



EFFECTS OF OCCUPATIONAL HEALTH AND SAFETY PRACTICES ON EMPLOYEES' PRODUCTIVITY IN ENERGY SECTOR IN RWANDA. A CASE STUDY OF ENGIE ENERGY ACCESS RWANDA

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ABSTRACT: - Occupational health entails the promotion and maintenance of the highest degree of physical and mental health and social well-being of workers in all occupations. This study intended to assess the influence of health and safety practices on employee performance. Specifically, attempted to examine the effect of health and safety training on employee performance at ENGIE energy access, to assess the effect of health and safety working conditions on employee performance at ENGIE energy access, to examine the effect of safety risk management on employee performance at ENGIE energy access and to determine the effect of organizational Hazard Prevention on employee performance at ENGIE energy access. This study only used quantitative approach in order to accomplish the study purpose, in which descriptive study design was adopted. This study was conducted at ENGIE energy company which is termed as the study area while the employees of the company were termed as the study population. Simple random sampling method was used for sample selection, whereby a total number of 82 samples successfully responded to questionnaires which was data collected technique adopted in this study. Quantitative data obtained through questionnaire was analyzed using descriptive statistics, correlation analysis, multiple regression analysis and ANOVA. The findings indicated that the study' independent variables including health and safety training, working condition and safety procedures and risk management had positive and significant influence of employee performance. With these findings, the study concludes that health and safety measures are important to be applied due to its enormous contribution to performance of employees. It is recommended that emphasis should be given in conduction of regular training on occupational health and safety practices, safe working conditions should be improved and maintained and disciplinary actions should be taken for safety rules breakers among employees and even deficiencies or mistakes revealed during internal audits should be monitored.

GENERAL INTRODUCTION

Background of the study

Occupational health entails the promotion and maintenance of the highest degree of physical and mental health and social well-being of workers in all occupations (Taderera, 2012). Occupational Safety and Health has recently become a much higher priority in light of the growing evidence of great loss and suffering

caused by occupational diseases and ill-health across many different employment sectors, and is of concern to managers at least partly because of increasing number of deaths and accidents occurring at work.

Occupational safety remains neglected in developing countries because of competing social, economic, and political challenges. Despite global efforts to address OS&H concerns, an estimated 2 million work related

fatalities and 330 million work-related accidents still occur each year (ILO, 2009). The incidence of workplace fatalities varies enormously between countries. The studies have indicated that there appears to be a significant difference between developed and developing countries. It has been estimated that people in developing countries are exposed to more than 80% of global occupational hazards (Clare, 2014).

According to a Zwetsloots's study (2014) a factory worker in Pakistan is eight times more likely to be killed at work than a factory worker in France; fatalities among transport workers in Kenya are ten times than those in Denmark and construction workers in Guatemala are six times more likely to die at work than their counterparts in Switzerland. Alli (2009) described that the rate of occupational fatalities and accidents in India is 10.4 and 8,700 per 100,000 respectively. Almost similar situation exists in China, where it is 10.5 and 8,028 per 100,000 respectively. In sub-Saharan Africa, the fatality rate per 100,000 workers is 21 and the accident rate 16,000. In Latin America and the Caribbean, about 30,000 fatalities occur each year and 22.6 million occupational accidents cause at least three days' absence from work.

In Rwanda, organizations are currently operating in a complex and competitive business environment hence the need for an efficient and effective work force. Healthy workforce is one of the most indispensable assets in an organization. Ideally appropriate measures to ensure their wellbeing should be observed. This always calls for health and safety awareness among employers and employees to enable the organization to achieve the set objective. This is quite evident in most government policies requirements. However, the concept occupational health and safety practice seems to be only valid in most organizational policy statements while none exists in practice. For example, Rwanda Profile (2012) reported that the number of deaths in 2012 (263 fatalities) varies from six to seven times more than their number in 2007 (41 fatalities). This profile points out that the number of injuries in 2012 is almost equal to four times greater than their number in 2007 and an amount of 1,400,190,808

