior), and psychological (safety climate) dimensions. Similarly, Van Nunen et al. (2022) applied the model to integrate these situational, behavioral, and psychological aspects, underscoring their mutual influence in comprehensively assessing safety culture. According to Cooper's model, which is grounded in social learning theory, a preventive safety culture—viewed as an organizational subculture—develops through the dynamic interaction of situational, behavioral, and psychological characteristics within individuals, jobs, and the organization (Bautista-Bernal et al., 2024). Furthermore, Su (2021) highlighted that Cooper's reciprocal model acknowledges the integral roles of individuals (psychological), organizations (situational), and conduct (behavioral) in shaping an organization's overall safety culture.

A systems-theoretic approach to accident causation enables the examination of complex interactions among events, including feedback and indirect links, and offers deeper insight into the underlying reasons behind those events (Ge et al., 2021). Ge's systems-based approach provides a comprehensive framework for understanding accidents by focusing on system constraints, control structures, and dynamic interactions rather than simple cause-and-effect chains (Demirkesen, 2020). Building on this, Kim et al. (2023) applied the Systems-Theoretic Accident Model and Processes (STAMP) to demonstrate how a pier-contact accident resulted from inadequate control structures, missing feedback, and violations of safety regulations within the marine system. Similarly, Nakhal Akel et al. (2022) utilized STAMP to show how complex socio-technical interactions, violated system constraints, and insufficient control actions contribute to railway accidents. Furthermore, Karevan and Nadeau (2024) emphasized that by concentrating on system constraints rather than isolated component failures, Leveson's systems-theoretic approach enables a more comprehensive and holistic assessment of risks.

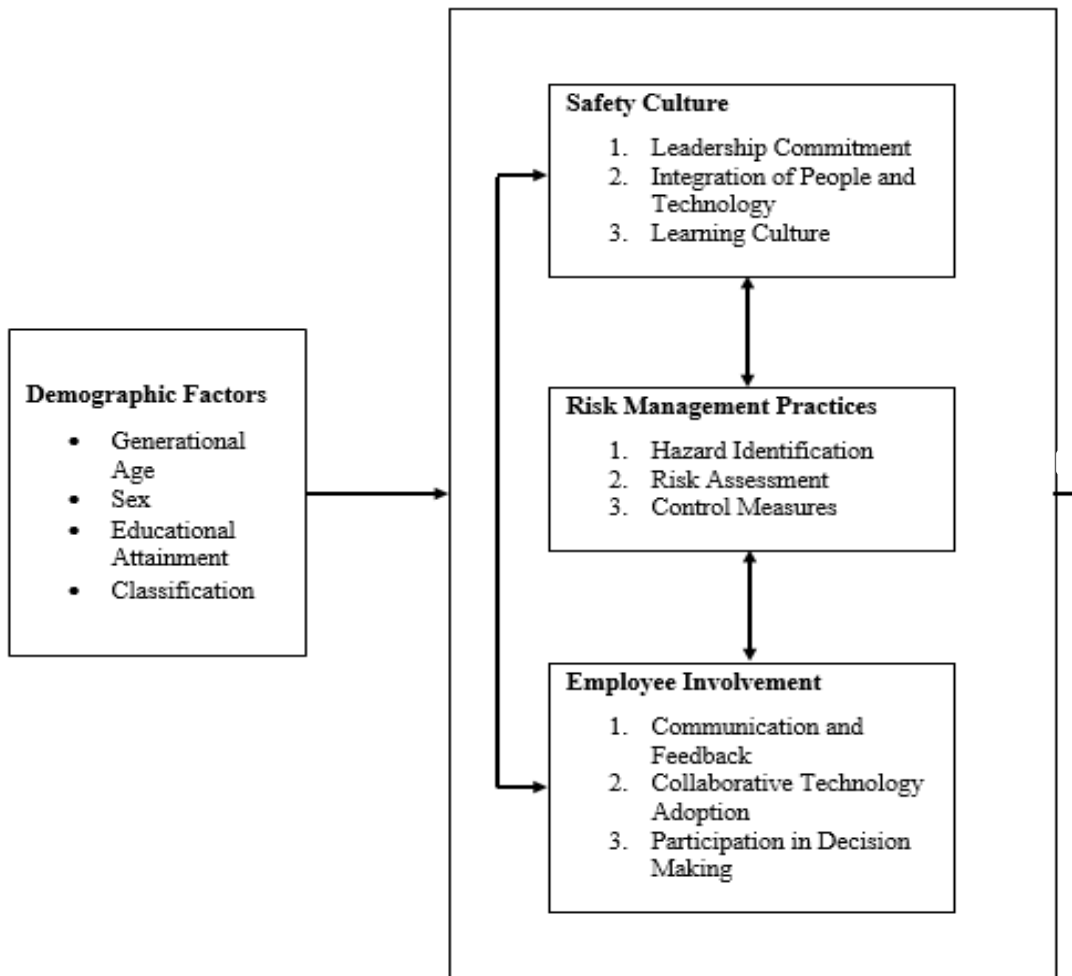
According to Demerouti and Bakker (2023), the Job Demands–Resources (JD-R) Model outlines how job resources foster motivation and engagement, while job demands contribute to stress. The model also demonstrates its adaptability by predicting employee performance and well-being across various occupations and organizational contexts. Building on this framework, Lee and Jo (2023) applied the JD-R Model to illustrate the dual pathway of motivation and strain, showing that job resources enhance employee engagement and performance, whereas excessive job demands reduce engagement. Also, Britt et al. (2021) employed the JD-R Model to reveal that increased work demands during the COVID-19 pandemic heightened mental health strain among healthcare workers, although organizational support as a job resource helped mitigate these negative effects. In addition, Jaß et al. (2024) utilized the JD-R Model to examine how specific job demands, such as digital overload, and job resources, such as autonomy, influence employees' experiences and well-being in hybrid work environments. Furthermore, the JD-R Model is expanded into a dynamic framework by Li et al. (2025), who demonstrate that job demands and resources interact nonlinearly, with high levels potentially lowering employee well-being.

The schematic diagram illustrates the conceptual framework of the study, which demonstrates the interrelationship among demographic factors, safety culture, risk management practices, employee involvement, and occupational safety in the workplace. It shows that demographic factors including generational age, sex, educational attainment, and classification serve as influencing variables that shape employees' attitudes, behaviors, and participation in safety-related activities.

These demographic characteristics are proposed to influence safety culture, risk management practices, and employee involvement, which are the key determinants of workplace safety outcomes. A strong safety culture, characterized by leadership commitment, integration of people and technology, and a learning culture, fosters a proactive approach to safety and minimizes workplace hazards. Meanwhile, risk management practices,

composed of hazard identification, risk assessment, and control measures, ensure that potential threats in the work environment are systematically identified, evaluated, and mitigated.

Figure 1
Schematic Diagram of the Conceptual Framework



A strong safety culture, characterized by leadership commitment, integration of people and technology, and a learning culture, fosters a proactive approach to safety and minimizes workplace hazards. Meanwhile, risk management practices, composed of hazard identification, risk assessment, and control measures, ensure that potential threats in the work environment are systematically identified, evaluated, and mitigated.

Furthermore, employee involvement, which includes communication and feedback, collaborative technology adoption, and participation in decision-making, emphasizes the active role of employees in maintaining and improving workplace safety standards. Altogether, these variables converge toward achieving occupational safety in the workplace, which serves as the ultimate outcome of the framework. The model implies that when demographic factors are properly considered, and when safety culture, risk management practices, and employee involvement are effectively implemented, the organization can cultivate a safer, more efficient, and sustainable work environment.

METHODOLOGY

The descriptive-correlational research design was used, and the researcher utilized the descriptive survey method in conducting the study. Information on supervisors' and rank-and-file employees' safety culture, risk management practices, and employee involvement in workplace safety was collected to determine how these factors influenced workplace safety. The researcher collected the data through a survey with 320 employees

using a validated (CVR= 0.968) and pilot-tested ($\alpha=0.98$) adapted, modified questionnaire. Data were analyzed using the mean, standard deviation, Mann-Whitney U test, Kruskal Wallis test and Spearman rho.

RESULTS AND DISCUSSION

Level of Safety Culture

Table 1

Level of Safety Culture when taken collectively (n=320)

Dimensions	Mean	Std. Deviation	Verbal Interpretation
Leadership Commitment	3.20	0.44	High
Integration of People and Technology	3.19	0.43	High
Learning Culture	3.17	0.44	High
Overall Safety Culture	3.19	0.40	High

A “high” level of safety culture is observed across all dimensions. Among the indicators, Leadership Commitment obtained the highest mean, indicating that employees perceive management as supportive of workplace safety initiatives.

The stakeholders, particularly management and employees, contribute to maintaining a positive safety culture within the organization. The high ratings imply that leaders are committed to implementing safety measures, while employees recognize the value of safety training, communication, and technological support in promoting workplace safety and operational efficiency.

The company should continue strengthening safety programs, especially in enhancing learning culture through regular training, seminars, and knowledge-sharing activities. Sustaining strong leadership commitment and improving employee engagement in safety initiatives may further strengthen organizational safety culture and reduce workplace risks.

Several studies support these findings. According to Pinto et al. (2025) emphasized the importance of management commitment in promoting workplace safety culture. Also, Farhan et al. (2025) found that safety leadership positively influences workplace safety climate. Identified communication and management support as important factors in safety culture development (Tappura et al., 2022). Another study reported that strong safety culture improves safety performance and reduces workplace accidents (Bautista-Bernal et al., 2024). Furthermore, Amru et al. (2025) also highlighted that leadership and organizational culture significantly influence employee safety compliance and workplace safety culture.

Table 2

Safety Culture When Employees are Grouped According to Age

Aspects	Generational X (n=32)			Generational Z (n=123)			Millennials (n=165)		
	Mean	sd	Verbal Interpretation	Mean	sd	Verbal Interpretation	Mean	sd	Verbal Interpretation
Leadership Commitment	3.48	0.39	Very High	3.23	0.44	High	3.14	0.42	High
Integration of People and Technology	3.43	0.43	Very High	3.23	0.40	High	3.12	0.43	High
Learning Culture	3.42	0.41	Very High	3.14	0.45	High	3.14	0.43	High
Overall Safety Culture	3.44	0.37	Very High	3.20	0.38	High	3.13	0.40	High

Generational Z and Millennials display a high level of safety culture in all aspects, although their mean scores are slightly lower than those of Generational X. Overall, the results suggest that safety culture is evident across all generational groups, but it is most prominently demonstrated by Generational X employees.

