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Employees Safety Behavior and Industrial Accident Mitigations: Moderating Role of Safety Management System in the Nigerian Manufacturing Sector

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Industrial Accident;
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ABSTRACT

Introduction: This study investigates the moderating role of safety management in the perceived nexus between employees' safety behavior and industrial accident mitigations in the Nigerian manufacturing sector.

Methods: This research adopted a survey design to gather data for the study with a leading manufacturing firm in Lagos. The sample size was 188, and data were collected using a structured questionnaire. The collected data were analysed statistically (Structural equation model). The Bowen University Teaching Hospital Ethics Committee granted ethical approval for the study.

Results: The study established that safety behavior reduces workplace accident rates. It was also found that a well-organized safety management system can lower industrial accidents. Lastly, a safety management system significantly moderates the relationship between safety behavior and industrial accident mitigation.

Conclusion: The study concludes that a safety management system determines safety behavior that mitigates industrial accidents. The study emphasized that safety attitude, safety compliance, safety knowledge, environmental control, fire control system, safety instruction equipment, regulatory enforcement, safety training program, and management commitment to safety regulate employees' safety behavior and mitigate spate of industrial accidents in the sector.

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INTRODUCTION

The manufacturing sector is a major contributor to Gross Domestic Product (GDP), employment creation, and socioeconomic development (1). Precisely, the sector in the world holds a place of priority in any economy as it contributes significantly to socio-economic development as it contributes to the Gross Domestic Product, creates jobs, and aids sectoral developments, among others (2,3,4). In Nigeria, the sector has been a major determinant of economic prosperity. Several regulatory bodies such as the Manufacturer Association of Nigeria, Nigeria Builders Association, Nigeria Apex Bank, and National Bureau of Statistics attested to this. However, some activities, like the incidence of industrial accidents due to safety negligence, take a toll on the sector's contributions. This suggests safety concerns, especially for employees who exhibit unacceptable safety behaviors despite the existence of a safety management system.

Safety behavior is actions and practices adopted by the individual or organization to minimize risks and prevent accidents in the workplace (5,6). To achieve this, safety compliance and safety participation are required of employees. Safety compliance denotes those behaviors consistent with formal safety policies and procedures. In contrast, safety participation is a voluntary activity of employees to make their workplace safer (7). Safety behaviour theories such as the Planned Behaviour theory and Bandura's theory of self-efficacy explain safety compliance and participation to reduce industrial accidents. This study is based on the Theory of Planned Behaviour by (8) which is intentional about the safety behavior of employees to reduce industrial accidents. Empirical research (9) into safety, behavior has satisfactorily established that this behavior has a decisive bearing on organizational safety performance. However, the reduction of industrial accidents is sudden events that always occur unintentionally and accidentally in the workplace, leading to injury, destruction of property, or even death (10)

Accounts of industrial accidents in the manufacturing sector are associated with the nature of production activities (11,12). This originates from poor safety management practices, a lack of consideration for the regulatory requirements, and low training for site workers (13). This makes industrial accidents in the sector to be high (14). The common causes of such accidents are employees' behaviors, lack of proper training on safety, poor maintenance of machines, and not providing workers with personal protective equipment (15). It is on record that the incidence of industrial accidents in Nigeria's manufacturing industry is alarming (16).

The profile of safety behavior among employees in this sector suggests the reason why industrial accidents have been on the increase. However, this should be open to empirical findings. For instance, in Nigeria, the safety behaviors of employees in the manufacturing sector are not cautiously determined but depict an interactional effect of regulatory, cultural, organizational, and economic factors (17,18). These are issues that require a proactive safety management system (19). In a collectivist society like Nigeria, where conformity to the group and hierarchy are emphasized, an effective safety management system will check the tendencies of inappropriate safety behavior and forestall industrial accidents (20). This backdrop justified the need to investigate the moderating role of the safety management system in the perceived relationship between employees' safety behaviors and industrial accident mitigations in the Nigerian manufacturing sector.