Fra has been used on occupational hazards for six years (2003-2009/2010). Deficient of health and safety practices at workplace have a massive impact on a business, not only it can damage the industry and financially cost but also it can severely hurt workers

Statement of problem

One of the biggest problems in the world today is the amount of pain, misery, injury and death caused by occupational accidents and diseases. The health and safety of today's workforce is vital part of every business' strategy. Employee safety and health programmes occupy a pivotal position in Human Resource Management. At some factories, attention is mainly on negative outcomes as long as there are no serious accidents, occupational health and safety policies and practices are not carried out fully.

Reports from the International Labor Organization and the World Health Organization (ILO 2010) reveal that many manufacturing workers encounter workplace accidents that lead to health damage and economic losses. Every 15 seconds a worker dies as a result of an accident at work or illness. Every 15 seconds 153 workers have a work-related accident, every day 6300 people die as a result of occupational accidents and work-related diseases; more than 2.3 million deaths a year. Each year, 317million accidents happen at work; lot of them provokes prolonged absenteeism of employee at work. The Rwanda Social Security Board reports show that the number of occupation accident and injuries in general is increasing every year; 41 in 2007, 84 in 2008, 114 in 2009, 194 in 2010, 264 in 2011, 263 in 2012, 389 in 2013, 437 in 2014, 516 in 2015, 592 in 2016 and 680 in 2017.

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requirements. However, the concept occupational health and safety practice seems to be only valid in most organizational policy statements while none exists in practice. Often accidents occur to employees who are vulnerable because there is no precaution taken by the employer. As a result, threats to employees' safety are not eliminated in time because accident-prone areas are not recognized and taken care of before accidents occur. Therefore, there was need to examine this practice and that is why the current study sought to investigate occupational health and safety practices in employee productivity in the energy sector

Specifically, this study attempts to:

- i. To examine the effect of health and safety training on employee performance at ENGIE energy access.
- ii. To assess the effect of health and safety working conditions on employee performance at ENGIE energy access.
- iii. To examine the effect of safety risk management on employee performance at ENGIE energy access.
- iv. To determine the effect of organizational Hazard Prevention on employee performance at ENGIE energy access.

LITERATURE REVIEW

Theoretical review

Maslow theory

The study adopted the Maslow's hierarchical of needs theory by Abram Maslow (1968) which states that individuals' needs are arranged in a hierarchy whereby when one needs has been fulfilled another need emerges and seeks satisfaction. Maslow's theory of motivation has frequently been applied within the industrial and organizational context (Maslow, 1965).

Maslow theory of motivation proposes that people who have all their "lower order" needs met progress towards the fulfillment their

potential. Typically, this can include the pursuit of knowledge, peace, esthetic experiences, self-fulfillment, and oneness with God, enlightenment etc. So ultimately this is all to do with the desire for self-transcendence. During the study on the occupational health and safety practices on employees' productivity, the study basically dealt with the psychological and safety needs. Maslow realized that people need to deal with the survival needs before they move on to any other levels of need. If they do not have the necessary food, clothing, water, shelter, and other crucial elements to survive, they are not likely to be concerned about learning new skills to qualify them for future jobs.

Employers typically address basic needs by providing food and water throughout a working session, allowing regular restroom, and providing an adequate lunch period. They can also build training programs and class content that add value and that would help employees maintain their current jobs and ultimately move on to higher paying ones that would increase the amount of money they have available to satisfy basic needs.

Goal-Freedom Alertness Theory

The Goal-Freedom Alertness Theory was developed by Kerr (1950) and it states that safe work performance is the result of psychologically rewarding work environment. Under this theory, accidents are viewed as low-quality work behaviour occurring in an unrewarding psychological climate. This contributes to a lower level of alertness.

