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Original Article

Employee-related factors influencing health and safety in the Ghanaian construction industry: A confirmatory factor analysis of professionals' perspectives

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ABSTRACT

Introduction: Employees' gross disregard for health and safety issues in the construction industry is worrying. The paper aims to identify the employee factors that could influence health and safety in Ghana's construction sector.

Methods: This study utilized quantitative research methodology. Eleven factors were identified, and designed into a questionnaire. 635 participants, consisting of experts from diverse backgrounds within the sector, were chosen using a simple random method and given the questionnaire. The responses were analyzed using the relative importance index and multivariate analysis. Exploratory factor analysis and confirmatory factor analysis were employed to ascertain the factor structure and reliability of the variables utilized and to examine the relationship between the explanatory and latent variables. A model fit analysis was conducted to assess the adequacy of the proposed model.

Results: Employee safety responsibilities and compliance behavior are crucial factors that can contribute to the improvement of health and safety. The most significant variable that could enhance health and safety was the reporting of employees' complaints regarding health and safety to supervisors - ESR2. The component accounted for 0.775, or 77.5%, of the variability in the latent construct of ESR.

Conclusion: Active participation of employees in fulfilling their occupational health and safety (OHS) legal obligations is vital. This can be achieved by diligently utilizing personal protective equipment (PPE), fostering a sense of organizational safety citizenship behavior, and demonstrating the willingness to report any health and safety concerns to supervisors, which collectively constitute the fundamental elements of employees' contribution to health and safety.

Keywords: Compliance behavior, Employee-related factors, Health and safety, Professionals' perspective, Safety responsibilities

Introduction

The construction industry is a sector of production and trade that focuses on the building, repair, renovation, and maintenance of infrastructure. This is accomplished through the utilization of specialized professionals, skilled laborers, and unskilled workers in some jurisdictions.[1,2] Construction employees are the skilled and unskilled professionals employed in the construction sector, forming the vital core of a construction business and the industry.[3,4] They work under the control of contractors on construction sites and are the promoters of success in construction organizations.[5] The Ghanaian construction industry is about US$8bn. In recent years, the industry has contributed about 15% to the nation's gross domestic product (GDP). It

employs approximately 420,000 active people.[6,7] The industry's expansion and recognition render it appealing in Sub-Saharan Africa, and this phenomenon cannot be elucidated without the presence of employees.[8,9] The invaluable contributions made by employees are sometimes overlooked, resulting in employers disregarding their H&S and occasionally, even the employees themselves.[10,11,12] This health and safety infraction occurs because the industry is unorganized and uncontrolled.[13]

According to the Ghana Statistical Service, the construction industry recorded an incidence rate of 86 in 2015, a figure 137% higher than the national indicator of 63. In 2016, the service reported an accident frequency rate of 65, compared to a national indicator of 43.[14] The National Labour Department's accident statistics from 2004 to 2009 show that 136 accidents occurred in the construction industry over the period.[15] In 2016, the Department recorded a severity rate of 418 nationwide. However, in 2015, the figure was 346.[14,16] Osei-Asibey et al. indicated that the number of accidents reported does not paint the exact picture of accident records in the construction industry.[16] This is because accident records are hard to come by, and the few are without inconsistencies, looking at the statistics from past studies. Some of the issues worsening the H&S situation in the industry are a bad attitude towards work by workers, a lack of H&S training for workers, a lack of appropriate skills by workers, poor working conditions and environments, and a lack of management commitment, among others.[16,17] This is due to the unstructured and unregulated nature of the industry.[13]