Generational X employees demonstrate stronger commitment and engagement toward workplace safety compared to younger generations. Their “Very High” ratings indicate greater appreciation for leadership support, safety procedures, and organizational learning. Meanwhile, Generational Z and Millennials also showed “High” levels of safety culture, reflecting positive perceptions of workplace safety despite differences in experience and organizational exposure.

The company should implement inclusive and age-responsive safety strategies to strengthen safety culture among all employees. Generational X employees may serve as role models or mentors in promoting safe work behaviors, while organizations can improve training, communication, and technology-based safety programs to better engage Millennials and Generational Z employees.

These findings suggest that older and more experienced employees tend to exhibit stronger adherence to workplace safety practices and a more developed safety culture, which supports the study of (Nævestad, Blom, et al., 2020). Leadership commitment, employee participation, and continuous learning are essential in building a strong safety culture (Tappura et al., 2022). The generational groups differ in organizational commitment and engagement, which may influence workplace behavior and participation (Ayo et al., 2025). Furthermore, Claxton et al. (2022) explained that occupational health and safety culture is strengthened through collaboration, communication, and shared responsibility among employees.

Table 3

Safety Culture When Employees are Grouped According to Sex

Aspects	Male (n=177)			Female (n=143)		
	Mean	sd	Verbal Interpretation	Mean	sd	Verbal Interpretation
Leadership Commitment	3.18	0.44	High	3.24	0.42	High
Integration of People and Technology	3.16	0.44	High	3.24	0.41	High
Learning Culture	3.17	0.46	High	3.17	0.43	High
Overall Safety Culture	3.17	0.41	High	3.22	0.38	High

The workers consistently demonstrate a high degree of safety culture in all areas. Leadership commitment, people-technology integration, and learning culture were regarded as high by both male and female respondents, with only minor variations in mean scores, with women typically reporting slightly higher values. Overall, the results show that both male and female employees in the company strongly adhere to and see safety culture in a comparable way.

Both male and female employees positively perceive the organization’s safety culture, as shown by the “High” ratings across all dimensions. Stakeholders may view these results as evidence that safety programs, leadership support, and workplace safety practices are consistently implemented regardless of sex. Although female employees reported slightly higher mean scores, the differences were minimal, suggesting similar levels of safety engagement among both groups.

The organization should continue implementing inclusive safety policies, strong leadership support, and continuous safety training for all employees. Maintaining equitable participation and effective communication may further strengthen workplace safety culture and employee involvement regardless of sex.

Similarly, Temur et al. (2024) found that both male and female employees demonstrate similar safety attitudes and practices. AlMousa et al., (2022) also reported that women workers had higher ergonomic risks. Males were more likely to violate work-hour regulations and engage in reckless behavior, suggesting lower safety compliance than females (Scott et al. 2024). On the other hand, Suryawanshi, (2025) revealed that male workers had higher safety climate scores in terms of management commitment and safety policies. Moreover, Kwon and Lee, (2020) found varying levels of safety awareness, risk perception, and safety concern among male and female employees. Overall, these studies support the present findings that male and female employees tend to display a positive workplace safety culture, although there may be small differences.

Table 4

Safety Culture When Employees are Grouped According to Educational Attainment

Aspects	College Graduate (n=298)			High School (n=21)			Elementary (n=1)		
	Mean	sd	Verbal interpretation	Mean	sd	Verbal interpretation	Mean	sd	Verbal interpretation
Leadership Commitment	3.18	0.43	High	3.51	0.47	Very High	3.2	0	High
Integration of People and Technology	3.16	0.41	High	3.64	0.42	Very High	3.2	0	High
Learning Culture	3.13	0.43	High	3.61	0.44	Very High	3.6	0	Very High
Overall Safety Culture	3.16	0.38	High	3.59	0.42	Very High	3.33	0	Very High

College graduates consistently rate all dimensions highly, while high school graduates report very high levels, indicating stronger perceived safety practices within this group. Although those with elementary education also show high to very high ratings, these findings should be interpreted cautiously due to the small sample size. High school graduates reported the highest mean scores, indicating stronger perceptions of safety culture, while college graduates also demonstrated consistently high ratings. However, the results for employees with elementary education should be interpreted cautiously due to the very limited sample size.

Employees across all educational levels positively perceive the organization's safety culture, as reflected in the high to very high ratings across all dimensions. Stakeholders may interpret these results as evidence that workplace safety programs, leadership commitment, and safety practices are effectively communicated and implemented regardless of employees' educational attainment.

The company should continue implementing inclusive safety programs and communication strategies that are understandable and accessible to employees with different educational backgrounds. Continuous safety training, leadership support, and employee engagement initiatives may further strengthen workplace safety culture across all groups. Additionally, organizations should ensure that safety policies and practices remain clear, practical, and adaptable to employees' varying educational experiences.

Saik et al. (2025) emphasized that a strong safety culture reduces occupational risks and improves safe behavior among workers, while Harahap and Cahaya (2025) highlighted that education and training influence employees' understanding and implementation of safety culture. Likewise, Bautista-Bernal et al. (2024) stated that organizations with strong safety cultures achieve better safety performance through employee involvement and management commitment. Moreover, leadership support, communication, and employee participation strengthen positive safety culture perceptions (Ahadzi et al., 2021). Furthermore, Chan et al. (2023) explained that a resilient safety culture enhances workers' safety performance regardless of educational level.

Table 5

Safety Culture When Employees are Grouped According to Classification

Aspects	Rank and File (n=214)			Supervisor (n=106)		
	Mean	sd	Verbal Interpretation	Mean	sd	Verbal Interpretation
Leadership Commitment	3.17	0.41	High	3.26	0.48	Very High
Integration of People and Technology	3.18	0.42	High	3.23	0.45	High
Learning Culture	3.12	0.43	High	3.25	0.46	Very High
Overall Safety Culture	3.16	0.39	High	3.25	0.41	Very High

Employees generally exhibit a high to very high level of safety culture across classifications. Rank-and-file employees consistently report strong ratings in all dimensions, while supervisors show even higher scores which particularly in leadership commitment, learning culture, and overall safety culture. These results suggest that supervisors perceive and perhaps embody a more robust safety culture compared to rank-and-file employees, though both groups maintain positive safety culture levels overall.

Both rank-and-file employees and supervisors positively perceive the organization's safety culture. Stakeholders may interpret the higher scores among supervisors as an indication that individuals in leadership positions possess greater awareness, involvement, and commitment to workplace safety practices. Supervisors' very high ratings in leadership commitment, learning culture, and overall safety culture also imply that managerial responsibilities and experience may strengthen engagement in safety initiatives and organizational safety values.

The company should continue strengthening safety culture across all employee classifications by promoting collaboration, communication, and shared responsibility for workplace safety. Supervisors may serve as role models or facilitators in reinforcing safe work behaviors and encouraging rank-and-file employees to actively participate in safety programs. Continuous training, leadership support, and employee involvement initiatives may further enhance safety awareness and maintain a strong organizational safety culture across all levels.

Miring'u et al. (2024) emphasized that safety training strengthens employees' safety culture and promotes adherence to workplace safety practices. Leadership commitment, communication, and employee participation are key dimensions in creating a satisfactory safety culture (Tappura et al., 2022). Chan et al. (2023) explained that resilient safety culture improves workers' safety performance regardless of employee differences. Safety culture develops through leadership support, learning culture, and organizational integration (Bisbey et al., 2021) while Naji et al. (2021) concluded that a positive safety culture significantly improves safety performance.

Table 6

Risk Management Practices When Employees are Taken Collectively (n=320)

Dimensions	Mean	Standard Deviation	Verbal Interpretation
Hazard Identification	3.17	0.41	High
Risk Assessment	3.16	0.43	High
Control Measures	3.15	0.44	High
Overall Risk Management Practices	3.16	0.39	High

Employees demonstrated a "High" level of risk management practices across all dimensions. Overall, the findings suggest that the organization maintains effective and consistent risk management practices in the workplace. Stakeholders, particularly management and safety officers, may perceive the organization's risk management system as functional and well-implemented. The employees recognize the importance of identifying workplace hazards, assessing risks, and applying appropriate control measures to prevent accidents and ensure safety. Employees are generally engaged in organizational efforts to maintain a safe and controlled working environment.

The organization should continue strengthening its risk management practices through regular hazard monitoring, risk assessment activities, and implementation of effective control measures. Continuous safety training, employee participation, and leadership support may further improve awareness and compliance with workplace safety procedures. Additionally, organizations should sustain proactive risk management strategies to minimize workplace hazards, enhance employee safety, and maintain operational efficiency.

Likewise, Bracci et al. (2024) mentioned that integrating risk management into organizational practices improves performance and strengthens decision-making processes while Dvorsky et al. (2021) opined that effective risk management practices help organizations identify, assess, and control risks efficiently. The implementation of risk assessment and control measures enhances organizational effectiveness and safety outcomes (Castellini & Riso, 2023).

Furthermore, Zainuddin et al. (2022) explained that sustainable risk management practices promote organizational stability and continuous safety improvement. Roshan Khan concluded that effective hazard identification, risk assessment, and control measures are essential factors in achieving successful organizational and project outcomes.

Table 7

Risk Management Practices of Employees When Grouped According to Age

Aspects	Generational X (n=32)			Generational Z (n=123)			Millennials (n=165)		
	Mean	sd	Verbal Interpretation	Mean	sd	Verbal Interpretation	Mean	sd	Verbal Interpretation
Hazard Identification	3.45	0.39	Very High	3.19	0.43	High	3.10	0.38	High
Risk Assessment	3.45	0.43	Very High	3.20	0.42	High	3.07	0.41	High
Control Measures	3.42	0.42	Very High	3.16	0.48	High	3.08	0.38	High
Overall Risk Management Practices	3.44	0.34	Very High	3.18	0.40	High	3.08	0.36	High

Generation X employees consistently display a very high level of risk management practices, particularly in hazard identification, risk assessment, control measures, and overall implementation. Both Generation Z and Millennials demonstrate strong engagement at a high level, though slightly lower than their Generation X counterparts. While all generational groups effectively practice risk management, older employees tend to show more robust and consistent application of these practices.

Generation X employees demonstrate stronger and more consistent risk management practices compared to Generation Z and Millennials. Stakeholders may view the very high ratings among Generation X employees as evidence of greater work experience, familiarity with safety procedures, and stronger awareness of hazard prevention and control measures. Generation Z and Millennials also showed “High” levels of risk management practices, indicating positive engagement in workplace safety.