The theory suggests that managers and supervisors should try and make work more rewarding for workers. They may use a variety of managerial techniques including positive reinforcements, goal setting participative management and clear work assignments. Heinrich et.al (1980) supports the theory by stating workers will be safe in a positive work environment. They argue that safe performance is compromised by a climate that diverts the attention of workers. They confirm that hazards divert the worker's attention during work hours and thus the diversion increases susceptibility to

injury. Heinrich et. al (1980) suggests that managers and supervisors can actively work to alleviate hazards in the work environment. Reaction of workers to unsafe conditions depends on the fact that whether the worker identifies the unsafe condition.

Distractions Theory

The proponent of the theory is Hinze (1997) and states that safety is situational. Because mental distractions vary, the responses to them may have to differ to maintain safe performance. Additionally, hazards or physical conditions with inherent qualities that can cause harm to a person, may or may not be recognized by the worker and influence safety of the task. The theory applies to a situation in which recognized safety hazard or mental distractions exist and there is a well-defined work task to perform. In the absence of hazards there is little to prevent workers from completing their tasks. However, in the presence of hazards, work is greatly complicated.

The theory has two components, first dealing with hazards posed by unsafe physical conditions and the other dealing with a worker preoccupation with issues not directly related to the task being performed. The theory basically states that when a worker has lower probability of injury and higher level of task achievement. When a worker has a higher focus on a mental distraction the worker has a higher probability of injury and a lower level of task achievement. To avoid injury and achieve high levels of productivity, workers must avoid mental distractions.

Petersen (1996) states that managers must consider human capabilities from health and safety viewpoint when assigning tasks to their employees. He argues that accidents have identifiable socio-technical cause resulting in human performance. Employers should take account of their capabilities and the level of training, knowledge and experience on health and safety in the workplaces. Petersen (1996) confirms that organizations should design human error oriented accidents prevention programs without slowing productivity or compromise performance since accidents and

incidents in workplaces are unplanned and unwanted occurrences involving movement of persons, objects or materials which may result in injury, damage or loss to property or people.

Empirical review

Health at work and healthy work environments are among the most valuable assets of individuals, communities, companies and countries. Occupational safety and health is an important strategy not only to ensure the health and safety of workers, but also contribute positively to productivity, quality of products, work motivation, job satisfaction and thereby to the overall quality of life of individuals and society (Boom 2014).

Health and safety training and employee performance

Training according to Cole (2008) is any learning activity which is directed towards the acquisition of specific knowledge and skills for the purposes of a task. Examples of training needs are: the need to have efficiency in safety in the operation of particular machines or equipments; the need for an effective sales force: and the need for competent management in the organization.

According to Armstrong (2006) Health and safety training is a key part of the preventative programme. It should start as part of the induction course. It should also take place following a transfer of employee to a new station or change in a working method. Health and safety training spells out the rules and provides information on potential hazards and how to avoid them. Further refresher training should be provided and special courses laid on to deal with new aspects of health and safety or areas in which safety problems have emerged.

Dessler (2005) asserts that training is another way of reducing unsafe and unhealth acts, especially for new employees. They should be instructed in safe practices and procedures, warn them of potential hazards, and work on developing a safety-conscious attitude. OSHA has published booklets on training requirements and teaching safety in the work place. The main object of every organization is to improve its performance but it can never be possible without the efficient performance of employees. Therefore, the performance management system came into effect as a management reform to address and redress concerns, organizations had about performance (Sharif, 2012). The main objective of human resource development is to create learning environment in the organization so that each member of the organization continuously learns and acquires new competencies". Employees have been told by the top officials how much output should be produced. Staff training is an indispensable strategy for motivating workers (Hopkins, 1994).

Health and safety working conditions and employee performance

This study envisaged that health and safety working conditions through cleanliness, light, less noise, healthy seating, availability of clean drinking water and ventilation have influence on employee performance as the mentioned working condition factors ensure healthy status of employees.

