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Health and safety practices and employee productivity: A study of selected public organizations in Ghana

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Abstract
The study investigates the impact of health and safety practices on employee productivity in the Ghanaian public sector organizations. Explanatory design was used to ascertain the relationship between the study's variables. The purposive and convenient sampling technique was used in collecting data from 170 respondents in 5 public sector organizations (manufacturing, construction, service, health and education) in Tema. Findings of the study showed a significant impact of all the three independent variables: health measures, safety measures and technical measures on the dependent variable, employee productivity. However, among the independent variables, health measures is rated 1st, safety measures is rated 2nd and technical measures rated 3rd. Findings of the study should assist policy makers formulate efficient safety and health policies to prevent any failures that lead to accidents, incidents and prosecutions.

Keywords: Health and safety, employee productivity, public sector organizations, tema

Introduction

Human resources are one of the most important features of many businesses. According to Agustian *et al.* (2023) [1], business' success relies heavily on the effectiveness to which this resource is managed. Policies and practices used by the firm set out the standards to which they seek to aspire. Such policies and practices are designed to govern the operation of the business; especially in today's business environment with heightened competition (Stone *et al.*, 2024) [24]. In the Ghanaian public organizations, health and safety policies and practices are mandated by law.

It is often said that, "the health of a nation is the wealth of a nation" (WHO, 2020), the same concept applies to business. The health and safety of a company's human resource is an enormous contributor to the success of that business. Human resources account for a large proportion of many company's costs; it is the people that invariably drive a business (Anwar & Abdullah, 2021) [2]. Define as the evaluation of risks relating to the health and safety of an organization's workers and others (including the public) who may be affected by its activities (Singh *et al.*, 2021) [22], the presence of health and safety in the work place is to ensure accordance of a company to monitor and control the health and safety of the workplace, and to maintain it (Claxton *et al.*, 2022) [6]. According to De Cieri & Lazarova (2021) [7], both the employer and the employee are responsible for ensuring that the workplace is healthy and safe for all users. In buttressing this, Rosemberg (2020) [19] opines that both employers and employees are legally obligated to maintain and provide a working environment that is conducive for comfortable operations. Further, Rosemberg (2020) [19] intimated that employers are obliged also to provide employees with any information, instruction, training and/or supervision that are needed to ensure that workers are safe during operations no matter the job. Lestari *et al.* (2020) [13] also aver that the onus is also on employees to play a part in ensuring proper health and safety of the workplace. Employees are expected to adhere to the directions given by management to guarantee health and safety. If workers are to ignore these directives it creates a hazard in the workplace not only for themselves but also for others (Lestari *et al.* (2020) [13].

In Ghana, there have been incessant reports of injury, death, frequent absenteeism and huge compensation costs in public organizations impacting productivity and development negatively, albeit the presence of health and safety policies in these organizations. Studies have shown that almost 7 per cent of Ghana's GDP is spent on solving problems related to the improper management of health and safety (Anim, 2020). This includes dependence on government services for health care, housing and food, since the ability of injured workers to afford these needs is disrupted. The question then is: How have health and safety standards led to employee productivity in the Ghanaian public sector organizations?

The health and safety executive (HSE) places great emphasis on the systems of the organization to curb the fatal injury rate and occupation death among employees. Findings of the study should assist policy makers formulate efficient safety and health policies to prevent any failures that lead to accidents, incidents and prosecutions. Policy makers should leverage on the findings to build systems that cover inspection, monitoring and auditing as essential features of the action required of them to satisfy their regulatory duties.by reducing incidents, Thus, this study will be helpful in producing more valuable results regarding issues of occupational health and safety measures along with its vitality for employees' productivity and performances.

Literture review

The concept of occupational health and safety

Concern for the protection of worker's health and safety is not new. According to Salguero-Caparrós *et al.* (2020) [20], it started from the early cavemen till now to the modern workers. History has shown that the Egyptians knew the danger from gold and silver fumes. They even had their own first manual of 1st aid. Ramses in 1500 B.C. hired a physician for quarry workers. Hippocrates the father of medicine realized in 400 B.C. that stone crushers were

having breathing problems. The Romans even had a goddess of safety and health named, Salus and whose picture is usually found on their coins. Health and safety is mainly about providing a safe and healthy workplace to the employees. The International Labour Organisation stated a definition of Health and Safety in 1950 "Occupational health should aim at: the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention amongst workers of departures from health caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in an occupational environment adapted to his physiological and psychological capabilities; and, to summarize, the adaptation of work to man and of each man to his job".