Perceived behavioral control (PBC), self-efficacy, and intention are central psychological factors that predict employees' safety behavior, particularly in the manufacturing sector. The theory of Planned Behaviour (TPB) posits that an individual's intention to exhibit a behavior is contingent on their attitude, subjective norm, and PBC (21). In the workplace safety scenario, PBC refers to employees' perception to act within the safety management system (22). Employees with the perception that an effective safety management system exists are likely to exhibit compliance and participatory behavior intended to reduce industrial accidents (23). Conversely, where employees perceive a weak or absence of a safety management system, they will tend to violate safety regulations, hence increasing the possibility of accidents (24).

Self-efficacy, closely tied to PBC, is equally a critical driver of employees' perception of their ability to execute safety-related activities effectively (14,25). Based on Bandura's Social Cognitive Theory, self-efficacy refers to the individual's belief in being able to execute actions that lead to favorable outcomes. Self-efficacious employees tend to take aggressive steps to identify risks, comply with safety regulations, and react when unsafe behaviors are observed. Low self-efficacy individuals will be unable to execute safety practices, so they will either be negligent or passive recipients of a dangerous work environment (26).

Employees with stronger intentions to operate within a safety management system tend to obey the usage of personal protective equipment (PPE), use of machine procedures, and response to emergencies uniformly (8,27). Moreover, this willingness also shapes safety participation beyond rule obedience in that it encompasses voluntary behavior, such as reporting dangerous conditions, participating in safety education, and engaging with management to improve workplace situations (22,28). In the Nigerian industry, organizational commitment, leadership engagement, and reinforcement programs have curtailed occupational risks and industrial accidents.

The Safety Climate Theory posits that employees' perceptions of the safety management system directly influence attitudes and behaviors concerning safety (29). Safety climate is the sum of beliefs and values held by the employees regarding safety at the workplace, reflecting leadership, communication, and reinforcement of the safety policy (14). A good safety climate is also manifested by the active participation of managers, proper open communication of safety, compliance with procedures, and active employee participation in safety activities. A good safety climate encourages workers towards greater conformity with safety rules, workers' adoption of proactivity, reporting hazards and thereby minimizing risks to accidents. Organizations with effective safety management systems have lower numbers of workplace accidents due to enhanced worker watchfulness and adherence to safety procedures (8). However, ineffective or non-existent safety management systems might lead to increased accident levels. This highlights the importance of an effective safety management system in a high-hazard industry such as the manufacturing sector (12).

Furthermore, (30) proposed the Job Demands-Resources (JD-R) Model, a theoretical model explaining how employee well-being, performance, and safety behavior are affected by work conditions. In line with the model, workplace conditions are preserved with a safety management system (31). Job demands are those job attributes that require sustained physical or mental effort and can lead to stress or burnout if not controlled. Heavy workload, long working hours, physical risk, time pressure, and role ambiguity are some examples of job demands. Job Resources are factors in the work setting that assist workers in meeting job demands, enhancing motivation, and avoiding stress (32). Through a safety management system; positive supervision, adequate training, protective equipment usage, and a strong organizational safety culture are promoted. Studies have found that safety management systems check excesses to forestall the likelihood of industrial accidents (31,33).

Safety management systems have transformed considerably in developing economies such as India, Brazil, and South Africa, where workplaces are also subject to identical occupational hazards to Nigeria's manufacturing sector. Research in the economies establishes the viability of next-generation safety practices, such as AI-based safety monitoring, online risk assessment, and participatory safety leadership training (34). This system has yielded measurable improvements in workplace safety, reducing accident frequencies and enhancing compliance with occupational health and safety (OHS) standards. Nevertheless, Nigeria has yet to apply these best practices systematically to its industrial safety practice, and this constitutes an adaptation and implementation opportunity (35).