As Cole, (2012) asserted that a positive working condition is vital in ensuring employee performance. Employees' performance decreases when they negatively perceive job safety. Physical working condition include lightings, temperature, noise, office layout and fresh air. There is a direct relationship between job safeties, physical working condition, with employee performance.

Safety risk management and employee performance

This study envisaged that if safety procedures and risk management factors are effectively adhered it contributes to an improved status of employee health which in turns leads to employee performance. Safety procedures and risk management indicators adopted in this study includes regular equipment maintenance, availability of danger signs, wearing PPEs, adherence to safety rules, supervisor's/managers' knowledge on safety procedures and efficient supervision on safety rules.

To put much emphasis on this, Hassard (2018) asserted that a company may suffer productivity related losses due to unhealthy employees. Moreover, the employees' health wellbeing at workplace have positive relationship with task and contextual performance which are the indicators of employee performance

Occupational Hazard Prevention and employee performance

Study by Dwomoh (2013) has shown that the company's health and safety measures are positively correlated with the performance of its employees resulted in better organizational outcomes. If the company can reduce the level and severity of work accidents, illness and matters related to stress, as well as improve the quality of work life of its work, the company will be more effective (Gunningham et al, 2016). Gunningham (2017) stressed that majority of construction companies in Nigeria lack the potential to identify all conceivable risk factors and hazards before or during construction activities.

Danish (2013) conducted a survey on factors affect occupational safety and health management on operational performance in the case of road construction companies in Nigeria. Occupational hazard prevention was detected to have significant effect on organizational performance. A reason of it may be the fact that

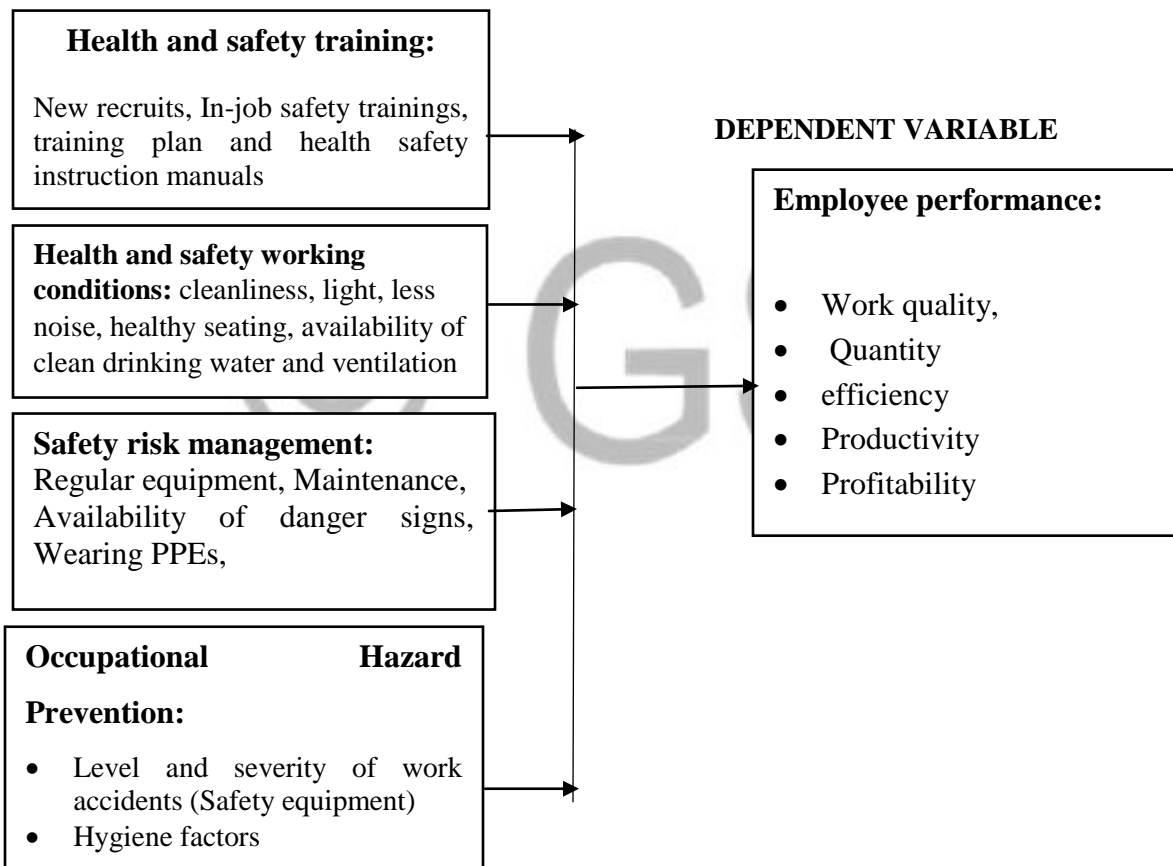
the employees perceived this variable as the hygiene factor. Such elements like management policy and management, working conditions, wage levels, level of happiness at private life, Healthy and Safe employees have got feelings for this belonging need because they need to work in teams and have general employee employer relations these results in high productivity due to synergy. Esteem or ego needs are the needs for recognition and respect from others, for self-esteem and a personal sense