Global perspectives on health and safety

Every year, around the world, there are about 270 million occupational accidents, 160 million workers suffers from occupational diseases and 2.2 million occupational deaths (Claxton *et al.,* 2022) [6]. The cost to society is several billion pounds. Britain has the lowest fatal injury rate in the European Union but although those 19.5 million days were lost due to work related ill health in 1999 against 6.5 in 1998 (Moretta *et al.,* 2022) [16]. Musculoskeletal disorders and particularly back pain are the most frequently reported work related illness (Wilf -Altman, 2020). The Health and Safety Executive (HSE, 2005) places great emphasis on the requirement systems that cover inspection, monitoring and auditing as essential features of the action required by organisation to satisfy their regulatory duties. Such systems are designed to prevent any failures that lead to accidents, incidents and prosecutions. According to the Health and Safety Executive (HSE, 2018), Spain has the largest rates of accident in the European countries. The National survey of working conditions conducted in 2020 in Spain stated that 59% of the workers were exposed to hazards at work, 33% were exposed to noise while 32% were exposed to chemical pollutants and about 50% of the workers maintained static postures or perform repetitive movements during a quarter of their working time.

Employee involvement in health and safety

Workers' involvement may be termed as the willingness of employees' to accept the responsibility for their behavior in creating an accident free workplace. From a management perspective, workers involvement refers to the ability of workers to directly influence or form the management and work process in an enterprise (Bochkovskyi & Sapozhnikova, 2020) [5]. The term employee refers to every employee in the organization at every level and in every department (De Cieri & Lazarova, 2021) [7]. Workers involvement is a process involving behavior that is dynamic, action oriented and problem solving that continuously seeks for improvement in a safety conscious environment. According to Schein, (2012) there is the need to increase safety for individuals if they are to feel secure and capable of changing behaviors and adapting to new policies and procedures. Thus, employees" involvement means that employees have a substantial voice in health and safety decisions and also have the leverage to initiate and achieve health and safety improvement as well as hold themselves and others accountable for their actions as well as taking pride in the health and safety performance record of the organization.

Empirical literature on health measures and employee productivity

The occupational health measures are generally related to healthiness and fitness of employees at the workplaces which has strong affiliations which productivity and performance of employees. A good health is directly related with level of productivity and desired outcomes (Kavouras *et al.,* 2022) [11]. When the employees are not feeling well and have different health related issues then it might automatically affect the performance level of the concerned employees and results into the lower productivity (Shabani *et al*., 2023) [21]. In study conducted by Voordt & Jensen (2023) [25] on the impact of healthy workplaces on employee satisfaction, productivity and costs, a positive relationship was established between health, satisfaction and productivity

Mehmood *et al.* (2022) [14] investigated the impact of human health on worker productivity in South Asia. The health proxies that are used in this study is life expectancy. The indicator of education is the school enrollment at the secondary level; labor force and gross capital formation are also used as independent variables. The study used a panel of South Asian countries from 1991 to 2019, by applying panel OLS, fixed-effects model, random-effects model, and generalized method of moments (GMM). The results demonstrate that health and education significantly and positively influence productivity.