The company may implement generationally responsive risk management strategies to strengthen employee participation in hazard identification, risk assessment, and control measures. Generation X employees may serve as mentors or role models, while organizations can enhance training, communication, and technology-based safety programs to better engage younger employees.

The age-related workplace practices influence employees’ participation and performance in organizational activities (Boehm et al., 2021). According to Weaver, (2022) noted that older generations contribute valuable workplace experience and stronger organizational commitment, which may enhance safety and risk management behaviors. Based on Serona and Siao (2025) explained that generational age influences workplace attitudes and employee engagement in organizational practices. Furthermore, Dobrowolski et al. (2022) highlighted that

Generation Z employees possess competencies and ethical perspectives that shape their understanding of risk management, supporting the findings in Table 7 that Generational X employees demonstrated very high risk management practices, while Generational Z and Millennials exhibited high levels across hazard identification, risk assessment, and control measures.

Table 8

Risk Management Practices of Employees When Grouped According to Sex

Aspects	Male (n=177)			Female (n=143)		
	Mean	sd	Verbal Interpretation	Mean	sd	Verbal Interpretation
Hazard Identification	3.15	0.42	High	3.20	0.41	High
Risk Assessment	3.13	0.43	High	3.19	0.42	High
Control Measures	3.13	0.42	High	3.17	0.46	High
Overall Risk Management Practices	3.14	0.39	High	3.18	0.38	High

Both male and female employees demonstrate a high level of risk management practices in all areas, including hazard identification, risk assessment, control measures, and overall practices. Female employees show slightly higher mean scores compared to male employees, although the differences are not substantial. Overall, the risk management practices are consistently applied across both sexes, with both groups exhibiting similarly high levels of implementation.

Employees consistently practice effective risk management in the workplace, as reflected in the “High” ratings across all dimensions. Stakeholders, particularly management and safety officers, may interpret these results as evidence that risk management policies, safety procedures, and control measures are equally implemented and understood regardless of sex. Although female employees reported slightly higher mean scores, the minimal differences indicate that both groups demonstrate similar levels of awareness and participation in workplace risk management practices.

The company should continue implementing inclusive and consistent risk management programs for all employees regardless of sex. Maintaining strong safety communication, continuous training, and employee involvement may further strengthen hazard identification, risk assessment, and control measures within the workplace. These efforts may help sustain a positive and effective risk management culture across the organization.

Comparably, Guerrero et al. (2021) highlighted that employee characteristics and generational differences can affect workplace involvement and organizational practices. Also, Fuchs et al. (2024) pointed out that although demographic groups may differ slightly in attitudes and work practices, they generally maintain common organizational objectives and responsibilities. On the other hand, Huyler et al. (2025) emphasized that inclusive leadership enhances employee participation and collaboration within the workplace. Furthermore, workplace equality and intergenerational cooperation foster positive organizational behavior and engagement, supporting the findings in Table 8 that both male and female employees exhibit consistently high levels of risk management practices in terms of hazard identification, risk assessment, and control measures (Wu et al., 2025).

Table 9

Risk Management Practices of Employees When Grouped According to Educational Attainment

Aspects	College Graduate (n=298)			High School (n=21)			Elementary (n=1)		
	Mean	sd	Verbal Interpretation	Mean	sd	Verbal Interpretation	Mean	sd	Verbal Interpretation
Hazard Identification	3.15	0.4	High	3.54	0.46	Very High	3.75	0	Very High
Risk Assessment	3.12	0.41	High	3.57	0.47	Very High	3.75	0	Very High

Control Measures	3.12	0.42	High	3.54	0.48	Very High	3.25	0	Very High
Overall Risk Management Practices	3.13	0.37	High	3.55	0.44	Very High	3.58	0	Very High

In terms of hazard identification, risk assessment, control methods, and overall implementation, the table demonstrates that college graduates consistently exhibit a high level of risk management techniques. On the other hand, despite the small sample size, the solitary primary graduate likewise exhibits very high ratings, while high school grads report very high levels in all areas. Overall, the results indicate that while risk management is successfully practiced by all educational categories, people with lesser educational attainment typically report higher levels of engagement than college graduates.

The employees with different levels of education reflect positive engagement in the workplace risk management practices as indicated by the high to very high ratings in all dimensions. Irrespective of educational attainment, these results can be used by stakeholders to evidence effective communication and implementation of hazard identification, risk assessment and control measures. High school graduates reported very high levels of risk management practices and college graduates consistently rated high. However, the results for employees with elementary education should be interpreted with caution because the sample size is very small.

The company should continue to implement inclusive and accessible risk management programs that cater to employees with different educational backgrounds. Regular safety training, clear communication and practical safety procedures can further increase the engagement of employees in hazard identification, risk assessment and control measures. In addition, organizations must maintain employee engagement efforts to ensure consistent and effective management of workplace risks in all education groups.

Research has consistently shown that employees with higher levels of education tend to demonstrate stronger understanding and compliance with occupational health and safety protocols. For instance, Coca et al. (2025) and Bira et al. (2025) observed that workers with greater educational attainment exhibited heightened safety awareness and were more likely to adhere to established procedures. Sinelnikov et al. (2020) further noted that individuals with advanced educational backgrounds adapted more readily to technical safety concepts, though he emphasized that the success of training programs depended largely on the quality of organizational support and interventions. In contrast, Jule, (2020) argued that continuous training and the presence of a robust safety culture were critical in promoting compliance across all educational levels. Similarly, Lahuta et al. (2021) concluded that organizational backing and ongoing training initiatives enhanced safety performance among employees regardless of their educational attainment.

Table 10
Risk Management Practices of Employees When Grouped According to Classification

Aspects	Rank and File (n=214)			Supervisor (n=106)		
	Mean	sd	Verbal Interpretation	Mean	sd	Verbal Interpretation
Risk Management Practices-Hazard Identification	3.17	0.44	High	3.18	0.36	High
Risk Management Practices-Risk Assessment	3.14	0.44	High	3.18	0.41	High
Risk Management Practices-Control Measures	3.13	0.46	High	3.19	0.38	High
Overall Risk Management Practices	3.15	0.41	High	3.18	0.34	High

In terms of hazard identification, risk assessment, control measures, and overall implementation, both supervisors and rank-and-file personnel regularly exhibit high levels of risk management practices. Supervisors' mean scores are marginally higher than those of rank-and-file workers, but they still fall into the same verbal interpretation group. Overall, the results indicate that both groups continue to take a sound and consistent approach to risk management, which reflects a strong organizational commitment to safety procedures.

Both rank-and-file employees and supervisors demonstrate high levels of risk management practices across all dimensions. Stakeholders, particularly management and safety officers, may view these results as evidence that hazard identification, risk assessment, and control measures are consistently practiced throughout the organization. Although supervisors obtained slightly higher mean scores, the minimal differences suggest that both groups have similar levels of awareness and participation in workplace risk management practices.

The company should continue strengthening risk management programs through regular safety training, effective communication, and employee involvement across all classifications. Supervisors may further support safe work practices by guiding rank-and-file employees in applying risk management procedures and sustaining organization-wide safety initiatives.

Both rank-and-file employees and supervisors demonstrated high levels of risk management practices in hazard identification, risk assessment, control measures, and overall risk management. Employees consistently follow workplace safety procedures and actively participate in organizational risk management efforts. Supporting this, Kumar and Bhattacharjee (2023) emphasized that management commitment and customized safety training improve workplace safety and risk management practices. Based on, Ajmal et al. (2022) highlighted that effective safety-management practices and safety compliance enhance organizational safety performance. Safety consciousness, safety climate, and responsible leadership improve workplace safety (Saleem & Malik, 2022). Leadership, behavior-based safety, hazard identification, and risk assessment are essential in strengthening safe work practices and managing occupational safety risks effectively (Shi & Nadeem, 2023).

Table 11

Level of Employee Involvement when taken collectively (n=320)

Dimensions	Mean	Std. Deviation	Verbal Interpretation
Communication and Feedback	3.15	0.42	High
Collaborative Technology Adoption	3.16	0.44	High
Participation in Decision Making	3.15	0.44	High
Overall Employee Involvement	3.15	0.39	High

Employees demonstrated “High” levels of involvement across all dimensions. Collaborative Technology Adoption obtained the highest mean, indicating that employees actively engage in workplace technologies that support operations and safety. Communication and Feedback and Participation in Decision Making also received “High” ratings, suggesting that employees generally feel involved in workplace communication and organizational activities.

The management and supervisors may perceive employees as actively participating in organizational initiatives, teamwork, and communication processes. The high ratings indicate that employees recognize opportunities to provide feedback, collaborate with others, and contribute to workplace decisions, reflecting a supportive and participative organizational environment.

The company should continue strengthening employee involvement through open communication, participative leadership, and collaborative workplace practices. Encouraging employee feedback, involving employees in decision-making, and supporting technology adoption may further enhance employee engagement, teamwork, and organizational performance.

Employees are actively engaged in workplace activities and organizational processes. According to Byrne (2022) emphasized that employee engagement strengthens participation, communication, and organizational commitment. Mohammad et al. (2025) highlighted that employee involvement and collaboration contribute to improved workplace performance and productivity. Motivation and job satisfaction enhance employee engagement and performance (Riyanto et al., 2021). Furthermore, Job engagement strengthens employee participation and retention within organizations (Sepahvand & Khodashahri, 2020).

Table 12

Employee Involvement When Grouped According to Age

Aspects	Generational X (n=32)			Generational Z (n=123)			Millennials (n=165)		
	Mean	sd	Verbal interpretation	Mean	sd	Verbal interpretation	Mean	sd	Verbal interpretation
Communication and Feedback	3.44	0.44	Very High	3.14	0.44	High	3.10	0.37	High
Collaborative Technology Adoption	3.41	0.41	Very High	3.15	0.45	High	3.12	0.43	High
Participation in Decision Making	3.38	0.41	Very High	3.14	0.46	High	3.12	0.43	High
Overall Employee Involvement	3.41	0.35	Very High	3.14	0.42	High	3.11	0.36	High

Generational X employees exhibit a very high level of involvement across all dimensions, including communication and feedback, collaborative technology adoption, participation in decision making, and overall involvement. In contrast, Generational Z and Millennials show a high level of involvement in all areas, with mean scores that are slightly lower than those of Generational X. Overall, the results suggest that employee involvement is evident across all generations, but it is most pronounced among Generational X employees.