The attitude of construction employees on site shows that they lack an understanding of health and safety.[15,18] Many employees are ignorant about health and safety (H&S), despite their awareness of the risks posed by the complicated environment in which they work.[19] The current industrial legislation is inadequate since it fails to adequately tackle the intricacies and difficulties presented by contemporary construction processes and industrial practices. In firms where employers make H&S provisions and provide Personal Protective Equipment (PPE) for workers, employees often look contemptuously and rebel against such provisions. This attitude of employees has resulted in the careless posture taken by some employers.[20] Employers perceive the allocation of PPE as an inefficient utilization of their limited resources due to employees' apparent disinterest in utilizing them. Interestingly, in some cases, employers have no clue about health and safety and even the provisions of the law to educate and empower their employees. Only an empowered employee can question and actively comply with established norms and regulations. Sometimes, employers consider the naivety of workers as an advantage and cost-saving.[21] However, they realize their mistakes only when there is an accident. Regrettably, the state appears to lack control or remedy for H&S violations. Although the 1992 Ghana Constitution and the Labour Act (2003) require employers to establish a satisfactory work environment and mandate that employees implement reasonable measures to mitigate or eradicate risk, this employer obligation does not absolve employees of their H&S responsibilities. The ultimate responsibility for their safety lies in their hands, even in cases where there are structured H&S systems.[22,23] The need for the study is necessitated by employees' ignorance of existing occupational health and safety legislation, their blatant disdain for safety standards, and the negligence on the part of employers to educate, prioritize and enforce health and safety best practices. The paper aims to identify the employee factors that could influence health and safety in the Ghanaian construction industry.

Methods

The positivist philosophy was adopted for this study, and a deductive approach that supports quantitative methodology was employed. As a highly structured design, the deductive approach led to the collection of numerically driven data and the quantification and measurement of employee-related factors by relying on existing

knowledge of H&S and observable phenomena in the industry in relation to the subject.

Based on the above foundation, a questionnaire survey was deemed the most appropriate strategy. The study design was cross-sectional. A literature search was first undertaken to identify the employee-related factors that could boost H&S. The information search identified eleven relevant factors, which were modified and aligned to the study's purpose and designed into a questionnaire. The questionnaire was designed into the bioinformation section and employee-related factors section. The second section of the questionnaire was rated on a five-point Likert scale with 1 = low influence and 5 = very high influence.

In Ghana, the construction industry comprises general contractors, architects, quantity surveyors, estimators, engineers, procurement officers or experts, and other allied professionals. The general contractor is responsible for supervising all activities on the construction site and managing the operations of subcontractors, input suppliers, and craftsmen. The contractor's activities are carried out by project managers, who plan, organize, and direct projects. They collaborate with supervisors, estimators, quantity surveyors, and field staff to ensure the efficient execution of projects.

An all-in population of 7925 was used, comprising registered engineers, quantity surveyors, contractors, architects, and lecturers. The study excluded ground workers in order to specifically collect professionals' perspectives on the roles that employees can play to enhance health and safety. A total of 635 subjects were selected using the simple random sampling technique. This offered all the professionals the opportunity to be selected. The selected sample comprised 63 architects, 152 quantity surveyors, 202 engineers, lecturers 76, and contractors 142. The population used in this study was not stratified, and as a result, the subjects selected were non-proportional to their subpopulations. The justification for selecting the above size was based on Gay et al.'s proposal. They indicated that a sample size of 400 is deemed adequate when a study's population exceeds 5000. A size bigger than the proposed was selected to account for non-responses common with survey studies. To develop a robust model, a sample above 200 was adjudged adequate.[24,25,26] Data was analyzed using the relative importance index (RII) and multivariate analysis. This was meant to determine the relative significance of employees' factors, establish the reliability and consistency of the factors, and examine their association with the construct as explained in the next section. The exploratory factor analysis (EFA) was performed using SPSS version 26, while AMOS version 22 was used for the confirmatory factor analysis (CFA). The model assessment was performed using Table 1 below.