Similarly, Mora *et al.* (2020) [15] determined the effect of work safety and work healthy on employee productivity in the production department at PT. Sisirau Aceh Tamiang. This research is a type of quantitative research with a sample of 45 people. The data analysis method used is multiple linear regression analysis. Hypothesis testing is done through t test, F test, and the coefficient of determination (R2). Findings of the study showed that health variables influence the work productivity of employees by 61.4%. From the literature, we can therefore hypothesize that

H1: health measure will impact the employees' productivity positively

Empirical literature on safety measures and employee productivity

Zhang *et al*. (2022) [26] define occupational safety measure as the care, security and protection of employees from the undesirable events. According to Guler *et al*. (2021) [8] employee tend to show their commitment and dedication when they feel that their organizations are serious about their safety and protection. Bellet *et al*. (2024) [4] share that safety measures are vital for protecting employees from any undesirable consequences in organizations. Prasetyo *et al.* (2021) [18] are of the view that safety measure are shared concern of employers and employees as employees are required to adopt all the safety measures at workplaces which are according to the standards already set by organizations. Similarly, the organizations are also required to provide the employees all the safety measures which might be helpful for the employees in case of the emergency (Prasetyo *et al.,* 2021) [18]. Findings of earlier studies support this assertion. In a study conducted by Boakye *et al*. (2023) [3] to determine the critical factors contributing to the

construction industry's safety performance by building construction artisans in Ghana. Through a literature review, 55 factors influencing safety performance were selected from previous studies and evaluated by the building construction. An exploratory factor analysis was used for dimension reduction, and seven components clustering the 55 factors were revealed. The results showed that management support and commitment toward safety performance was the most influential component. The results showed that management support and commitment toward safety performance was the most influential component.

H2: safety measures will impact the employees' productivity positively

Empirical literature on technical measures and employee productivity

One of the primary goals of organizations is optimize human resource to achieve set targets. Issues of health and safety within organizations are critical in accomplishment of tasks. Industrial accident and illness make up one of the largest part of loss of production time in the industry and these injuries have posed a major challenge to most manufacturing industries. In this regard, occupational technical measure is imperative. Hauke *et al.* (2020) [9] argued that occupational technical measure describes control on mechanical processes for mitigation, mechanism and prevention of the main coincidences. For technical measure, different researchers proposed different models containing diverse measures, for the best interest of the employees and for the best interest of the industry (Stack & Ostrom, 2023) [23] For this purpose, each industries have their own booklets to publish their rules, regulations, precautionary measures for workers while their entry at the workplace or becoming the part/roll of organization (Stack & Ostrom, 2023) [23]. The technical measures most related with the usages of different machines which requires technical knowledge from their employees (Godderis & Luyten, 2020) that how to operate the machines and how to cater the situation when undesirable circumstances arose/happen. The technical safety is mainly related with advanced tools and techniques that are used in concerned organizations in order to facilitate organizational smooth functioning.

H3: technical measures will impact the employees' productivity positively

Conceptual framework

Figure 1 depicts the framework that relates the concepts and the central themes of the study. The conceptual framework establishes the link between health measures, safety measures technical measures and employee productivity

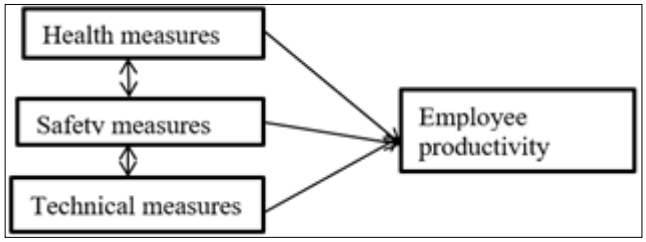

Fig 1: Employee productivity
Author's Construct, 2024

Based on the framework in Figure 1, occupational health and safety is conceptualized operationally to constitute three dimensions: health measures, safety measures and technical measures as the independent variables in the model above while the dependent variable is employee productivity. The hypotheses of the study are reflected by the links between health measures, safety measures and technical measures and employee productivity

Methodology

Research design

According to Polit *et al* (2003), a research design is the overall plan for obtaining answers to the questions being studied and for handling some of the difficulties encountered during the research process. The research design of this study is explanatory. Explanatory was used to establish causal relationships between the study's variables. It emphasizes the study of situations or problems in order to explain the relationships between variables.