Generational X employees demonstrate stronger involvement in workplace activities compared to Generational Z and Millennials. Stakeholders, particularly management and supervisors, may interpret the very high ratings among Generational X employees as evidence of greater engagement in communication, decision-making, and collaborative workplace practices.

Although Generational Z and Millennials also reported “High” levels of involvement, their slightly lower mean scores may reflect differences in workplace experience, organizational exposure, and participation preferences across generations.

The company should adopt generationally responsive strategies to strengthen employee involvement across all age groups. Generational X employees may serve as role models or mentors in promoting active communication, teamwork, and participation in decision-making. Additionally, organizations can enhance employee engagement by implementing collaborative and technology-based initiatives that are more appealing and accessible to younger employees, particularly Millennials and Generational Z workers.

Several studies suggest that generational differences in the workplace are often overstated. Costanza et al. (2023) found that employee behavior is influenced more by organizational and individual factors than by generation. Older workers often perceive Millennials as technologically skilled but less committed (Arras-Djabi et al., 2024). In the Philippine context, Generation X employees showed stronger organizational commitment and participation (Gabriel et al., 2020). Furthermore, higher engagement and lower turnover intention among Generation X workers and also older employees demonstrated stronger communication and leadership participation than younger workers (Muniz et al., 2024).

Table 13

Employee Involvement When Grouped According to Sex

Aspects	Male (n=177)			Female (n=143)		
	Mean	sd	Verbal Interpretation	Mean	sd	Verbal Interpretation
Communication and Feedback	3.14	0.39	High	3.17	0.45	High
Collaborative Technology Adoption	3.16	0.44	High	3.16	0.44	High
Participation in Decision Making	3.16	0.44	High	3.14	0.45	High
Overall Employee Involvement	3.15	0.38	High	3.16	0.41	High

Both male and female employees continually exhibit high levels of involvement in decision-making, collaborative technology usage, and communication and feedback. The differences between the two groups are negligible, despite the fact that women report slightly higher mean scores in communication and total involvement. Overall, the results point to a robust and gender-balanced level of employee involvement, which reflects a consistently favorable engagement with organizational procedures.

Employees demonstrate high levels of involvement in communication, collaborative technology adoption, and participation in decision-making. Stakeholders, particularly management and supervisors, may interpret these results as evidence that employee involvement practices are consistently experienced across both sexes. Although female employees reported slightly higher mean scores in communication and overall involvement, the minimal differences indicate that both groups share similar levels of engagement and participation in organizational activities.

The company should continue promoting inclusive and participative workplace practices that encourage employee involvement regardless of sex. Strengthening open communication, teamwork, and employee participation in decision-making may further enhance engagement, collaboration, and organizational effectiveness. Additionally, sustaining equal opportunities for involvement may help maintain a balanced and supportive work environment.

Employee involvement is consistently high regardless of sex. This is supported by Dei Mensah et al. (2024), who found that employee engagement promotes innovative work behavior regardless of sex, and by Pithaloka and Ardiyanti (2024), who emphasized that organizational support and engagement encourage active participation. Similarly, Westover & Andrade (2024) highlighted that employee activation strengthens engagement across gender groups. Moreover, Ambalika et al. (2024) and Gehrau et al. (2024) said that effective internal communication enhances employee engagement, empowerment, participation, and involvement in organizational processes.

Table 14

Employee Involvement When Grouped According to Educational Attainment

Aspects	College Graduate (n=298)			High School (n=21)			Elementary (n=1)		
	Mean	sd	Verbal interpretation	Mean	sd	Verbal Interpretation	Mean	sd	Verbal Interpretation
Communication and Feedback	3.13	0.41	High	3.42	0.45	Very High	3.80	0	Very High
Collaborative Technology Adoption	3.13	0.43	High	3.53	0.4	Very High	3.60	0	Very High

Participation in Decision Making	3.12	0.43	High	3.57	0.42	Very High	3.20	0	High
Overall Employee Involvement	3.13	0.38	High	3.51	0.40	Very High	3.53	0	Very High

Employees who are college graduates exhibit a high level of involvement across all aspects, including communication and feedback, collaborative technology adoption, participation in decision making, and overall involvement. In comparison, employees with high school and elementary education demonstrate a very high level of involvement in most areas, generally obtaining higher mean scores than college graduates, although participation in decision making among those with elementary education is only rated as high. Overall, employee involvement is evident across all educational levels, with relatively higher levels among those with lower educational attainment, though findings for the elementary group should be interpreted with caution due to the very limited sample size.

Employees across all educational levels demonstrate positive involvement in workplace activities, as reflected in the high to very high ratings across all dimensions. Stakeholders may interpret these results as evidence that communication, collaboration, and participation opportunities are accessible to employees regardless of educational attainment. Employees with high school and elementary education reported relatively higher levels of involvement compared to college graduates, although the results for the elementary group should be interpreted cautiously due to the very limited sample size.

The company should continue promoting inclusive and participative workplace practices that encourage employee involvement across all educational backgrounds. Strengthening communication channels, teamwork, and employee participation in decision-making may further enhance engagement and organizational effectiveness. Additionally, organizations should ensure that involvement initiatives remain accessible, understandable, and supportive for employees with varying educational experiences.

Employees remain actively engaged in organizational activities regardless of educational background. This supports the study of Vadivel et al. (2023), which emphasized that educational experiences influence participation and development in organizations, and Al-refaei et al. (2023), who found that job involvement, job satisfaction, and organizational commitment enhance employee participation. Similarly, Thanh and Quang (2022) highlighted that leadership styles positively influence employee engagement and workplace involvement. Moreover, Plückelmann et al. (2024) noted that participative decision-making strengthens employee inclusion and engagement, while Islam (2025) explained that effective human resource management practices promote communication, participation, and collaboration.

Table 15
Employee Involvement When Grouped According to Classification

Aspects	Rank and File (n=214)			Supervisor (n=106)		
	Mean	sd	Verbal Interpretation	Mean	sd	Verbal Interpretation
Communication and Feedback	3.11	0.41	High	3.22	0.41	High
Collaborative Technology Adoption	3.14	0.46	High	3.19	0.40	High
Participation in Decision Making	3.12	0.45	High	3.23	0.42	High
Overall Employee Involvement	3.12	0.41	High	3.21	0.36	High

A high degree of employee involvement in communication and feedback, collaborative technology usage, and decision-making is regularly displayed by both supervisors and rank-and-file employees. When compared to rank-and-file employees, supervisors report somewhat higher mean scores across the board, indicating a higher level of involvement. Overall, the results suggest that supervisors typically exhibit a little higher level of participation, even while both groups maintain positive involvement.

The stakeholders may perceive all levels of employees, especially management and supervisory staff, as being actively engaged in communication, collaboration and activities within the organization. Supervisors had marginally higher ratings, which may be indicative of more involvement in decision-making processes and organizational responsibilities as a function of their supervisory roles. But the high scores by rank-and-file employees also points to a positive work environment that promotes employee participation and engagement.

The company should continue to promote participative leadership, open communication and collaborative workplace practices to all employees' categories. Further improvement of employee engagement and collaboration at the workplace could be achieved by enhancing the participation of rank-and-file workers in decision-making and organizational initiatives. Continuing inclusive participation programs and effective communication channels may also help improve organizational effectiveness and employee satisfaction.

The findings align with the studies of Abolnasser et al. (2023; Ergun et al. (2025), which emphasized that leadership, work engagement, psychological empowerment, and organizational support enhance employee participation and innovative work behavior. Similarly, Boccoli et al. (2023) highlighted that employee engagement is shaped by social and workplace interactions that balance performance and well-being. Moreover, Pfrombeck et al. (2024) noted that knowledge-sharing across workplace roles encourages collaboration and active participation, while Islam (2025) explained that effective human resource management practices strengthen communication, collaboration, and employee engagement across organizational levels.

Table 16

Difference in the Level of Safety Culture

	Profile	Mean	Standard Deviation	p-value	Significance @ 0.05
Sex	Male (n=177)	3.17	0.41	0.15	not significant
	Female (n=143)	3.22	0.38		
Age	Gen x (n=32)	3.44	0.37	0.000	significant
	Gen Z (n=123)	3.20	0.38		
	Millennials (n=165)	3.13	0.40		
Classification	Rank and File (n=214)	3.16	0.39	0.06	Not significant
	Supervisors (n=106)	3.25	0.41		

The computed p-values showed no statistically significant difference in safety culture when the employees are grouped according to sex and classification. This means that employees generally share similar perceptions and practices regarding workplace safety regardless of sex or job classification.

However, when grouped according to age, their perception of safety culture significantly vary. The older generation (Gen X) have higher regard to safety culture than the younger generations (Gen Z and Millennials).

The management and safety officers may view the organization's safety culture as consistently practiced and experienced by employees across different groups. Even though slight differences in scores were observed, the results indicate that safety policies, leadership support, and workplace safety practices are applied fairly and uniformly throughout the organization.

The company should continue promoting inclusive and consistent safety programs for all employees. Providing regular safety training, open communication, and strong leadership support can further strengthen workplace safety culture and encourage continuous employee participation in safety practices regardless of sex or classification.

Safety leadership and safety attitudes significantly shape workers' safety motivation and knowledge, which in turn improve safety-related behaviors such as compliance and participation (Basahel, 2021). Also, Naji et al. (2021) stated that safety communication partially mediates the relationship between safety culture and employee safety performance, indicating that a stronger safety culture promotes better safety outcomes through clearer

communication. Furthermore, Nævestad et al. (2020) found that when strong safety systems and regulations are implemented, demographic differences have only a minor impact on safety culture. Supporting this finding, (Scott et al. (2024) determined that gender differences have only a limited effect on safety culture, reinforcing the idea that organizational safety measures outweigh demographic factors.

Table 17

Difference in the Level of Risk Management Practices

Profile		Mean	Standard Deviation	p-value	Significance @ 0.05
Sex	Male (n=177)	3.14	0.39	0.29	not significant
	Female (n=143)	3.18	0.38		
Age	Gen x (n=32)	3.44	0.34	0.000	significant
	Gen Z (n=123)	3.18	0.40		
	Millennials (n=165)	3.08	0.36		
Classification	Rank and File (n=214)	3.14	0.41	0.42	not significant
	Supervisors (n=106)	3.18	0.34		

The computed p-values revealed that the differences according to sex and classification were not statistically significant at the 0.05 level. This indicates that employees generally practice risk management in a consistent manner regardless of sex or job classification.