and the relationship between lower and higher ranks in the organization etc. are called as “hygiene factors.”

of competence and achievement. Health and safe employees use their full potential and abilities to the fullest extent hence high productivity (Evans, 2014). The following conceptual framework through research variables gives details on the relationship between variables which are found in the study.

INDEPENDENT VARIABLE

Occupational health and safety practice



Source: Researcher, 2022

To address safety needs of the hierarchy, we consider physical as well as psychological safety and security. As a worker you can do common sense things like make sure that the environment contains no safety hazards, such as wires that are not taped down, broken furniture, boxes that can cause accidents, or equipment that might fall and injure someone. Also provide

mental security by explaining how to use materials will assist the workers to become more effective and efficient in the workplace or other situations, thereby helping to solidify their position in the organization as a knowledgeable, skilled employee or individual.

Occupational health and safety practice falls on all the hierarchy levels as follows: physiological needs for survival. They include the biological needs such as food, water, fresh air, sex, and clothing among others. Safety needs are centered on protections, predictability and

stability to ensure that employees are not vulnerable and that they feel both physically and psychologically safe. Belonging or social needs is the need for affiliation, for love, affection and meaningful relationship with others.

The study of the total population sometimes is not possible considering the practical limitations of cost, time and other factors which usually stand in the way of studying the total population. Consequently, the concept of sampling was introduced to deal with this challenge. As for the respondents who took part in the study, sampling was done to select a manageable sample size given the time and resource constraints. Cooper & Schindler (1999) refers to sampling as a process of selecting a small group of a population for a study that is 'assumed to be related to the large group from which it is drawn'.

RESEARCH METHODOLOGY

Research Design

Cooper & Schindler (1999) defines a research design as a framework or plan of research used as a guide in data collection and analysis. It is a blueprint that is used to complete the research. He described the blueprint as an action plan, for the purpose of this study.

This study adopted a descriptive research design and consisted of both qualitative and quantitative research. Descriptive research design was chosen because this study seeks to determine the effects of occupational health and safety practices on employees' productivity in energy sector in Rwanda. A case of ENGIE Energy Access Rwanda.

Target population

According to Mugenda and Mugenda (2003) the target population, is "a group of individuals or a body of people or any collection of items under consideration from which samples are taken for measurement". The population involved in this study was staff from ANGIE Energy Access Rwanda. The study be targeted these respondents owing to the fact that they are responsible for the management of the company. At the time of the study the company had a work force of 118 employees who appeared on the payroll. These included 5 top managers 13 middle level managers, 7 supervisors, and 93 support staff in ENGIE Energy Access Rwanda company.