Table 1: Indices for robust evaluation[27,28]

Fit Index	Cutoff value	Comment
Chi-squared (S – B χ^2)		
Degrees of freedom *(Df)*	0≥	Acceptable
Comparative fit index (CFI)	0.90≥ acceptable 0.95≥ good fit	Good fit
Parsimony comparative fit index (PCFI)	Less than 0.80	Good fit
Root mean square error of approximation (RMSEA)	Less than 0.08	Acceptable
RMSEA 95% confidence interval (CI)	0.00-0.08 "good fit"	Acceptable
Normed fit index (NFI)	Greater than 0.90 "good fit"	Good fit
Incremental fit index (IFI)	Greater than 0.90 "good fit"	Good fit
Parsimony normed fit index (PNFI)	Less than 0.80	Good fit
Root mean square residual (RMR)	Less than 0.05 "good fit"	Good fit
Goodness-of-fit index (GFI)	Greater than 0.90 "good fit"	Good fit

Results

A total of 454 valid responses were retrieved, representing 71.50% of the questionnaires distributed. The valid responses comprised 84 contractors, 134 quantity surveyors, 62 lecturers, 49 architects, and 125 engineers. Among the respondents, 68 had 2-5 years of working experience, 126 and 103 possessed 6-10 and 11-15 years of working experience, respectively. However, 101 had 16-20 years of working experience, and 56 possessed 21 years and above experience.

The study identified eleven employee-related factors that could impact health and safety performance in the construction industry in Ghana, as shown in Table 2. The process of identifying the determinants commenced with an examination of the existing body of research on employee behaviors that have an impact on health and safety. This resulted in the identification of certain factors and provided researchers with a comprehensive understanding of the employee aspects that impact health and safety. The researchers not only inferred components from the literature but also discovered observable factors that lead to health and safety breaches in the construction industry of Ghana. The factors from both sides were consolidated into a unified list. The selection criteria in this study were based on elements that were in accordance with specific provisions of the Constitution, the Factories, Offices, and Shops Act, and the Labour Act of the country. Furthermore, the industry's structure and employee perceptions regarding health and safety were also taken into account.

Table 2: Relative importance index of employee-related factors

Factor code	Employee-related factors	RII	RANK
EMRF1	Cooperate with employers to fulfil their OHS legal responsibilities by adhering strictly to the use of PPE as a lawful obligation.	0.924	1st
EMRF3	Comply with health and safety legislation, regulations, guidance requirements, codes of practice, and instructions.	0.922	2nd
EMRF5	Report any unsafe condition on site to supervisors and avoid drug and alcohol use.	0.917	3rd
EMRF2	Take reasonable care of their health and safety and that of others affected by their actions and omissions.	0.916	4th
EMRF4	Request information on any imminent danger on site and report accidents and near misses.	0.912	5th
EMRF11	Participate in health and safety programmes organized by local government agencies, employers, employers' associations, and trade associations.	0.910	6th
EMRF7	Develop good interpersonal relationships with other employees to improve OHS at work.	0.906	7th
EMRF10	Alert local government OHS departments to unsafe conditions on site that employers have consistently failed to address.	0.902	8th
EMRF6	Count the cost of unsafe behavior and promote OHS teamwork.	0.897	9th
EMRF8	Report employees' complaints about health and safety to supervisors.	0.897	10th
EMRF9	Develop organizational safety citizenship behavior and ownership.	0.892	11th

After analyzing these factors, "cooperate with employers to fulfill their OHS legal responsibilities by adhering strictly to the use of PPE as a lawful obligation," coded EMRF1, was found to be the factor that could have the greatest influence on health and safety performance. This factor recorded an RII of 0.924 and was ranked first. Succeeding this was "comply with health and safety legislation, regulations, guidance requirements, codes of practice, and instructions - EMRF3". The factor was considered the second significant employee-related factor with an RII of 0.922. Next, after EMRF3 was "report any unsafe condition on-site to supervisors and avoid drug

and alcohol use, EMRF5." Based on the analysis, the factor was rated the 3rd most significant factor with an RII of 0.917. The 4th and 5th relatively significant factors were "take reasonable care of their health and safety and that of others affected by their actions and omissions - EMRF2" and "request information on any imminent danger on site and report accidents and near misses - EMRF4" with RIIs of 0.916 and 0.912, respectively. Respondents considered "report employees' complaints about health and safety to supervisors - EMRF8" and "develop organizational safety citizenship behavior and ownership - EMRF9" as relatively less important.