One of the most cutting-edge safety management systems in India and Brazil is AI-driven safety monitoring systems (36). Such systems utilize computer vision and machine learning to identify dangerous situations, predict probable accidents, and provide real-time warnings to workers and managers. In hazardous manufacturing factories, artificial intelligence technologies have helped prevent falls, exposure to harmful substances, and equipment-related accidents (37). For Nigeria, adopting AI-powered safety monitoring would increase the level of hazard detection and minimize response time (38). Yet, implementation challenges such as expensive costs, poor digital infrastructure, and low technical capacity must be surmounted. A response is to roll out low-infrastructure-requiring AI-driven mobile applications and wearable sensors that provide crucial safety benefits (39).

Digital risk analysis and predictive safety analytics are trendy in Brazil and South Africa. These systems examine workplace safety information to determine areas of high risk and forecast likely accidents using trend analysis over time. By leveraging digital solutions in compliance monitoring and risk assessment, it is feasible for organizations to shift from reactive to proactive safety management (40). Nigerian manufacturing companies can leverage mobile-based digital risk assessment solutions to enable workers and supervisors to report impending hazards in real-time (41). However, for successful adoption, organizations must overcome digital literacy shortcomings, resistance to change, and insufficient regulatory support for data-led safety management (42,43). For instance, South Africa's participatory safety leadership programs focus on employee involvement in safety decision-making by encouraging workers to take an active role in the safety management system.

METHOD

This study made use of a survey design. This research design provides a study to gather data from a sector (27). With this design, it was easy to collect data from a population on the issues of employees' safety behavior and industrial accident mitigation: the moderating role of a safety management system based on the respondents' personal experiences. This confirmed that the study made use of primary data. The study comprised employees of a leading manufacturing firm in Lagos, Nigeria the commercial hub of Nigeria. The employee population of the manufacturing firm as of December 2024 stood at 1,890 (Source: Firm's HR department). The sample was determined from the population due to the chances of similarity in their experiences. In this regard, 10% of the population was adopted as the sample size as justified by (27). Data from the sample were collected using a structured questionnaire. The instrument was segmented into sections such as Section A: Demographic Profile of the Respondents, Section B: Employee Safety Behavior, Section C: Industrial Accident Mitigation, and Section D: Safety Management System. Data collection lasted for three months and data collected was analyzed statistically using Structural Equation Modeling.

Ethical Approval

The Bowen University Teaching Hospital Ethics Committee approved this study.

RESULTS

Table 1. Factor Loading, Common Method Bias, Construct Reliability and Validity

	Loading	Common Method Bias	AVE	Composite Reliability	Cronbach's Alpha
Constructs	> 0.7	IVF<3.0	>0.5	> 0.8	> 0.7
Safety Attitude (SA)			0.676	0.862	0.763
SA1	0.832	1.225			
SA2	0.793	2.186			
SA3	0.839	1.711			
Safety Compliance (SC)			0.765	0.907	0.846
SC1	0.844	1.783			
SC2	0.858	1.896			
SC3	0.921	1.990			
Safety Knowledge (SK)			0.708	0.879	0.793
SK1	0.848	2.002			
SK2	0.900	1.874			
SK3	0.772	2.411			
Safety Participation (SP)			0.758	0.904	0.840
SP1	0.901	1.872			
SP2	0.923	1.911			
SP3	0.783	2.229			
Environmental Control (EC)			0.818	0.931	0.888
EC1	0.926	1.942			
EC2	0.922	1.934			
EC3	0.864	2.442			
Fire Control System (FCS)			0.755	0.903	0.841
FCS1	0.868	1.871			
FCS2	0.853	1.863			
FCS3	0.886	1.794			
Safety Instruction Equipment (SIE)			0.686	0.867	0.800
SIE1	0.843	1.921			
SIE2	0.819	1.934			
SIE3	0.822	2.007			
Regulatory Enforcement (RE)			0.607	0.821	0.704
RE1	0.701	2.510			
RE2	0.737	2.119			
RE3	0.886	1.862			
Safety Training Programme (STP)			0.688	0.869	0.776
SIP1	0.817	1.933			
SIP2	0.886	1.888			
SIP3	0.825	1.795			
Mgt. Commitment to Safety (SIE)			0.644	0.844	0.721
MCS1	0.733	2.332			
MCS2	0.846	1.776			
MCS3	0.805	2.067			