Sample size and sampling techniques

A sample is a smaller group or sub-group obtained from the accessible population (Mugenda & Mugenda, 2003). This study adopted the stratified sampling technique. Stratified sampling is a probability sampling technique wherein the researcher divides the entire population into different subgroups or strata, then randomly selects the final subjects proportionally from the different strata. The reason for the choice of the sampling method was because it enabled the researcher to representatively sample even the smallest and most inaccessible subgroups in the population. This allowed the researcher to sample the rare extremes of the given population. In addition, the study used the following formula proposed by using Yamane (1973) to determine the sample size;

Using Yamane (1973) formulae

$$n = \frac{N}{1+(N)(e)^2}$$

Where:

n = sample size

N = the population size

e = the acceptable sampling error (5%) at 95% confidence level

Thus;

$$n = 118 (1+118) (0.05)^2$$

$$n=82 \text{ respondents}$$

A sample of 82 respondents was targeted to participate in this study. This formula was used to estimate a representative sample. A total number of 82 respondents was taken as simple size. The following is the table showing sample size for each category:

Table 2: Representing the sample size

Respondents	Population	Sample size
Top managers	5	2
Middle level manager	13	5
Supervisor	7	3
Other staff	93	72
Total	118	82

Source: Primary data, 2022.

GENERAL CONCLUSION AND RECOMMENDATION

Summary of major findings

Under this section, the researcher would like to make out the summary of findings provided by respondents from the field by basing on research objectives.

Findings on health and safety training on employee performance

The results indicated that at ENGIE energy access, workers are given sufficient HS training when joining your company, changing workers or using a new technique as shown by a

mean of 4.6707 and 0.47284 as standard deviation. The second item shows that HS training is ongoing and based on a planning plan and it proves that respondents are strongly agreed with a mean of 4.1220 and with a very low correlation standard deviation of 0.32924; the third item shows that HS training plans are decided jointly with workers or their representatives and that proves that respondents are strongly agreed with a mean of 4.0732 and a very strong and positive correlation standard deviation of 0.74999; the fourth item shows that ENGIE energy access supports HS training opportunities for workers and that it proves that respondents strongly agreed with a mean of 4.2439 and a very strong and positive standard deviation of 0.43208.; the fifth item shows how HS instruction manuals or work procedures are available at ENGIE energy access and it proves that respondents strongly agreed with a mean of 4.6341 and a very strong and positive correlation standard deviation of 0.48463.

Findings on health and safety working conditions on employee performance

The results revealed that the majority of respondents strongly agreed with a mean of 4.6707 and with a positive correlation stand deviation of 0.47284; the second item shows on they office is well ventilated, respondents strongly agreed with a mean of 4.1220 with a positive low standard deviation of 0.32924. On the third item regarding how comfortable work space and furniture, most of respondents strongly agreed with a mean of 4.0732 and a positive and strong standard deviation of 0.74999. Respectively on items adequate and clean toilet facilities in my office (4.2439 of mean and 0.43208 standard deviation), item on temperature in office is appropriate and comfortable (mean of 4.6341 and standard deviation of 0.48463), item on overall work environment is hygienic and health (mean of 3.2195 and stand deviation of 1.34278), on item of is adequate power supply in my office (mean of 2.9512 and standard deviation of 1.35617), on item of Safety and security facilities are always available at ENGIE(mean of 2.2927, standard deviation of 1.35617), on item of good and effective communication (mean 2.3537 and

standard deviation of 0.98598); on item of first aid box which is provided in the office at ENGIE energy access (mean of 4.0244 and standard deviation of 1.03011). Finally regarding the workplace is well cleaned, the majority of respondents strongly agreed with a mean of 4.4024 and with a very positive strong correlation standard deviation of 0.95400