Maximum Likelihood with Varimax rotation (ML Varimax) was used for the factor extraction of the variables measuring the employee-related construct. A Kaiser-Meyer-Olkin (KMO) of 0.909 with Bartlett's test of sphericity of $p<0.000$ were obtained. The figures were more than the recommended KMO cutoff points of 0.70 and Bartlett's test of sphericity of $p<0.05$ suggested by Hair et al.[29] The estimated figures indicated consistency and suggested factor analysis could be conducted with the data. All the eleven items (ERF1, ERF2, ERF3, …, ERF11) loaded two components. A threshold of 0.5 was used as the cutoff factor loading, a figure greater than the 0.4 recommended by Field and Hair et al. All the items exceeded the cutoff threshold. Component one loaded five (5) items and was labeled employee safety responsibilities (ESR). Component two on the other hand loaded six (6) items and were identified as employee compliance behaviors (ECB).

Table 3: Employee-related factors that could impact health and safety performance

Employee-related factors	Components	
	1	2
Develop organizational safety citizenship behavior and ownership.	0.829	
Report employees' complaints about health and safety to supervisors.	0.772	
Count the cost of unsafe behavior and promote OHS teamwork.	0.604	
Develop good interpersonal relationships with other employees to improve OHS at work.	0.578	
Alert local government OHS departments to unsafe conditions on site that employers have consistently failed to address.	0.555	
Comply with health and safety legislation, regulations, guidance requirements, codes of practice, and instructions.		0.777
Take reasonable care of their health and safety and that of others affected by their actions and omissions.		0.762
Cooperate with employers to fulfill their OHS legal responsibilities by adhering strictly to the use of PPE as a lawful obligation.		0.644
Report any unsafe condition on-site to supervisors and avoid drug and alcohol use.		0.597
Request information on any imminent danger on site and report accidents and near misses.		0.563
Participate in health and safety programmes organized by local government agencies, employers, employers' associations, and trade associations.		0.524

After extracting the two components, the corrected item-total correlation for the items of the two components was extracted using the suggested cutoff value of 0.30. The results, as shown in Table 4, indicated that the items were good measures of the components, registering Cronbach's alphas greater than 0.800 at 0.844 for the first component (ESR) and at 0.866 for the second component (ECB), suggesting acceptable internal reliability.[30]

Table 4: Unidimensionality and reliability of employee-related factors (ERF)

Employee-related factors	ESR	ECB	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
Develop organizational safety citizenship behavior and ownership.	0.829		0.746	0.589	0.786	0.844
Report employees' complaints about health and safety to supervisors.	0.772		0.718	0.553	0.795	
Count the cost of unsafe behavior and promote OHS teamwork.	0.604		0.62	0.395	0.821	
Develop good interpersonal relationships with other employees to improve OHS at work.	0.578		0.606	0.376	0.825	
Alert local government OHS departments to unsafe conditions on site that employers have consistently failed to address.	0.555		0.568	0.339	0.835	
Comply with health and safety legislation, regulations, guidance requirements, codes of practice, and instructions.		0.777	0.714	0.542	0.835	0.866
Take reasonable care of their health and safety and that of others affected by their actions and omissions.		0.762	0.684	0.525	0.84	
Cooperate with employers to fulfil their OHS legal responsibilities by adhering strictly to the use of PPE as a lawful obligation.		0.644	0.659	0.447	0.845	
Report any unsafe condition on site to supervisors and avoid drug and alcohol use.		0.597	0.667	0.469	0.843	
Request information on any imminent danger on site and report accidents and near misses.		0.563	0.64	0.441	0.848	
Participate in health and safety programmes organised by local government agencies, employers, employers' associations, and trade associations.		0.524	0.616	0.384	0.853	

The constructs were unidimensional and reliable and paved the way for the administration of CFA. A three-statistics strategy of fit indices was employed as advised by Hu and Bentler. The sample data yielded the S – Bχ2 of 3.768 with 4 degrees of freedom (df) with a probability of p = 0.0000, indicating the significant departure of the sample data from the postulated model. This indicated a good fit. The CFI value was 0.988, greater than the 0.90 cutoff point, describing the model as acceptable. NFI value was 0.983, within the given range as revealed in Table 5, indicating that the model is acceptable; the PNFI value obtained is 0.393 and below 0.80. The RMR was 0.011, smaller than 0.05, and the GFI value was 0.987, greater than 0.090, suggesting that the postulated model adequately describes the sample data. Overall, the model could be described as a good fit.