Study population

The population for a study can be defined as the total number of the units for which the researcher requires information. According to Kumekpor (2002) population is the total number of all units of the phenomenon to be investigated that exists in the area of investigation". The target population for this study is the management and employees of 3 public organizations in Tema

Sampling technique

Sampling is the processes of selecting units from a population of interest so that by studying the sample we may fairly generalize our results back to the population from which they were chosen (Donald *et al*., 2010). The sampling technique is used to ensure a fair representative of the whole population. For the purposes of the study, the purposeful and convenient sampling was used. First employees were purposefully selected from different public sector organizations in Tema with sufficient knowledge on the subject. The respondents were selected on the basis of time nd convenience of the researcher

Sample size

A sample size is referred to as "a sub-set of a population" (Agresti & Finlay, 2009). Locke (2002) refers to sample size as "the individuals who are included in data collection selected from the whole population". A total sample size of 170 was determined based on the population of each organization. According to Creswell (2003), a sample size of 100 is appropriate for a survey and since the study's sample size is above 100, it is considered appropriate. Table 1 shows the distribution of population and sample size for each organization.

Table 1: Distribution of population and sample size

Organizations	Estimated Population	Sample Size
Organization A	58	45
Organization B	42	32
Organization C	45	38
Organization D	40	30
Organization E	32	25
Total 2 17 170		

Source: Field Survey, 2024

Data collection

In research study, the collection of data can be from the field, secondary or both sources (Fadhley, 1991). For this study, field data was gathered from five public organizations in Tema with the use of questionnaire. Secondary source was gathered from text books, institutions and statutory publication, periodicals and trade/academic journals, seminar and conference papers to ascertain a good understanding for the research.

Validity and reliability

To ascertain the study's validity, a pilot text was conducted. A pilot testing is a brief preliminary survey using a small convenient sample (Alreck & Settle (1995). The aim of the pilot testing was to identify and eliminate problems inherent with the developed instrument before collecting the data from the target population. The questionnaire was pilot with 20 employees who did not take part in the study but are in chosen sector. After the pilot study, the content of the questionnaire was modified to improve its quality and understanding. Reliability on the other hand was ascertained using Cronbach's (1951) alpha. An alpha score of above 0.70 indicated internal consistency and was considered reliable (Nunnally, 1978).

Data analysis

The data collected was edited, sorted, and coded. Statistical Package for Social Sciences, version 20 (SPSS Version 20) was used to analyse the data. Frequency and tables were also used for data presentation. The results from these analyses were accompanied by succinct commentary to aid easy understanding and comprehension.

Ethical consideration

Confidentiality, informed consent and anonymity protocols have been diligently implemented to safeguard respondent identities. Collected data was exclusively utilized for research purposes, ensuring no identification of individual respondents.

Results and discussions

Demographic characteristics of respondents

The gender distribution showcases a fair majority of male 95(55.9%) within the surveyed population as against 75(44.1%) respondents identified as female. Tis disparity is understood as men are the bread winners of the family

Regarding the age grouping of respondents, 70(41.2%) of respondents fall within the age groups of 49-59 years, 50(29.4%) of respondents fall within the age groups of 38-48 years, 35(20.6%) of respondents fall within the age groups of 27-37 years and 15(8.8%) of respondents fall within the age groups of 60 years above. The dataset presents a diverse spread across various age groups, showcasing a comprehensive spectrum of perspectives.

On years of experience as employee in the public sector, 25(14.7%) of respondents have about 1-3years experience, 35(20.6%) of respondents have about 4-6years experience, 50(29.4%) of respondents have about 7-9years experience, 60(35.3%) of respondents have over 10years experience. Findings of the study indicate varied level of experience with fairly majority with over 10years experience as employees in the public sector. Such experience was vital to the study.

In identifying the sector of employees, 45(26.5%) of respondents work in the manufacturing sector, 60(35.3%) of respondents work in the construction sector, 30(17.6%) of respondents work in the service sector, 20(11.8%) of respondents work in the health sector whilst 15(8.8%) of respondents work in the education sector. The diverse sector of respondents' experience is said to enrich the study.

Reliability statistics

Internal consistency is vital to ascertain how the appropriate items on the test measure the same construct. The Cronbach's Alpha is said to the appropriate tool for this measurement. As indicated by (Nunnally, 1978). An alpha score of above 0.70 indicated internal consistency and was considered reliable in most social science research situations (Nunnally, 1978). As can be observed, the study' reliability values ranges from 0.802 to 0.924 indicating higher values, hence its acceptance (Nunnally, 1978). Table 2 presents the results.