However, when grouped according to age, their risk management practices significantly vary, with Gen X having better risk management practices than their younger counterpart (Gen X and Mellinnials).

The management and safety officers may view the organization's risk management practices as fairly and consistently implemented across all employee groups. Although slight differences in mean scores were observed, the results imply that employees share similar levels of awareness and participation in hazard identification, risk assessment, and control measures. This may also reflect the organization's commitment to ensuring that all employees are equally informed and involved in workplace safety practices.

The company should continue strengthening inclusive and organization-wide risk management programs that encourage active participation from all employees. Providing regular safety training, clear communication, and continuous support from supervisors may help maintain consistent risk management practices throughout the workplace. Sustaining these efforts can further enhance employee awareness, safety compliance, and overall workplace safety performance.

Studies indicate that differences in safety performance based on sex or organizational position are minimal when strong leadership support, a robust safety culture, and effective risk management are in place. Ta et al. (2022) and Kabiesz and Tutak (2024) emphasized that a well-established organizational safety culture enhances employee performance regardless of demographic or positional factors. In line with this, Orvik et al. (2026) explained that variables such as sex and job classification exert limited influence when employee involvement and risk management systems are effectively implemented. Likewise, Dela Cruz and Ylagan, (2025) and Ajmal and Nordin, (2021) found that workers demonstrated comparable levels of safety behavior, organizational commitment, and occupational health and safety performance irrespective of sex or organizational role.

Table 18

Difference in the Level of Employee Involvement on Safety

Profile		Mean	Standard Deviation	p-value	Significance @ 0.05
Sex	Male (n=177)	3.15	0.38	0.45	not significant
	Female (n=143)	3.16	0.41		
Age	Gen x (n=32)	3.41	0.35	0.000	significant
	Gen Z (n=123)	3.14	0.42		

	Millennials (n=165)	3.11	0.36		
Classification	Rank and File (n=214)	3.12	0.41	0.10	not significant
	Supervisors (n=106)	3.21	0.36		

The computed p-values indicated that the differences according to sex and classification were not statistically significant. These findings suggest that employee involvement is generally experienced in a similar way across different employee groups.

However, when grouped according to age, their involvement in safety activities significantly differ, with Gen X have better involvement than their younger counterpart.

The management and supervisors may view employee involvement practices as consistently implemented throughout the organization regardless of sex or job classification. Although supervisors obtained slightly higher scores, the differences were minimal, indicating that employees across all groups feel involved in workplace communication, collaboration, and decision-making processes. This reflects a supportive work environment that encourages participation and engagement among employees.

The company should continue fostering inclusive and participative workplace practices that encourage employee involvement at all levels. Maintaining open communication, teamwork, and opportunities for employee participation in decision-making may further strengthen engagement and organizational effectiveness. Continuous support from management and supervisors can also help sustain a positive and collaborative workplace culture.

According to Naji et al. (2022) safety communication helps turn a strong safety culture into better employee safety performance, which fits the table's high employee involvement across both sex and classification. Safety leadership increases safety participation, suggesting that involvement stays strong when employees are guided and supported well (Zhao et al., 2022). Safety culture should be viewed as a shared, organization-wide practice, which matches the table's similar involvement levels between rank-and-file employees and supervisors (Van Nunen et al., 2022).

Table 19
Relationship Between Safety Culture, Risk Management Practices, and Employee Involvement

Correlates	Spearman's Rho	p-value	Significance at 0.05
Safety Culture & Risk Management Practices	0.773	0.000	significant
Safety Culture & Employee Involvement	0.705	0.000	significant
Risk Management Practices & Employee Involvement	0.817	0.000	significant

Significant relationships among safety culture, risk management practices, and employee involvement exists in the company. The strongest correlation was observed between risk management practices and employee involvement ($\rho = 0.817$), followed by safety culture and risk management practices ($\rho = 0.773$), and safety culture and employee involvement ($\rho = 0.705$). Since all p-values were below the 0.05 level of significance, the null hypotheses were rejected, indicating that these variables are closely associated with one another.

The management and safety officers may recognize that employee involvement, effective risk management, and a positive safety culture work together in creating a safer and more productive workplace. Employees who are more engaged are also more likely to participate in safety and risk management activities, while a strong safety culture encourages cooperation, awareness, and communication within the organization.

The company should continuously strengthen safety programs, employee participation, and risk management strategies at the same time, as improvements in one area may positively influence the others. Promoting open communication, leadership support, and active employee involvement may further enhance workplace safety, teamwork, and organizational performance.

Based on Naji et al., (2022) Safety communication helps convert a strong safety culture into better safety performance, which aligns with the table's strong positive link between safety culture and both risk management practices and employee involvement. Safety consciousness, safety climate, and responsible leadership work together to improve safety outcomes, supporting the idea that these variables move closely with risk management and involvement (Saleem & Malik, 2022). Safety-management practices reduce accidents through safety compliance (Ajmal et al., 2022). Safety leadership increases safety participation (Zhao et al., 2022). Effective occupational health and safety culture depends on multiple stakeholders working together, which matches the table's significant relationships among all three variables (Claxton et al., 2022).

CONCLUSION

The employees generally exhibit a strong safety culture across all dimensions, with particularly high ratings in leadership commitment, the integration of people and technology, and the organization's learning culture. Descriptive analysis further indicated that Generation X employees consistently achieved the highest mean scores, while Millennials and Generation Z also reported strong perceptions of workplace safety. Across sex, educational attainment, and employment classification, employees demonstrated high to very high levels of safety culture, underscoring that safety practices and organizational commitment are widely observed throughout the company. Inferential analysis showed no significant differences in safety culture when grouped by sex or classification. This suggests that employees, regardless of demographic profile, share similar views on workplace safety.

The employees demonstrated strong risk management practices, particularly in hazard identification, risk assessment, and the implementation of control measures. Descriptive results showed that Generation X employees received the highest ratings, while both male and female employees, as well as rank-and-file staff and supervisors, consistently reported high engagement in risk management activities. Employees with high school and elementary educational attainment reflected very high levels of risk management practices, though results for the elementary group should be interpreted with caution due to the small sample size. Inferential analysis revealed no significant differences in risk management practices when grouped by sex or classification, suggesting that employees apply risk management procedures consistently across demographic categories.

Employee involvement was generally high across areas such as communication and feedback, collaborative use of technology, and participation in decision-making. Descriptive analysis indicated that Generation X employees demonstrated very high levels of involvement, while other generational groups also maintained strong participation and engagement within the organization. Both male and female employees, along with rank-and-file and supervisory personnel, reported similarly high levels of involvement, reflecting a supportive and participative organizational environment. Inferential analysis revealed no statistically significant differences in employee involvement when grouped by sex or classification, suggesting that engagement and participation are experienced consistently across different employee groups.

The study demonstrated that safety culture, risk management practices, and employee involvement are strongly and significantly interconnected. Among these, the most robust relationship was observed between risk management practices and employee involvement, followed by the links between safety culture and risk management, and between safety culture and employee involvement. These results suggest that strengthening one organizational factor is likely to reinforce the others, underscoring the integrated nature of workplace safety and employee participation.

Since Gen X holds the strongest grasp and most positive view of the company's safety culture, utilizing them as mentors is a perfect way to transfer this deep-rooted knowledge and commitment down to younger generations (Millennials and Gen Z). Moreover, the high ratings in the integration of people and technology is a company strength that can be used to introduce tech-based safety initiatives is a highly strategic move. It caters perfectly to Gen Z's digital-native strengths while reinforcing an integration capability the company already excels at. Lastly, the company can utilize the strong correlation among safety culture, risk management practices and employee involvement in safety, by empowering frontline employees to co-design risk management practices, transforming active involvement into a self-sustaining safety culture.

REFERENCES

1. Abolnasser, M. S. A., Abdou, A. H., Hassan, T. H., & Salem, A. E. (2023). Transformational Leadership, Employee Engagement, Job Satisfaction, and Psychological Well-Being among Hotel Employees after the Height of the COVID-19 Pandemic: A Serial Mediation Model. *International Journal of Environmental Research and Public Health*, 20(4), 3609. <https://doi.org/10.3390/ijerph20043609>
2. Ahadzi, D. F., Afitiri, A.-R., & Ahadzi, E. (2021). Organizational safety culture perceptions of healthcare workers in Ghana: A cross-sectional interview study. *International Journal of Nursing Studies Advances*, 3, 100020. <https://doi.org/10.1016/j.ijnsa.2021.100020>
3. Ajmal, M., Isha, A. S. N., Nordin, S. M., & Al-Mekhlafi, A.-B. A. (2022). Safety-Management Practices and the Occurrence of Occupational Accidents: Assessing the Mediating Role of Safety Compliance. *Sustainability*, 14(8), 4569. <https://doi.org/10.3390/su14084569>
4. Ajmal, M., & Nordin, S. (2021). Safety Management Practices and Occupational Health and Safety Performance: An Empirical Review. *Jinnah Business Review*, 9(2), 15–33. <https://doi.org/10.53369/DTOC3606>
5. Al Suleiman, S., Cortez, A., Monzón, A., & Lara, A. (2023). How to improve public transport usage in a medium-sized city: Key factors for a successful bus system. *European Transport Research Review*, 15(1), 47. <https://doi.org/10.1186/s12544-023-00616-y>
6. Al-Bayati, A. J. (2021). Impact of Construction Safety Culture and Construction Safety Climate on Safety Behavior and Safety Motivation. *Safety*, 7(2), 41. <https://doi.org/10.3390/safety7020041>
7. Al-Mekhlafi, A.-B. A., Kanwal, N., Alhajj, M. N., Isha, A. S. N., & Baarimah, A. O. (2025). Trends in Safety Culture Research: A Scopus Analysis. *Safety*, 11(2), 33. <https://doi.org/10.3390/safety11020033>
8. AlMousa, N., Althabet, N., AlSultan, S., Albagmi, F., AlNujaidi, H., & Salama, K. F. (2022). Occupational Safety Climate and Hazards in the Industrial Sector: Gender Differences Perspective, Saudi Arabia. *Frontiers in Public Health*, 10, 873498. <https://doi.org/10.3389/fpubh.2022.873498>
9. Al-refaei, A. A.-A., Ali, H. B. M., Ateeq, A. A., & Alzoraiki, M. (2023). An Integrated Mediating and Moderating Model to Improve Service Quality through Job Involvement, Job Satisfaction, and Organizational Commitment. *Sustainability*, 15(10), 7978. <https://doi.org/10.3390/su15107978>
10. Altman, J., Mace Firebaugh, C., Morgan, S. M., & Epstein, M. (2023). Perceived Workplace Support for Employee Participation in Workplace Wellness Programs: A Brief Report. *Merits*, 3(3), 494–503. <https://doi.org/10.3390/merits3030029>
11. Ambalika, N. K. A. D., Azzahra, H. A. S., Rahmayanti, P. L. D., & Ditha, I. G. A. T. L. (2024). The Effect of Work-Life Balance, Internal Communication, and Rewards on Employee Engagement and Employee Performance: A Study on Generation Z. *International Journal of Business, Law, and Education*, 5(2), 1646–1654. <https://doi.org/10.56442/ijble.v5i2.703>
12. Amru, M. F., Etikariena, A., & Hidayat, N. S. (2025). Does culture matter? Driving safety compliance from leadership through safety culture. 20(2).
13. Ansori, N., Widyanti, A., & Yassierli. (2021). The Role of Safety Silence Motives to Safety Communication and Safety Participation in Different Sectors of Small and Medium Enterprises. *Safety and Health at Work*, 12(2), 192–200. <https://doi.org/10.1016/j.shaw.2020.10.001>
14. Arras-Djabi, M., Cottard, L., & Shimada, S. (2024). Understanding the stereotypes of Millennials in the workplace. *European Management Review*, 21(1), 45–65. <https://doi.org/10.1111/emre.12559>
15. Ashraf, A., & Idrisi, M. J. (2024). Smart and Sustainable Public Transportation—A Need of Developing Countries. *International Journal of Networked and Distributed Computing*, 12(1), 144–152. <https://doi.org/10.1007/s44227-024-00023-2>
16. Ayo, E. B., Sumande, C. T., Tamayo, J. D., Isip, M. L. G., & Wibowo M. S., A. D. (2025). Measuring Organizational Commitment of Boomers, Gen X, Gen Y, and Gen Z: Basis for Engagement and Retention Policies. *International Journal of Multidisciplinary Applied Business and Education Research*, 6(7), 3582–3597. <https://doi.org/10.11594/ijmaber.06.07.27>
17. Basahel, A. M. (2021). Safety Leadership, Safety Attitudes, Safety Knowledge and Motivation toward Safety-Related Behaviors in Electrical Substation Construction Projects. *International Journal of Environmental Research and Public Health*, 18(8), 4196. <https://doi.org/10.3390/ijerph18084196>