Safety Attitude (SA), Safety Compliance (SC), Safety Knowledge (SK), Environmental Control (EC), Fire Control System (FCS), Safety Instruction Equipment (SIE), Regulatory Enforcement (RE), Safety Training Programme (STP) and Management Commitment to Safety (MCS)

Table 1 analyses the psychometric qualities of some safety management-related items. Important statistical metrics such as factor loadings, Cronbach's alpha (α), average variance extracted (AVE), composite reliability (CR), and common method bias (CMB) are included. These metrics aid in evaluating the reliability and validity of the study's measuring model. Multiple items are used to test each construct, including safety knowledge, compliance, and attitude. The factor loadings of each item indicate how well it represents the underlying construct.

The observed variables have a significant relationship with their respective constructs, as evidenced by all the factor loadings being more than the 0.7 threshold. Each item significantly contributes to measuring the intended construct, thus, confirming the model's convergent validity. Variance inflation factors (VIFs) were used to evaluate the common method bias (CMB). The CMB results stay below 3.0 which is within the standard threshold. The implication of this is that multicollinearity is not an issue and that there is no substantial technique bias in the data, guaranteeing that widely used measurement sources did not disproportionately impact the answers.

Furthermore, all constructs have average variance extracted (AVE) values greater than 0.5, indicating good convergent validity. The latent construct's AVE is the percentage of the indicators' variance that it explains; values greater than 0.5 imply that the construct captures enough variance about measurement error. All the composite reliability (CR) ratings are higher than 0.8, indicating a high level of internal consistency between the items in each construct. Even though Regulatory Enforcement (RE) and Management Commitment to Safety (MCS) have somewhat lower values (0.704 and 0.721), which are still within an acceptable range, Cronbach's alpha values generally surpass 0.7, further demonstrating internal reliability.

Table 1 shows that the study's constructs are valid and dependable. Strong reliability coefficients (CR and α), high factor loadings, and excellent AVE values show that the measurement model is statistically robust and can capture the desired safety-related features. Furthermore, the results are more reliable due to the lack of common procedure bias. This analysis demonstrates that the data may be utilized to make valid and trustworthy inferences regarding safety attitudes, compliance, training, and other relevant elements in the study context.

Table 2. Effect size (f^2), lateral collinearity test (VIF) and Redundancy (Q^2)

	Effect size (f2)	**Decision**	**Redundancy (Q2)**
Safety Attitude	0.322	Large Effect	-
Safety Compliance	0.231	Medium Effect	-
Safety Knowledge	0.334	Large Effect	-
Safety Participation	0.377	Large Effect	-
Social- Awareness	0.362	Large Effect	-
Environmental Control System	0.401	Large Effect	-
Fire Control System	0.244	Medium Effect	-
Safety Instruction Equipment	0.379	Large Effect	-
Regulatory Enforcement	0.384	Large Effect	-
Safety Training Programme	0.388	Large Effect	-
Mgt Commitment to Safety	0.392	Large Effect	
Industrial Accident Mitigation	-	-	0.430
Safety Behavior	-	-	0.628
Safety Management System	-	-	0.485

Safety Attitude (SA), Safety Compliance (SC), Safety Knowledge (SK), Environmental Control (EC), Fire Control System (FCS), Safety Instruction Equipment (SIE), Regulatory Enforcement (RE), Safety Training Programme (STP) and Management Commitment to Safety (MCS), Safety Behavior (SB), Industrial Accident Mitigation (IAM)