Table2: Reliability test

Variables	Cronbach Alpha
Health measures	.0924
Safety measures	.0886
Technical measures	.0848
Employee productivity	0.802

Source: Field work, 2024

Correlation analysis

The correlation analysis was performed on the study's variables. The statistics from the correlation analysis obtained revealed a positive correlation between health measures (independent variable) and employee productivity (dependent variable). The findings demonstrate a positive relationship such that (r=.755, p=0.0001). The results are presented in table 2.

Table 3: Pearson's correlation between health measures and employee productivity

	EP	HM
Pearson Correlation	1	.755**
Employee productivity Sig. (2 tailed)		.0000
N	170	170
Pearson Correlation	.755**	1
Health measures Sig. (2 tailed)	.0000	
N	170	170

Source: Researcher's Field Work, 2024

**. Correlation is significant at the 0.01 level (2-tailed)

*** EP and HM denotes Employee productivity and Health measures respectively

The findings obtained from the correlation analysis also revealed a positive correlation between safety measures (independent variable) and employee productivity (dependent variable). The relationship demonstrates positive such that (r=.680, p=0.0001). The results are presented in table 3.

Table 4: Pearson's Correlation between safety measures and employee productivity

	EP	SM
Pearson Correlation	1	.680**
Employee productivity Sig. (2 tailed)		.0000
N	170	170
Pearson Correlation	.680**	1
Safety measures Sig. (2 tailed)	.0000	
N	170	170

Source: Researcher's Field Work, 2024

**. Correlation is significant at the 0.01 level (2-tailed)

*** EP and SM denotes Employee productivity and Safety measures respectively

The findings obtained from the correlation analysis also revealed a positive correlation between safety measures (independent variable) and employee productivity (dependent variable). The relationship demonstrates positive such that (r=.680, p=0.0001). The results are presented in table 4.

Table 5: Pearson's Correlation between technical measures and employee productivity

	EP	TM
Pearson Correlation	1	.680**
Employee productivity Sig. (2 tailed)		.0000
N	170	170
Pearson Correlation	.680**	1
Technical measures Sig. (2 tailed)	.0000	
N	170	170

Source: Researcher's Field Work, 2024
**. Correlation is significant at the 0.01 level (2-tailed)
*** EP and TM denotes Employee productivity and Technical measures respectively

In testing the study's hypothesis, the regression analysis technique was applied to ascertain the impact of health measures, safety measures and technical measures on employee productivity. All the three identified measures demonstrated a significant impact on employee productivity. Table 5 presents the regression results.

Table 6: Regression Results

hypotheses	Independent variables	B	Standard Error	T	Sig(P)	Results
H1	Health measures	.645	.070	6.124	.000	Accepted
H2	Safety measures	.608	.070	5.228	.001	Accepted
H3	Technical measures	.542	0.70	5.010	.005	Accepted

From the regression results shown in the table 5 the concept model was developed and shown in Figure 1. The model clearly shows the relationship between the three independent variables health measures, safety measures and technical measures and the dependent variable employee productivity among employees of public sector organizations in Tema. The beta value shows the weightage of the variables. Higher the beta value, the stronger the relationship between the independent variable and the dependent variable.

Impact of health measures on employee productivity

As shown in table 5, health measures have a significance value (p) 0.000 which is less than 0.05. It is an admission that health measures have a significant impact on employee productivity. Having higher beta value i.e., 0.645, health measures is rated first among the other variables. Hence, H1 is accepted. The study's results align with literature Mitchell *et al*. (2020) Street & Lacey (2021). However, other studies revealed a partial impact of health measures on employee performance and productivity (Iman *et al.,* 2023) [10]. Shabani *et al.* (2023) [21] confirmed that occupational health programs can improve employee morale and job satisfaction, leading to increased retention rates and improved organizational performance. However, the study of Iman *et al*. (2023) [10] revealed a partial impact of health measures on employee performance and productivity. As the saying goes, "a healthy mind in a healthy body", employees who have health problems are often less productive at work. Thus, employee absences and on-the-job productivity losses due to poor health cost employers nearly $230 billion in the United States each year (Mclean, 2022). For some companies, productivity-related losses may even exceed the costs of direct medical care. When health promotion programs are effective, it has been shown that they may save an average of $3.27 in medical costs and $2.73 in absenteeism costs, per dollar spent on these programs (Mclean, 2022).