18. Bautista-Bernal, I., Quintana-García, C., & Marchante-Lara, M. (2024). Safety culture, safety performance and financial performance. A longitudinal study. *Safety Science*, 172, 106409. <https://doi.org/10.1016/j.ssci.2023.106409>
19. Bedonio, C. G., & Andaya, M. J. (2025). Extent of Knowledge on Occupational Health and Safety (OHS) of Delivery Room Nurses: Basis For Proposed Training Program. *Psychology and Education: A Multidisciplinary Journal*, 41(1), 143–151. <https://doi.org/10.70838/pemj.410108>
20. Bira, S., Zanabazar, A., Purev, B., Otgonbayar, A.-E., & Gansukh, B.-A. (2025). Examining the Linking between the Occupational Health and Safety Practices, Employee Awareness and Performance. *European Journal of Business and Management Research*, 10(3), 162–167. <https://doi.org/10.24018/ejbmr.2025.10.3.2702>
21. Bisbey, T. M., Kilcullen, M. P., Thomas, E. J., Ottosen, M. J., Tsao, K., & Salas, E. (2021). Safety Culture: An Integration of Existing Models and a Framework for Understanding Its Development. *Human Factors: The Journal of the Human Factors and Ergonomics Society*, 63(1), 88–110. <https://doi.org/10.1177/0018720819868878>
22. Boccoli, G., Gastaldi, L., & Corso, M. (2023). The evolution of employee engagement: Towards a social and contextual construct for balancing individual performance and wellbeing dynamically. *International Journal of Management Reviews*, 25(1), 75–98. <https://doi.org/10.1111/ijmr.12304>
23. Boehm, S. A., Schröder, H., & Bal, M. (2021). Age-Related Human Resource Management Policies and Practices: Antecedents, Outcomes, and Conceptualizations. *Work, Aging and Retirement*, 7(4), 257–272. <https://doi.org/10.1093/workar/waab024>
24. Bracci, E., Bruno, A., D'Amore, G., & Ievoli, R. (2024). The integration of performance management and risk management in the public sector: An empirical case. *Journal of Management Control*, 35(1), 137–163. <https://doi.org/10.1007/s00187-024-00369-2>
25. Britt, T. W., Shuffler, M. L., Pegram, R. L., Xoxakos, P., Rosopa, P. J., Hirsh, E., & Jackson, W. (2021). Job Demands and Resources among Healthcare Professionals during Virus Pandemics: A Review and Examination of Fluctuations in Mental Health Strain during COVID-19. *Applied Psychology*, 70(1), 120–149. <https://doi.org/10.1111/apps.12304>
26. Byrne, Z. (2022). Understanding Employee Engagement. *Applied Psychology Series*. <https://doi.org/10.4324/9781003171133>
27. Cagbaleño, L. R. V., & Palic, A. A. S. (2025). Implementation of Occupational Safety and Health Standards in Government Offices in the Province of Negros Occidental, Philippines. 72.
28. Castellini, M., & Riso, V. (2023). Risk Management in Practice: A Multiple Case Study Analysis in Italian Municipalities. *Journal of Risk and Financial Management*, 16(1), 30. <https://doi.org/10.3390/jrfm16010030>
29. Cena, C. J. J. (2025). Safety culture, climate, and cost in a construction company in Bacolod City. <https://doi.org/10.5281/ZENODO.15848927>
30. Chan, A. P. C., Guan, J., Choi, T. N. Y., & Yang, Y. (2023). Moderating Effects of Individual Learning Ability and Resilient Safety Culture on the Relationship between the Educational Level and Safety Performance of Construction Workers. *Buildings*, 13(12), 3026. <https://doi.org/10.3390/buildings13123026>
31. Claxton, G., Hosie, P., & Sharma, P. (2022). Toward an effective occupational health and safety culture: A multiple stakeholder perspective. *Journal of Safety Research*, 82, 57–67. <https://doi.org/10.1016/j.jsr.2022.04.006>
32. Coca, J. C., Ferrer, R. Y., Picardo, R. L., Coronado, R. S., & Bacarisas, J. P. (2025). Awareness and Compliance on Occupational Health and Work Safety among Employees in a Private Company. *International Journal of Research and Scientific Innovation*, XI(XV), 901–917. <https://doi.org/10.51244/IJRSI.2024.11150068P>
33. Conda, L. E., Nuñez, C. A., Uy, D. S. E., Artaiz-Cariaga, C., Cabigon, J. J., & Apostol, G. L. (2024). A Recent Situational Analysis of the Occupational Safety and Health Landscape in the Philippines. *Acta Medica Philippina*. <https://doi.org/10.47895/amp.vi0.8944>
34. Costanza, D. P., Rudolph, C. W., & Zacher, H. (2023). Are generations a useful concept? *Acta Psychologica*, 241, 104059. <https://doi.org/10.1016/j.actpsy.2023.104059>

35. Dei Mensah, R., Boateng, R. K., & Kwesi Papa Andoh, R. (2024). Job Resources, Employee Engagement, and Innovative Work Behaviour of Bank Employees: Does Sex Matter? *Golden Ratio of Human Resource Management*, 5(1), 15–32. <https://doi.org/10.52970/grhrm.v5i1.419>
36. Dela Cruz, G. H. F., & Ylagan, A. D. (2025). Occupational safety and health on employees' safety behavior and organizational commitment among Agri-tourism farm sites in Central Luzon Region: Basis of sustainable strategic plan for safe and committed human resource. *International Journal of Research Studies in Management*, 13(5). <https://doi.org/10.5861/ijrsm.2025.25058>
37. Demerouti, E., & Bakker, A. B. (2023). Job demands-resources theory in times of crises: New propositions. *Organizational Psychology Review*, 13(3), 209–236. <https://doi.org/10.1177/20413866221135022>
38. Demirkesen, S. (2020). Investigating linear models of accident causation: A review study in the construction safety context.
39. Dobrowolski, Z., Drozdowski, G., & Panait, M. (2022). Understanding the Impact of Generation Z on Risk Management—A Preliminary Views on Values, Competencies, and Ethics of the Generation Z in Public Administration. *International Journal of Environmental Research and Public Health*, 19(7), 3868. <https://doi.org/10.3390/ijerph19073868>
40. Dvorsky, J., Belas, J., Gavurova, B., & Brabenec, T. (2021). Business risk management in the context of small and medium-sized enterprises. *Economic Research-Ekonomska Istraživanja*, 34(1), 1690–1708. <https://doi.org/10.1080/1331677X.2020.1844588>
41. Ergun, E., Tunca, S., Cetinkaya, G., & Balcıoğlu, Y. S. (2025). Exploring the Roles of Work Engagement, Psychological Empowerment, and Perceived Organizational Support in Innovative Work Behavior: A Latent Class Analysis for Sustainable Organizational Practices. *Sustainability*, 17(4), 1663. <https://doi.org/10.3390/su17041663>
42. Farhan, A., Ambarwati, R., & Dedy. (2025). The Role of Safety Leadership in Shaping Safety Culture: The Mediating Role of Communication and Commitment. *Jurnal Manajemen Bisnis*, 12(2), 216–239. <https://doi.org/10.33096/jmb.v12i2.1231>
43. Fuchs, O., Lorenz, E., & Fuchs, L. (2024). Generational Differences In Attitudes Towards Work And Career: A Systematic Literature Review On The Preferences Of Generations X, Y And Z. 11(7).
44. Gabriel, A. G., Alcantara, G. M., & Alvarez, J. D. G. (2020). How Do Millennial Managers Lead Older Employees? The Philippine Workplace Experience. *Sage Open*, 10(1), 2158244020914651. <https://doi.org/10.1177/2158244020914651>
45. Ge, J., Zhang, Y.-Y., Xu, K.-L., Li, J.-S., Yao, X.-W., Wu, C.-Y., Li, S.-Y., Yan, F., Zhang, J.-J., & Xu, Q.-W. (2021). Interaction Theory of Hazard-Target System.
46. Gehrau, V., Lührmann, J., Stehle, H., & Röttger, U. (2024). The Impact of Internal Communication on Individual Empowerment: Findings of a Representative Employee Survey in Germany. *International Journal of Strategic Communication*, 18(3), 208–227. <https://doi.org/10.1080/1553118X.2024.2312859>
47. Giraldi, M. S., Restuputri, D. P., Dewi, S. K., Masudin, I., & Yuliati, U. (2023). Relationship Between Safety Culture and the Safety Climate, Safety Behavior and Safety Management. *Majalah Ilmiah Pengkajian Industri*, 15(2), 105–114. <https://doi.org/10.29122/mipi.v15i2.4601>
48. Guerrero, M., Amorós, J. E., & Urbano, D. (2021). Do employees' generational cohorts influence corporate venturing? A multilevel analysis. *Small Business Economics*, 57(1), 47–74. <https://doi.org/10.1007/s11187-019-00304-z>
49. Ha, D. K. (2024). A model of factors influencing safety behaviour and awareness among Vietnamese construction workers. *Ministry of Science and Technology, Vietnam*, 66(4). <https://doi.org/10.31276/VJSTE.2024.0038>
50. Harahap, A. S., & Cahaya, Y. F. (2025). Literature Review of Factors Affecting Occupational Safety Culture. *Dinasti International Journal of Management Science*, 6(4), 1108–1119. <https://doi.org/10.38035/dijms.v6i4.4397>
51. Hertanto, A., Erwandi, D., Widanarko, B., & Tejamaya, M. (2023). Relationship between Safety Climate and Safety Behavior in Company X in Indonesia. *Safety*, 9(4), 89. <https://doi.org/10.3390/safety9040089>
52. Huyler, D., Gomez, L., Rocco, T. S., & Plakhotnik, M. S. (2025). Leading Different Generational Cohorts in the Workplace: Focus on Situational and Inclusive Leadership. *New Horizons in Adult Education and Human Resource Development*, 37(1), 6–19. <https://doi.org/10.1177/19394225241297230>