Table 5: Robust fit index for employee-related factors (ERF)

Fit Index	Cutoff Value	Estimate	Comment
S – Bχ^2		3.768	
Df	0≥	4	Acceptable
CFI	0.90≥ acceptable 0.95≥ good fit	0.988	Good fit
PCFI	Less than 0.80	0.395	Good fit
RMSEA	Less than 0.08	0.078	Acceptable
RMSEA 95% CI	0.00-0.08 "good fit"	0.039-0.08	Acceptable
NFI	Greater than 0.90 "good fit"	0.983	Good fit
IFI	Greater than 0.90 "good fit"	0.988	Good fit
PNFI	Less than 0.80	0.393	Good fit
RMR	Less than 0.05 "good fit"	0.011	Good fit
GFI	Greater than 0.90 "good fit"	0.987	Good fit

The ERF unidimensional features for the model are presented (Figure 1 and Table 6). Only five (5) out of the eleven factors were obtained and used for the final CFA analysis.[31] From the 454 cases analyzed for this construct, five (5) indicator variables made up of two (2) components, identified as ESR (ESR1 and ESR2) and ECB (ECB1, ECB2 and ECB3) were deduced.

Table 6: Final conceptual model indicator variables for employee-related factors (ERF)

Latent Component	Indicator Variable	Measurement Variable	Label
Employee safety responsibility (ESR)		Develop organizational safety citizenship behavior and ownership.	ESR1
		Report employees' complaints about health and safety to supervisors.	ESR2
Employee compliance behavior (ECB)		Comply with health and safety legislation, regulations, guidance requirements, codes of practice, and instructions.	ECB1
		Take reasonable care of their health and safety and that of others affected by their actions and omissions.	ECB2
		Cooperate with employers to fulfill their OHS legal responsibilities by adhering strictly to the use of PPE as a lawful obligation.	ECB3

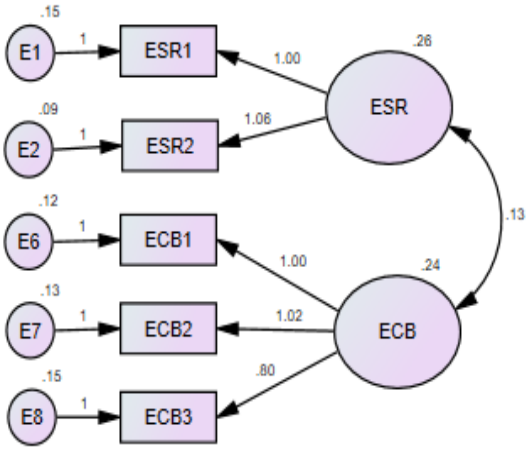

Figure 1: CFA Model for employee-related factors (ERF)

Table 7 shows the correlation values, standard errors, and the test of statistics of the final five-indicator model. All the correlation values were less than 1.00, and all the p-values were less than the significant value of 0.05. The estimates are reasonable and statistically significant. ESR2 had the highest standardized coefficient, and its parameter coefficient was 0.880.

Most parameter estimates had high correlation values close to 1.00, suggesting a high degree of linear association between the indicator and unobserved variables (ESR and ECB). In addition, the R-squared values were also close to the desired value of 1.00, indicating that the factors explained more of the variance in the indicator variables. The results suggest that the indicator variables significantly predict the unobserved components because all the measured variables are significantly associated with the two (2) components (ESR and ECB) under employee-related factors (ERF).