The two main statistical metrics used to evaluate the structural model's quality are effect size (f2) and redundancy (Q2), shown in Table 2. These indicators help in determining the predictive usefulness of the model. The practical significance of an independent variable in explaining the variation of a dependent variable is measured by the effect size (f^2). Cohen (1988) defined small, medium, and large impacts as indicated by f2 values of 0.02, 0.15, and 0.35, respectively. The table shows that most constructs, such as Safety Attitude (0.322), Safety Knowledge (0.334), Safety Participation (0.377), and Safety Training Programme (0.388), have significant effect sizes, meaning they make substantial contributions to the model. Only Safety Compliance (0.231) and Fire Control System (0.244) show medium effect sizes, suggesting a moderate influence on the outcome variable.

The model's predictive significance is evaluated by the redundancy (Q^2) values using Stone-Geisser's Q^2 test. A construct is considered predictively relevant for the dependent variable if its Q2 value is larger than zero. Safety Behaviour (0.628), Safety Management System (0.485), and Industrial Accident Mitigation (0.430) all have positive Q2 values in this table. This suggests that the model has a high predictive ability for these domains. The model's capacity to forecast upcoming observations increases with the Q2 value.

Table 3 Discriminant Validity (Heterotrait-monotrait Ratio (HTMT) Matrix)

	ECS	FCS	IAM	MCS	RE	SA	SB	SC	SIE	SK	SMS	SP	STP
ECS													
FCS	0.668												
IAM	0.782	0.602											
MCS	0.490	0.594	0.691										
RE	0.508	0.622	0.216	0.478									
SA	0.494	0.591	0.609	0.554	0.579								
SB	0.512	0.638	0.547	0.553	0.655	0.338							
SC	0.658	0.564	0.530	0.557	0.578	0.408	0.332						
SIE	0.684	0.524	0.423	0.696	0.561	0.563	0.542	0.347					
SK	0.529	0.577	0.532	0.529	0.742	0.541	0.544	0.453	0.458				
SMS	0.578	0.652	0.549	0.547	0.678	0.448	0.444	0.554	0.466	0.492			
SP	0.583	0.544	0.688	0.534	0.157	0.578	0.587	0.399	0.651	0.482	0.387		
STP	0.674	0.677	0.681	0.628	0.332	0.664	0.569	0.654	0.536	0.628	0.659	0.431	

Safety Attitude (SA), Safety Compliance (SC), Safety Knowledge (SK), Environmental Control (EC), Fire Control System (FCS), Safety Instruction Equipment (SIE), Regulatory Enforcement (RE), Safety Training Program (STP) and Management Commitment to Safety (MCS), Safety Behavior (SB), Industrial Accident Mitigation (IAM)

Table 3 depicts the Heterotrait-Monotrait Ratio (HTMT) Matrix to evaluate discriminant validity of the study. Discriminant validity ascertained that every construct of the model is very unique. This suggests that they assess various theoretical ideas. The HTMT technique is essential to identifying any multicollinearity problems between constructs.

The values in the matrix represent the correlations between different constructs based on their indicators. This discriminant validity is considered acceptable if the HTMT values are below 0.85 (strict threshold) or 0.90 (lenient threshold). The standard threshold posited that when HTMT values should not exceed 0.85. The table demonstrates that most HTMT values for all the constructs fall below the 0.85 threshold. This confirms that the constructs in this study retain their theoretical distinctiveness. Some values, such as the relationships between the Safety Training Program and Fire Control System (0.677) and Safety Knowledge and Regulatory Enforcement (0.742), are relatively high but remain within an acceptable range. These constructs share some conceptual similarities but are still sufficiently different.

Bootstrapping with β and T-statistics of safety behavior, safety management system, and industrial accident mitigation presented in Table 4 was to validate the significant influence of safety behavior, safety management system on industrial accident mitigation. It becomes necessary to report that all the T-statistics values for the observed variables are above the threshold of 1.96, as presented in Table 4.