53. Ilmi, N. (2025). Analysis of Occupational Health and Safety Risks in the Palm Oil Processing Industry Using the HIRARC Method. 4(1).
54. Islam, M. J. (2025). Exploring the Impact of HRM Practices on Employee Engagement and Job Satisfaction: A Quantitative Analysis in the Organizational Context. *Journal Of Creative Writing* (ISSN-2410-6259), 9(3), 1–13. <https://doi.org/10.70771/jocw.202>
55. Izyati, N. J., A., Irman. S. A., Aulia, N. A., Rizki, A.H., Aura, D.I., Alicia, R.D. (2023). Risk Management and Safety Education in Custom Garage. *Journal of Safety Education*, 1(1), 13–18. <https://doi.org/10.15294/jse.v1i1.70315>
56. Jaß, L., Klußmann, A., Harth, V., & Mache, S. (2024). Job demands and resources perceived by hybrid working employees in German public administration: A qualitative study. *Journal of Occupational Medicine and Toxicology*, 19(1), 28. <https://doi.org/10.1186/s12995-024-00426-5>
57. Jule, J. G. (2020). Workplace Safety: A Strategy for Enterprise Risk Management. *Workplace Health & Safety*, 68(8), 360–365. <https://doi.org/10.1177/2165079920916654>
58. Kabiesz, P., & Tutak, M. (2024). Developing a Culture of Safety for Sustainable Development and Public Health in Manufacturing Companies—A Case Study. *Sustainability*, 16(17), 7557. <https://doi.org/10.3390/su16177557>
59. Karevan, A., & Nadeau, S. (2024). A comprehensive STPA-PSO framework for quantifying smart glasses risks in manufacturing. *Heliyon*, 10(9), e30162. <https://doi.org/10.1016/j.heliyon.2024.e30162>
60. Khasanah, N., . K., & . S. (2019). Analysis the Effect of Leadership to Safety Climate, Safety Culture and Safety Performance. *Asian Journal of Advanced Research and Reports*, 1–12. <https://doi.org/10.9734/ajarr/2019/v4i230106>
61. Kim, S., Wamugi, W. J., Camliyurt, G., Kim, D. W., & Park, Y.-S. (2023). Analysis of Pier Contact Accident in Busan New Port of South Korea by System-Theoretic Accident Model and Processes (STAMP). *TransNav, the International Journal on Marine Navigation and Safety of Sea Transportation*, 17(2), 299–304. <https://doi.org/10.12716/1001.17.02.05>
62. Kumar, D., & Bhattacharjee, R. M. (2023). Reducing workplace unsafe behaviour using risk classification, profiling, risk tolerance approach. *Heliyon*, 9(3), e13969. <https://doi.org/10.1016/j.heliyon.2023.e13969>
63. Kwon, S. A., & Lee, J. E. (2020). An Empirical Analysis of Women’s Perception on Safety Culture and Disaster Vulnerability. *Crisis and Emergency Management: Theory and Praxis*, 16(6), 119–130. <https://doi.org/10.14251/crisisonomy.2020.16.6.119>
64. Lahuta, P., Kardoš, P., & Hudáková, M. (2021a). Integrated Risk Management System in Transport. *Transportation Research Procedia*, 55, 1530–1537. <https://doi.org/10.1016/j.trpro.2021.07.142>
65. Lee, D. Y., & Jo, Y. (2023). The job demands-resource model and performance: The mediating role of employee engagement. *Frontiers in Psychology*, 14, 1194018. <https://doi.org/10.3389/fpsyg.2023.1194018>
66. Li, Y., Chen, C., & Yuan, Y. (2025). Evolving the job demands-resources framework to JD-R 3.0: The impact of after-hours connectivity and organizational support on employee psychological distress.
67. Lu, J. L. (2022). State and Trends of Occupational Health and Safety in the Philippines. *Acta Medica Philippina*, 56(1). <https://doi.org/10.47895/amp.v56i1.3865>
68. Mamasarogan, J., & Tan, M. R. (2024). The Predicting Effect of Occupational Commitment and Leadership Styles on Organizational Effectiveness of Public School Heads. *Journal of Interdisciplinary Perspectives*, 2(9). <https://doi.org/10.69569/jip.2024.0354>
69. Matti, S., & Condes, K. (2025). Leadership Styles, Risk Management, and Staff Support among Head Nurses: Basis for Capacity Building Program. <https://doi.org/10.5281/ZENODO.15205607>
70. Miring’u, J., Gatebe, E., & Karanja, B. (2024). Assessment of the Influence of Safety Training on the Technicians Safety Culture in the Pharmaceutical Manufacturing Industries in Kenya. *Journal of Health and Environmental Research*, 10(4), 134–148. <https://doi.org/10.11648/j.jher.20241004.15>
71. Mohammad, A. M., Menhat, M., Shafi, S., Mohammed Abu Hussein, A.-H., Abdullah Al-Mubaideen, M., & Alshaketheep, K. (2025). Trends in employee performance: A comprehensive review and bibliometric analysis using Scopus and WOS. *SA Journal of Human Resource Management*, 23(0), a2887. <https://doi.org/10.4102/sajhrm.v23i0.2887>

72. Morales, M. M., & Estioko, E. D. (2020). Perceptions of Nurse Managers on Patient Safety Culture and Safety Culture Maturity Level of Selected Internationally Accredited Hospitals in Metro Manila, Philippines. 5(2).
73. Muniz, C. J., Jones, J. S., & Murray, S. R. (2024). A Generational Preference for Preferred Work Arrangement and the Relationship With Employee Engagement and Turnover Intention. *Journal of Business Diversity*, 24(3). <https://doi.org/10.33423/jbd.v24i3.7257>
74. Nævestad, T.-O., Blom, J., & Phillips, R. O. (2020). Safety culture, safety management and accident risk in trucking companies. *Transportation Research Part F: Traffic Psychology and Behaviour*, 73, 325–347. <https://doi.org/10.1016/j.trf.2020.07.001>
75. Nævestad, T.-O., Laiou, A., & Yannis, G. (2020). Safety Culture Among Car Drivers and Motorcycle Riders in Norway and Greece: Examining the Influence of Nationality, Region, and Transport Mode. *Frontiers in Sustainable Cities*, 2, 23. <https://doi.org/10.3389/frsc.2020.00023>
76. Naji, G. M. A., Isha, A. S. N., Alazzani, A., Saleem, M. S., & Alzoraiki, M. (2022). Assessing the Mediating Role of Safety Communication Between Safety Culture and Employees Safety Performance. *Frontiers in Public Health*, 10, 840281. <https://doi.org/10.3389/fpubh.2022.840281>
77. 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. (2021). 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), 8568. <https://doi.org/10.3390/ijerph18168568>
78. Nakhal Akel, A. J., Di Gravio, G., Fedele, L., & Patriarca, R. (2022). Learning from Incidents in Socio-Technical Systems: A Systems-Theoretic Analysis in the Railway Sector. *Infrastructures*, 7(7), 90. <https://doi.org/10.3390/infrastructures7070090>
79. Odu, J. O., Hamedon, T. R., Mahmud, A., & Baharudin, M. R. (2023). Systematic Review of Intervention Programs to Improve the Level of Knowledge, Attitude, and Practices towards Work Safety Culture among Office Workers. *Malaysian Journal of Medicine and Health Sciences*, 19(1), 263–271. <https://doi.org/10.47836/mjmhs.19.1.34>
80. Odu, J. O., Rahmawati Binti Hamedon, T., Rafee Bin Baharudin, M., & Mahmud, A. B. (2022). Reliability and validity study on work safety culture questionnaire (WSCQ) among government office workers using Information Motivation and Behavior (IMB) Model. *Safety and Health at Work*, 13, S119–S120. <https://doi.org/10.1016/j.shaw.2021.12.1127>
81. Omidi, M. R., Jafari Eskandari, M., Department of Industrial Engineering, Payam Noor University, Tehran, Iran., Omidi, N., & Department of Management, Payam Noor University, Tehran, Iran. (2022). The Safety Culture Among the Employees of the Operational Units of South Zagros Oil & Gas Production Company, Iran. *Health in Emergencies & Disasters Quarterly*, 7(4), 171–176. <https://doi.org/10.32598/hdq.7.4.222.12>
82. Orvik, C. P., Albrechtsen, E., Kongsvik, T., Holen, S. M., Bertheussen, L. E., & Moltubakk, S. T. (2026). What is safety performance? A systematic review of conceptualizations in the construction safety research. *Safety Science*, 193, 107025. <https://doi.org/10.1016/j.ssci.2025.107025>
83. Pascarella, G., Rossi, M., Montella, E., Capasso, A., De Feo, G., Botti, G., Nardone, A., Montuori, P., Triassi, M., D'Auria, S., & Morabito, A. (2021). Risk Analysis in Healthcare Organizations: Methodological Framework and Critical Variables. *Risk Management and Healthcare Policy*, Volume 14, 2897–2911. <https://doi.org/10.2147/RMHP.S309098>
84. Pfrombeck, J., Burmeister, A., & Grote, G. (2024). Older workers' knowledge seeking from younger coworkers: Disentangling countervailing pathways to successful aging at work. *Journal of Organizational Behavior*, 45(1), 1–20. <https://doi.org/10.1002/job.2751>
85. Pinto, V. S., Silva, I. S., & Costa, D. (2025). The Impact of Contextual Constraints on the Role of Management Commitment in Safety Culture: A Moderation Analysis. *Societies*, 15(6), 145. <https://doi.org/10.3390/soc15060145>
86. Pithaloka, D. A., & Ardiyanti, N. (2024). The Effect of Perceived Organizational Support on Intention to Stay Mediated by Employee Engagement and Job Satisfaction. *Jurnal Aplikasi Manajemen*, 22(2), 476–491. <https://doi.org/10.21776/ub.jam.2024.022.02.13>
87. Plückelmann, C., Gustafsson Sendén, M., Bernhard-Oettel, C., Leineweber, C., & Sczesny, S. (2024). Women's and men's experiences with participative decision-making at workplace and organizational levels. *Frontiers in Psychology*, 14, 1240117. <https://doi.org/10.3389/fpsyg.2023.1240117>