Table 7: Factor loading and p-value of employee-related factors (ERF)

Hypothesised relationships (Path)	Unstandardised Coefficient (λ)	Standardized Coefficient (λ)	P-Value	R- Squared	Significant at 5% Level
ESR1 ← ESR	1.000	0.800	0.00	0.640	Yes
ESR2 ← ESR	1.060	0.880	0.00	0.775	Yes
ECB1 ← ECB	1.000	0.811	0.00	0.658	Yes
ECB2 ← ECB	1.023	0.808	0.00	0.653	Yes
ECB3 ← ECB	0.797	0.712	0.00	0.506	Yes

Discussion

Eleven factors were subjected to a relative importance index equation, exploratory factor analysis, and confirmatory factor analysis. The relative importance of the factors used shows that they are all relatively significant in impacting safety performance. The eleven factors when subjected to EFA analysis were grouped into two components namely, employee safety responsibilities (ESR) and employee compliance behaviors (ECB). The registered Cronbach's alphas for ESR and ECB indicated that the explanatory variables were good measures of the two components and constituted good internal reliability, consistency, and unidimensionality. The hypothesized CFA model was described good fit based on its robust fit indices, as depicted in Table 5.

After subjecting the eleven explanatory variables to EFA analysis, develop organizational safety citizenship behavior and ownership; comply with health and safety legislation, regulations, guidance requirements, codes of practice, and instructions; report employees' complaints about

health and safety to supervisors; and take reasonable care of their health and safety and that of others affected by their actions and omissions were identified as the employee-related factors that were significant to safety performance.

The EFA and CFA factors gained significance because they reflected some of the basic ingredients needed to enhance H&S in the construction industry. When a company permits the development of organizational safety citizenship behavior and ownership, it voluntarily increases the commitment of its employees to safety. Employees are more adept at self-policing than supervisors are, provided that they possess a sense of ownership over their own safety. In this manner, they assume responsibility for one another, which enhances their natural sensitivity to workplace hazards.

Reporting employee H&S concerns provides firms with information that highlights their safety challenges. H&S complaints assist organizations in evaluating their compliance with their health and safety obligations and in improving the quality of service they provide to their employees.

Compliance with laws, regulations, codes of practice, guidelines, and instructions is important in real life because it helps to prevent safety infractions and limits the level of risks and their impacts. This factor ensures adherence to guidelines and instructions.

An employer is not solely responsible for employee health and safety. While the law requires employers to provide a favorable work environment and necessary equipment for employees, it also imposes an equal obligation on employees to utilize these resources according to the nature of their work. In the Ghanaian construction industry, cooperation between employers and employees has always been a point of contention. Some employers express their dissatisfaction with employees' reluctance to collaborate on health and safety (H&S) issues and the use of personal protective equipment (PPE), citing this as the reason why they have ceased their efforts in this area.

Overall, the responses indicated that the development of organizational safety citizenship behavior and ownership was the most significant factor influencing health and safety. The finding buttresses the assertion that organizational safety citizenship behavior (SCB) generates and encourages positive behavior. SCB among workers increases cooperation, efficiency, and effectiveness.[32] It proactively protects organizational health and safety structures and the safety of others.[33] SCB aims at averting workplace accidents and incidents.[34] The study of Tear in Australia indicated that the degree to which individuals exhibit safety citizenship behavior is contingent upon their comprehension of an organization's safety culture.[35] Chandra and Mathur suggest that employee involvement, satisfaction, and commitment are influenced by organizational citizenship behavior.[36]

Compliance with health and safety laws, regulations, guidance requirements, codes of practice, and instructions reduces the frequency and severity of accidents. Workers' compliance with these enhances health and safety.[37] Adebiyi et al. posited that extreme construction industry accidents stem from the lack of strict regulations and poor H&S practice.[38] Organizational structures should encourage employees to disclose health and safety concerns to supervisors. According to Jeschke et al., employees' grievances should be perceived as a means of cooperation and differentiation.[39] The findings suggest that providing employees with the opportunity to express their concerns would significantly influence the industry's H&S concerns. Health and safety deficiencies can be resolved when employees exercise reasonable caution in maintaining their well-being and that of others.[40] This is prescribed by the International Labour Organisation's Convention No. 167.