Findings on safety risk management on employee performance

The results revealed that the majority of respondents on the first item on unsafe working conditions are identified and improved promptly at ENGIE energy access with a mean of 4.3902 and a strong and positive standard deviation of 0.87144; the second item of how ENGIE energy access maintains excellent housekeeping, respondents strongly agreed with a mean of 4.0976 and with a positive low correlation of 0.29855. The third item on how equipments are well maintained, respondents strongly agreed that with a mean of 4.3293 and a very positive and strong correlation of 0.91698. On the fourth item regarding how action is taken when safety rules are broken at ENGIE company, respondent agreed with 4.0366 and a very low correlation stand deviation of 0.36667. The next item on how supervisors confront and correct unsafe behaviors and hazards when they occur in the company, the majority of respondents strongly agreed that with a mean of 4.1829 and with a positive strong correlation standard deviation of 0.80320. On the last item, respondents were asked if the supervisors or managers are trained in job hazards and safe work practices, most of them strongly agreed that with a mean of 4.1829 and a standard deviation of 0.80320.

Findings on Organizational Hazard Prevention on employee performance

The results showed an overall weak mean of 296 meaning that OHP affect employee at low extent. The first item as the Filed Workers use safety equipment in ENGIE energy access, and it proves that respondents are agreed with mean of 3.6707 then for positive and very high correlation with standard deviation of .84990; the second item showed that Only those

specifically assigned workers with proper safety equipment have access to serious hazardous places in ENGIE company, and it is approved by respondents that are only agreed with mean of 3.9390 with positive and high correlation of standard deviation as .0.80657; the third item as deficiencies or mistakes revealed during internal audits for safety & health are monitored, and it proves that respondents are disagreed with mean of 2.0732 and positive and very correlation standard deviation of .97854. The fifth item as appropriate waste disposal is underway in workplace, and it approves that respondents strongly agreed with a mean of 1.3049 and a positive significant correlation standard deviation of .53723.

Conclusion

The regression analysis gives the value for multiple R, and the adjusted R is 0.670^a whereas R square is 0.448. This shows that the predictors Occupational health and safety practices (Employee working condition, Safety procedures and risk management, Occupational hazard prevention) performance is constant. This is frequently used to describe the goodness of fit or the amount variance explained by a given set of predictor variables and its value is 42 % of the variance in the dependent variable is explained by independent variables in the model.

Therefore, the study concluded that health and safety practices including health and safety training, health and safety working conditions and safety procedures and risk management have positive significant effect on employee performance at ENGIE energy access. This implies that employees can perform well when they feel safe being at a work place, surrounded by a positive working conditions such as hygienic, ventilated and less noises, aware of the safety rules and safety procedures being adhered but regarding organizational Hazard Prevention, the company still needs to make improvement so that it can improve productivity of the company.

Based on the findings and conclusion researched, the following recommendations were addressed to:

- i. Firstly, regular trainings on matters concerning occupational health and safety should be emphasized in order to increase awareness of employees on how to protect themselves at workplaces.
- ii. Secondly, specifically assigned workers with proper safety equipment should have access to serious/likely hazardous places in ENGIE energy access.
- iii. Thirdly, the company should maintain health and safety working condition at workplace, giving much emphasis in building ventilation facilities, maintaining hygienic working environment and control noise pollution at the offices available in the factory.
- iv. Fourthly, disciplinary actions should be taken to employees who break safety rules and procedures at the factory in order to mitigate negative effects such as accidents and occupational illness.
- v. Finally, management of ENGIE energy access should provide sufficient personal protective equipments. Such equipments should include waterproof aprons, eye goggles, all necessary personal protective equipment, health and safety devices and safety tools, equipment and machinery.

This study opens avenue for further study as interested researchers can use the findings from this study as baseline information to conduct similar research in other manufacturing companies in other geographical areas. Since that this study was conducted at manufacturing company, other interested researchers can conduct this study to government owned companies dealing with energy such the Energy Utility Corporation Limited. (EUCL). Finally, future researchers can incorporate employee health as a mediating variable in linking the relationship between health and safety practices and employee performance

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