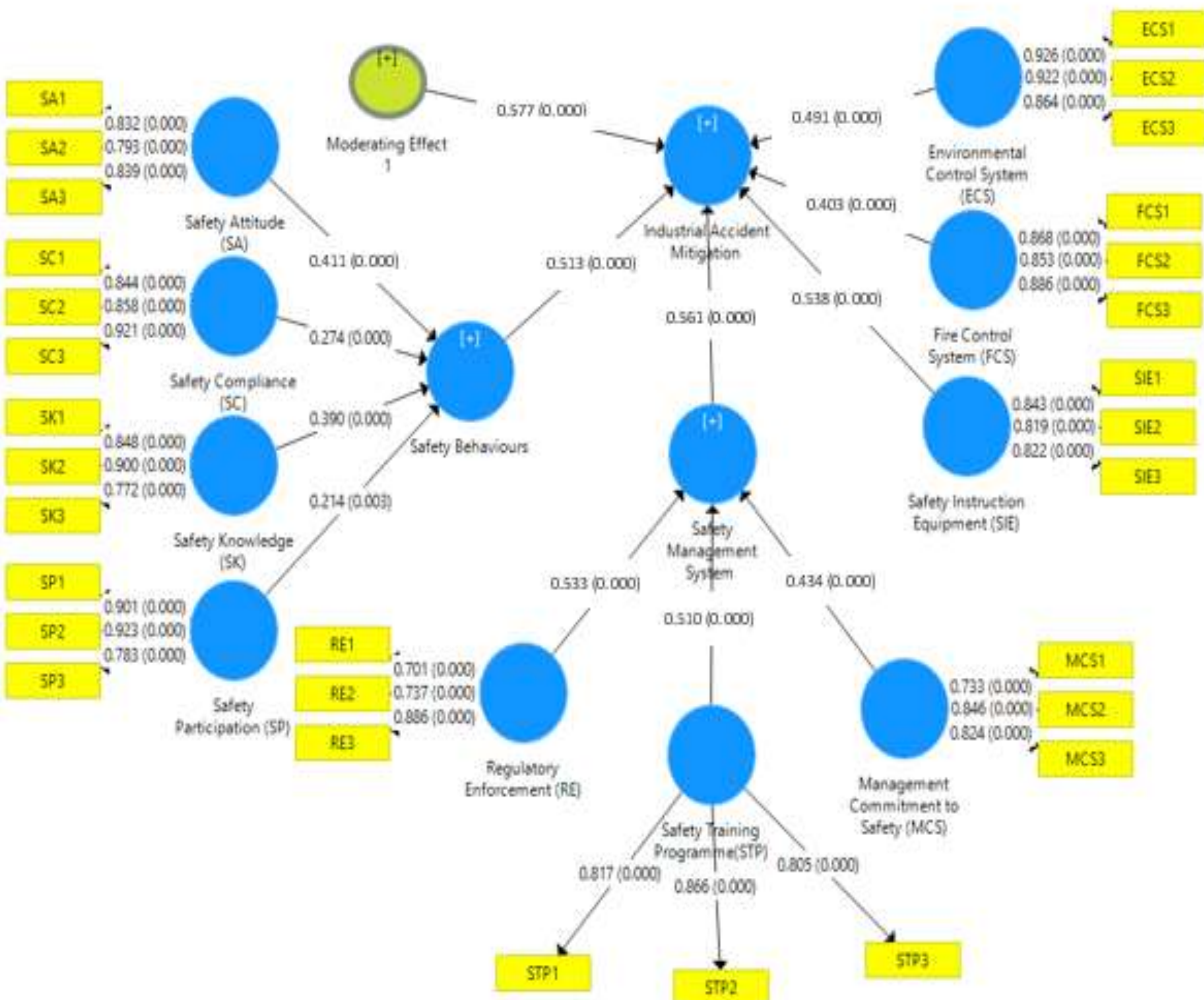

Table 4. Path- Coefficient

	Path Co-efficient	SD	T-Statistics	P-Value
Safety Behavior ⇨ Industrial Accident Mitigation	0.513	0.094	4.996	0.000
Safety Management System ⇨ Industrial Accident Mitigation	0.561	0.056	5.321	0.000
Moderating Effect ⇨ Industrial Accident Mitigation	0.577	0.063	5.798	0.000