88. Rampini, G. H., Takia, H., & Berssaneti, F. T. (2019). Critical Success Factors of Risk Management with the Advent of ISO 31000 2018—Descriptive and Content Analyzes. *Procedia Manufacturing*, 39, 894–903. <https://doi.org/10.1016/j.promfg.2020.01.400>
89. Restuputri, D. P., Giralidi, M. S., Dewi, S. K., Masudin, I., & Yuliati, U. (2023). Relationship between safety culture and the safety climate, safety behavior and safety management. *Majalah Ilmiah Pengkajian Industri*, 15(2), 105–114. <https://doi.org/10.29122/mipi.v15i2.4601>
90. Riyanto, S., Endri, E., & Herlisha, N. (2021). Effect of work motivation and job satisfaction on employee performance: Mediating role of employee engagement. *Problems and Perspectives in Management*, 19(3), 162–174. [https://doi.org/10.21511/ppm.19\(3\).2021.14](https://doi.org/10.21511/ppm.19(3).2021.14)
91. Rizki, S., Wahyuni, P., & Sugandhini, D. (2020). The effect of safety training and workers involvement on safety compliance with safety knowledge as a mediation variables. *Russian Journal of Agricultural and Socio-Economic Sciences*, 107(11), 239–246. <https://doi.org/10.18551/rjoas.2020-11.28>
92. Saik, P., Tsopa, V., Koriashkina, L., Cheberiachko, S., Deryugin, O., & Lozynskyi, V. (2025). Influence of occupational safety culture on the occupational risk level in the organization. *Frontiers in Public Health*, 13, 1595869. <https://doi.org/10.3389/fpubh.2025.1595869>
93. Saleem, F., & Malik, M. I. (2022). Safety Management and Safety Performance Nexus: Role of Safety Consciousness, Safety Climate, and Responsible Leadership. *International Journal of Environmental Research and Public Health*, 19(20), 13686. <https://doi.org/10.3390/ijerph192013686>
94. Santos, R., Sable, L., & Ramos, B. (2022). Risk Potential for Work Related Musculoskeletal Discomfort among Maintenance Personnel of a Catholic University in a Prime City in North Luzon Philippines.
95. Scott, A., Davis-Sramek, B., & Ketchen, D. J. (2024). Men at Work...Unsafely: Gender Differences in Compliance with Safety Regulations in the Trucking Industry. *Production and Operations Management*, 33(4), 995–1013. <https://doi.org/10.1177/10591478241235145>
96. Sepahvand, R., & Khodashahri, R. B. (2020). Strategic Human Resource Management Practices and Employee Retention: A Study of the Moderating Role of Job Engagement.
97. Serona, K., & Siao, R. M. (2025). *International Journal of Research and Innovation in Social Science (IJRISS)*. SSRN Electronic Journal. <https://doi.org/10.2139/ssrn.5065151>
98. Sherratt, F., Szabo, E., & Hallowell, M. R. (2025). Seeking a scientific and pragmatic approach to safety culture in the North American construction industry. *Safety Science*, 181, 106658. <https://doi.org/10.1016/j.ssci.2024.106658>
99. Shi, H., & Nadeem, M. A. (2023). Effects of safety leadership and safety management practices on safety participation through a casual-chain mediators approach in the Chinese construction industry. *International Journal of Occupational Safety and Ergonomics*, 29(4), 1383–1394. <https://doi.org/10.1080/10803548.2022.2131274>
100. Simanjuntak, F. L., Salsabila, L., Dompok, T., & Lodan, K. T. (2023). The Importance of Transportation Policy in Addressing Globalization. 3(1).
101. Sinelnikov, S., Bixler, E. A., & Kolosh, A. (2020). Effectiveness of safety training interventions for supervisors: A systematic review and narrative synthesis. *American Journal of Industrial Medicine*, 63(10), 878–901. <https://doi.org/10.1002/ajim.23163>
102. Su, W.-J. (2021). The Effects of Safety Management Systems, Attitude and Commitment on Safety Behaviors and Performance. *International Journal for Applied Information Management*, 1(4). <https://doi.org/10.47738/ijaim.v1i4.20>
103. Suryawanshi, O. (2025). Understanding Gender Differences In Safety Climate Among Workers In Chemical Plants. SSRN Electronic Journal. <https://doi.org/10.2139/ssrn.5093350>
104. Ta, M. T. D., Kim, T., & Gausdal, A. H. (2022). Leadership styles and safety performance in high-risk industries: A systematic review. *Safety and Reliability*, 41(1), 10–44. <https://doi.org/10.1080/09617353.2022.2035627>
105. Tappura, S., Jääskeläinen, A., & Pirhonen, J. (2022). Creation of satisfactory safety culture by developing its key dimensions. *Safety Science*, 154, 105849. <https://doi.org/10.1016/j.ssci.2022.105849>
106. Temur, S., Sakallı, A. E., Bağiran, H. E., Olcay, Z. F., & Badem, M. A. (2024). Differences in Safety Culture and Safety Motivation Among Different Occupational Groups. *Beykoz Akademi Dergisi*, 12(2), 317–340. <https://doi.org/10.14514/beykozad.1539741>

107. Thanh, N. H., & Quang, N. V. (2022). Transformational, Transactional, Laissez-faire Leadership Styles and Employee Engagement: Evidence From Vietnam's Public Sector. *Sage Open*, 12(2), 21582440221094606. <https://doi.org/10.1177/21582440221094606>
108. Vadivel, B., Alam, S., Nikpoo, I., & Ajanil, B. (2023). The Impact of Low Socioeconomic Background on a Child's Educational Achievements. *Education Research International*, 2023, 1–11. <https://doi.org/10.1155/2023/6565088>
109. Van Nunen, K., Reniers, G., & Ponnet, K. (2022). Measuring Safety Culture Using an Integrative Approach: The Development of a Comprehensive Conceptual Framework and an Applied Safety Culture Assessment Instrument. *International Journal of Environmental Research and Public Health*, 19(20), 13602. <https://doi.org/10.3390/ijerph192013602>
110. Wagner, A., Schöne, L., & Rieger, M. A. (2020). Determinants of Occupational Safety Culture in Hospitals and other Workplaces—Results from an Integrative Literature Review. *International Journal of Environmental Research and Public Health*, 17(18), 6588. <https://doi.org/10.3390/ijerph17186588>
111. Wang, X., Huang, X., Zhang, Y., Pan, X., & Sheng, K. (2021). A Data-Driven Approach Based on Historical Hazard Records for Supporting Risk Analysis in Complex Workplaces. *Mathematical Problems in Engineering*, 2021, 1–15. <https://doi.org/10.1155/2021/3628156>
112. Weaver, S. M. (2022). Multiple Generations in the Workplace: The Voice of the Older Generations.
113. Westover, J. H., & Andrade, M. S. (2024). Examining the Influence of Employee Activation on Gender Differences in Employee Engagement. *Journal of Business Diversity*, 24(3). <https://doi.org/10.33423/jbd.v24i3.7319>
114. Wright, Jatrana, & Lindsay. (2024). Examining workplace safety for remote area nurses in Australia: A cross-sectional descriptive study. *Rural and Remote Health*. <https://doi.org/10.22605/RRH8465>
115. Wu, J., Elliott O'Dare, C., & Greene, J. (2025). Ageism and Intergenerational Dynamics in the Workplace: A Scoping Review with Implications for Gender and Sustainable Human Resource Management (HRM). *Gender and Sustainability in the Global South*, 2(1), 281–308. <https://doi.org/10.1515/gsgs-2024-0010>
116. Yangailo, T. (2024). Strategic Planning on Productivity through Leadership Commitment and Employee Involvement. *DBS Applied Research and Theory Journal*, 1, 46–69. <https://doi.org/10.22375/dbs.v1i1.98>
117. Yusay III, J. T., & Caelian, Z. G. V. (2022). Compliance with the Disaster Risk Reduction and Management Act of 2010 of Local Government Units in the Province of Negros Occidental, Philippines. *Philippine Social Science Journal*, 5(2), 51–60. <https://doi.org/10.52006/main.v5i2.496>
118. Zainuddin, S. A., Abdullah, B., Nasir, N. A. M., Abdullah, T., Nawi, N. C., Patwary, A. K., & Hashim, N. A. A. N. (2022). Sustainable risk management practice in the organization: A Malaysian case study. *Environmental Science and Pollution Research*, 30(9), 24708–24717. <https://doi.org/10.1007/s11356-022-23897-7>
119. Zhao, L., Yang, D., Liu, S., & Nkrumah, E. N. K. (2022). The Effect of Safety Leadership on Safety Participation of Employee: A Meta-Analysis. *Frontiers in Psychology*, 13, 827694. <https://doi.org/10.3389/fpsyg.2022.827694>