Employees' safety responsibility (ESR) - Two variables define ESR: reporting employees' complaints about health and safety to supervisors and developing organizational safety citizenship behavior and ownership. Channels for reporting

health and safety concerns are critical, and employees must be encouraged to utilize them. This is a proactive means of gathering information on safety from the employee's perspective.[41] Employees must understand that unreported safety concerns increase the danger of accidents.[42] Safety citizenship behavior (SCB) is key to managing risk.[43] The safety motivation of an employee leads to safety citizenship. Workers who have knowledge about health and safety possess it and try to influence others to be safety conscious.[44,45] Employees' knowledge about their safety responsibilities influences their safety behavior.[46] The findings of the study suggest a relationship between employees' safety responsibility and workplace accidents and incidents. When employees assume personal responsibility for their own safety, it alters their perception of the level of risk they would like to tolerate.

Employees' compliance behavior (ECB) - The findings reveal that ECB is defined by three variables. The most significant ECB factor influencing health and safety performance is compliance with health and safety legislation, regulations, guidance requirements, codes of practice, and instructions. Employees' lack of compliance is usually due to ignorance and lack of knowledge.[47] This can be cured using high safety standards and awareness programmes. Apart from employees being responsible for their health and safety, they are obliged to ensure the safety of others to avoid accidents. The decision to use PPE should not be a personal preference or choice. The readiness of workers to use PPE is dependent on the experience, values, and beliefs of individuals, but these should not be preferred to compliance.[48]

Conclusions

The responses of the professionals previously enumerated are the basis for all of the study's findings. Through the perspectives of professionals on employees' responsibilities that can enhance H&S, firms and policymakers can develop tailored policies and regulations that suit their needs and the industry.

The paper identified the employee factors that could potentially impact Ghana's construction sector's health and safety. Based on the results, reporting employees' complaints about H&S to supervisors; complying with health and safety legislation, regulations, guidance requirements, codes of practice, and instructions; employees taking reasonable care of their H&S and that of others affected by their actions and omissions; and the development of organizational safety citizenship behavior and ownership, define employee safety role that influences health and safety performance.

Given the differences in population sizes among the various professional groups, the sampling approach used may result in sampling bias. Prioritizing the stratification of the different subgroups should have been done before selecting the sample to ensure proportionality.

Recommendations

The study recommends that the firms should provide the necessary support and encouragement to employees who demonstrate a voluntary commitment to health and safety, making this commitment visible for other employees to emulate. Firms should integrate individuals with such traits into their H&S teams, assigning them periodic responsibilities to engage with their peers and share their experiences. This would help firms build a cohesive and supportive environment that fosters a sense of community, prioritize health and safety, and encourages friendship among employees.

It is critical to educate employees on the employer's role in ensuring employee H&S as enshrined in the country's laws, as well as the consequences of an employer's breach. Employers must educate employees about Section 118 of the Labour Act, the relevant sections of the Constitution, and the Factories, Offices, and Shops Act. Firms should demonstrate their seriousness by strictly applying and enforcing the law.

In order to ensure a culture of safety discipline across firms in the construction industry, companies should organize health and safety

induction for all newly employed workers and continuous training for existing workers. This should introduce them to the legal requirements of H&S, the companies' safety policies and culture, raise awareness of the diverse risks, and educate them on safe work processes, accidents and incidents reporting, rules, regulations, and operational protocols. It should also cover emergency procedures, fire safety, general H&S training, first aid, a safety framework, hazard-specific training, hazard identification, health and well-being, how H&S is managed, the cost of accidents or unwanted behavior to both the employer and the employee, and the employee's role. Additionally, firms should dedicate time to educating workers on the uses and purposes of personal protective equipment (PPE) and provide practical demonstrations to ensure their understanding. Firms should conduct health and safety training using safety manuals and leaflets, demonstrations, audiovisuals, case studies, and current technologies such as BIM-based, 3D game-based, augmented reality, and virtual reality, which depict real-life situations.

Firms should establish feedback channels and develop structured complaint centers that catalog all employee safety concerns and commit to resolving them. The feedback loop should effectively communicate the actions taken to address employees' concerns. This instills confidence in the importance firms attach to worker welfare.

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