A structural equation model's path coefficients analysis, which measures the influence and strength of interactions between variables under consideration in this study, is shown in Table 4. The standard deviation represents the range of estimations, and the path coefficient (β) shows the direction and strength of the effect between variables. Furthermore, the P-value evaluates the probability that the observed association happened by chance, and the T-statistic establishes if the relationship is statistically significant with a P-value of 0.000.

The association between safety behavior and preventing industrial accidents shows a path coefficient of 0.513 with T-statistics of 4.996 and a p-value of 0.000. This study highlights the value of individual commitment to safety in reducing workplace accident rates, empowering safety managers and organizational leaders, and making them feel integral to the process in the workplace.

The study also investigated the influence of safety management systems on industrial accident mitigation. The results show a path coefficient of 0.561, T-statistics of 0.5321, and p-value of 0.000. This coefficient value signifies a well-organized safety management system can have on lowering industrial accidents, surpassing the influence of individual safety practices.

The result also shows that the safety management system significantly moderates the relationship between safety behavior and industrial accident mitigation with a path coefficient of 0.577 and T-statistic of 0.798 and a p-value of 0.000. This suggests that the moderating variable plays a significant role in enhancing the effectiveness of safety precautions in preventing accidents.

DISCUSSION

The study examined the moderating role of safety management in the perceived nexus between employees' safety behavior and industrial accident mitigations in the Nigerian manufacturing sector. The first finding established that safety behavior reduces workplace accident rates. This finding agreed with the positions of (6) who discovered that individual safety compliance reduces the chances of industrial accidents. This was the view of (10) which admitted that employees' commitment to safety-related issues counts in ameliorating industrial accidents. This can be attributed to employees' participation in different safety programs that enhanced their safety knowledge. It also supports the finding of (29) in the manufacturing sector which found that the safety behavior of employees has been positive at work. The outcomes of the studies of (29) and (21) respectively confirm that safety knowledge significantly reduces industrial accidents. Invariably, this study confirms the findings of (8) who reported that lack of safety knowledge among employees contributes to the high rate of industrial accidents in work organizations. On the contrary, safety knowledge cannot prevent industrial accidents if employees fail to display a safety attitude. This was established in the work of (32). This contradicts the findings of (30) who reported growing concern about the safety behavior of employees at the workplace. Similarly, this finding disagrees with the findings of (23) which affirmed inappropriate safety behavior of employees in selected Nigerian firms.

The second finding revealed that a well-organized safety management system can lower industrial accidents. This finding corroborated the finding of (7) which showed that effective safety management systems prevent industrial accidents in the workplace. To buttress this, (21) maintained that such a system reduces industrial accident occurrence among employees. Furthermore, (21) affirmed that with adequate safety management systems, companies have been able to forestall the emergence of industrial accidents that need not occur. Likewise, (8) reported employees' understanding of the safety management of systems aided the man-machine relationship and reduced the accident rate. This finding contrasts the outcome of the (31) study, which reported a continuous high rate of industrial accidents in Nigerian manufacturing firms because they pay less attention to safety management systems.

Lastly, a safety management system significantly moderates the relationship between safety behaviour and industrial accident mitigation. This finding agreed with (32) study in the Nigerian manufacturing sector, which claimed employee safety behaviour reduce industrial accidents subject to how effective the firm's safety management system. (33) found that effective safety management system promotes safety behaviour that strongly contribute to industrial accident reduction in workplaces. Likewise, (20) established that safety attitudes formed among employees as a result of the nature of safety management systems have minimized industrial accidents.