Impact of safety measures on employee productivity

The results of the statistics showed that safety measures have a p-value 0.001 which demonstrate a significant impact on employee productivity at 5% significant level. Hence, the result of the study shows that safety measures used by public sector organizations in Tema have a positive impact on employee productivity. Hence H2 is accepted. As the beta value.608, this variable is rated second among the independent variables. Findings of previous studies such as Mutegi *et al.* (2023) [17] support the study's findings. Mutegi *et al.* (2023) [17] examined the relationship between workplace safety, employee safety attitudes and employee productivity of manufacturing firms. The authors' study revealed that employee safety attitude significantly intervened in the relationship between workplace safety and employee productivity. This is also buttressed by the work of Lari (2024) [12]. In his study, Lari found a direct link between improved occupational safety practices and productivity. According to the author, occupational safety practices are pivotal for both a secure working atmosphere and heightened employee productivity. To the author, embracing proactive occupational safety strategies offers dual advantages: better well-being and improved organizational output. Investing in policies and practices for occupational safety is essential for businesses to maintain high productivity and employee well-being. Occupational health and safety scholars believe that organizations can use such practices to improve the health and safety of their organization and employee productivity. When employees perceive risk, which is the anxiety they feel about safety or the likelihood of experiencing work-related harm, they tend to take care of themselves than productivity

Impact of technical measures on employee productivity

The study's regression results demonstrate a significant positive association at 5% significance level between technical measures and employee productivity as the p-value is less than 0.01. Hence H3 is accepted and concludes that technical measures have significant impact on employee productivity. Considering the beta value.542, this variable is rated third among the independent variables. The result of this study is in consonance with the study of Gamay (2020). Gamay (2020) found a significant impact of technical measures on employee productivity among manufacturing employees. Odartey (2022) in his study similarly, found a significant relationship between occupational technical measures and employee productivity in the construction industry. Also, Godderis & Luyten (2020) shared in their study that for employees to avoid occupational injuries and accident, they must possess technical knowledge on the usage of various machines in the organization. Periodic training is regarded imperative on technical measures to

update and guide employees on the proper handling of machines to avoid injuries. Also, Stack & Ostrom (2023) [23] is of the view that each industries must have their own booklets to publish their rules, regulations, precautionary measures for workers while their entry at the workplace or becoming the part/roll of organization.

Conclusion

Productivity is generally seen as a measure of the amount of output generated per unit of input. In many countries, public sector productivity has been assumed to be zero in the national accounts. According to Faham (2022), output of the government sector has been measured as equal in value to the total value of inputs. Employees' health does not only uplifts life expectancy but also boosts productivity. Skilled workers contribute more to economic growth compared to uneducated and unskilled people. A healthy life raises prosperity and improves the standard of living of the citizens of the country.

There are governmental regulations, norms and guidelines documented in explicit (passive) forms that need to be followed (Mensah, 2020). However, those regulations do not include all possible safety issues that are specific to different working environments.

Therefore, policy makers should identify the health and safety issues facing different organizations in the working environments so as to formulate effective policies necessary to address the problem.

Employees' involvement in health and safety measures in the organization is paramount. Management should ensure a safety culture in the organization. Safety culture should be used to influence employees' health and safety behaviors. Equally, management should discourage the blame culture syndrome since it has the potential to discourage employees from reporting incidents and near misses and prevents learning from past and current mistakes.

Directions for future Studies

The study investigates the impact of health and safety practices on employee productivity in the Ghanaian public sector organizations. Only 5 of the public sector organizations in Ghana were examined out of over 50 organizations. Future studies could add more organizations to enrich the discussion. Also, the sample size can be increased to draw a generalized conclusion.

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