Interpretation of Key Findings

This study revealed that It was established that safety behavior reduces workplace accident rates (Path Co-efficient: 0.513; Standard deviation: 0.094; T-Statistics: 4.996; and P-0.000). This suggests that the safety behavior of employees in the sector is significant. Secondly, it was found that a well-organized safety management system can lower industrial accidents ((Path Co-efficient: 0.561; Standard deviation: 0.056; T-Statistics: 5.321; and P-0.000). This suggests that safety management systems mitigate industrial accidents in the sector. Lastly, the safety management system significantly moderates the relationship between safety behavior and industrial accident mitigation ((Path Co-efficient: 0.577; Standard deviation: 0.063; T-Statistics: 5.798; and P-0.000). Thus, the safety management system moderates the relationship between employees' safety behavior and industrial accident mitigation.

Limitations and Cautions

The outcomes of this study are germane to all sectors but peculiar to the manufacturing sector of Nigeria where the research problem (employee safety behavior, incidence of industrial accidents, and safety management system) was conceived. This delineates the study's scope and limits it to the variables, sector, and geographical location investigated. Also, the constructs and proxies used are not exclusive as other issues within the variables were not fully included. Beyond this, the survey design adopted is exclusive as suggested by (34). Likewise, the views analysed are based on what respondents gave which the researchers do not have any say in but believed to be fact. The sampled population might not have fully represented the opinions of the sector. Therefore, subsequent studies can cover more sectors and firms to encourage diverse samples.

Therefore, the outcome of this study cannot be generalized. This, however, does not invalidate the outcomes of this study as it achieved its aim.

Recommendations for Future Research

Against the backdrop of the limitations of the study, future studies can introduce mediating variables such as legislation or policy while studying the same sector. Also, the proxies of the variables can be expanded beyond what the study used. Also, other critical sectors like health, engineering, and security, will be of good value for advanced comparative study. It might also be interesting to engage in cross-border or international study on this topic to juxtapose what holds here against what is obtainable in other countries concerning different continents.

CONCLUSION

This study investigates the moderating role of safety management in the perceived nexus between employees' safety behavior and industrial accident mitigations in the Nigerian manufacturing sector. This rested on the premise that safety attitude, safety compliance, safety knowledge, environmental control, fire control system, safety instruction equipment, regulatory enforcement, safety training program, and management commitment to safety regulate employees' safety behavior and mitigate the spate of industrial accidents in the sector. The study established that safety behavior reduces workplace accident rates, a well-organized safety management system can lower industrial accidents, and a safety management system significantly moderates the relationship between safety behavior and industrial accident mitigation. It is imperative to reposition safety management systems in the Nigerian manufacturing sector to promote acceptable safety behavior among employees which will mitigate the spate of industrial accidents caused by inappropriate safety behavior employees exhibit in pursuit of global best practices in occupational health and safety.

AUTHORS CONTRIBUTION STATEMENT

Akinbode James formed the research cluster and initiated the study after an extensive preliminary literature review, which identified the gap. He coordinated the study by assigning responsibilities and prepared the final manuscript. **Olu-Ogunleye Itunu** was actively involved in the methodology design and discussion of results. **Bakare Akeem Adewale** coordinated data collection and assisted in data analysis. **Isah Friday Iyayi** worked extensively on literature sourcing and data collection. **Ogunkoya Samuel** carried out data analysis and interpreted the results. **Oyabambi Adeniyi** assisted in data collection and edited the final draft of this paper.

CONFLICTS OF INTEREST

The authors have no conflict. It is solely based on the authors' efforts and the consent of participants in the study. This study is declared not to have been conducted elsewhere and published in any outlet.

DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

This study did not use AI technology.

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