

Influence of Training on Occupational Safety and Health Compliance for the Construction Projects in Embakasi South Nairobi City County

Phires Mokeira Abaya¹

Jomo Kenyatta University of Agriculture and Technology
Master of Project Planning and Management

Stephen Ondieki²

University of Nairobi
Master of Construction Project Management

Abstract:- Occupational Safety and Health remains a chief concern for humanity in the World. Human beings risk exposure to irritants like chemicals, risk of injuries through running conveyer belts, falling objects, injurious exposure to radiant, exposure to dangerous gases, slippery floors and any other injurious incident. It is prudent for an employer to provide safe working environment frees from any form of dangers. On the other hand, employees are expected to maintains a secure and safe workplace by strictly complying to Occupational Safety and Health legal provisions. The purpose of this study was to determine how training influence occupational safety and health compliance of the construction projects in Embakasi South of Nairobi City County, Kenya. This study was anchored on the Systems Theory that clearly guided the researcher to understand the interrelations between the systems in the construction sector and how they influence implementation of OSH guidelines. Secondary data was sourced from journals, books and digital repositories. Primary data was collected by use of questionnaire tools that were issued to the respondents to fill. The study targeted 400 construction workers in 20 registered sites in Embakasi South. The researcher used purposive simple random sampling to arrive at 10 active construction sites within which the researcher carefully selected 4 respondents from each of the 10 sites giving a total sample size of 40 respondents. 40 questionnaires were issued to the respondent and were all filled and returned back to the researcher giving an instrument return rate of 100%. The returned questionnaires were processed, analyzed and presented in forma of tables, pie charts and bar graphs. Inferential analysis was done using Chi-square model to establish the statistical significance of the variables. The findings indicated that, employees' induction and level of education of employees influence to a larger extent the occupational safety and health compliance of the construction project. The researcher advocates related studies to be carried out in order to contribute in building the body of knowledge.

Key words: Training, Occupational Safety and Health, Compliance

1.1 INTRODUCTION

Occupational health and safety remain one of the most important aspects of human concern in the world. It aims an adaptation of working environment to workers for the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations. The occupational health and safety, as a global issue, is now taking a new turn (Takele and Mangesha, 2006). On the sama note Mwaruta (2013) connotes that Occupational Safety and Health (OSH) is generally defined as the Science of the Anticipation, recognition, evaluation

and control of hazards arising in or from the workplace that could impair the health and well-being of workers, taking into account the possible impact on the surrounding communities and the general environment. Some 160 million workers suffer from work-related diseases and about two-thirds of those are away from work for four working days or longer. After work-related cancers, circulatory diseases and certain communicable diseases, accidental occupational injuries are the fourth main cause of work-related fatalities.

According to Musyoka (2014) Health and Safety training Programmes are concerned with protecting employees and other people affected by what the organization produces and does. It aims at protecting employees against the hazards arising from their employment or their link with the organization. Occupational Health Training Programmes deals with the prevention of ill-health arising from working conditions. They consist of two elements, occupational medicine which is a specialized branch of preventive medicine concerned with diagnosis and prevention of health hazards at work and dealing with any ill health or stress that has occurred in spite of the preventive actions. Occupational hygiene which is a province of chemists and the engineer or ergonomist engaged in the measurement and control of environmental hazards (Armstrong, 2006).

According to Mutuma (2009) Some of most common and dangerous construction activity in regard to face and eye protection is welding operations. Welding operations poses great danger since the intense light associated with it can cause serious and sometimes, permanent eye damage if operators do not wear proper eye protection. The intensity of light or radiant energy produced by welding, cutting or brazing operations varies according to a number of factors including the task producing the light, the electrode size and the arc current. Mwangi (2016) Connotes that the construction industry has a disproportionately high percentage of injuries and fatalities, accounting for almost 20% of the fatalities of all industrial workers but employing only 6-8% of the industrial work force. It is important to acknowledge the fact that the construction industry accounts for nearly 15 % of the workers compensation injuries. Of all the injuries and deaths occurring on construction sites, negligence is the single largest cause, accounting for almost 38% of the construction worker deaths (Nyakango, 2005). Occupational health and safety is a cross-disciplinary area concerned with protecting the safety, health and welfare of people engaged in work or employment. The goal of all

occupational health and safety programs is to foster safe work environment. As a secondary effect it may also protect co-workers, family members, employers, customers, suppliers, nearby communities and other members of the public who are impacted by the work place environment. Occupational health and safety encompass the social, mental and physical well-being of workers, that is, the “whole person” (Nyambu, 2011).

Globally, developed countries like in USA, United Kingdom, India and Australia, research has revealed that such states have best technological, legal, structural and competent human resource that foster OSH compliance over 75% unlike the developing states. On the same note, a study by Makori et al (2012) revealed that variables such as work conditions such as temperatures, fire, noise, workspace, staircases, floors and drinking water negatively affected employees’ work and ultimately organizational performance. It was noted that fire, noise along with temperatures in some firms exposed workers to untold sufferings. The risks involved while working in such workplace environment caused firms to incur huge losses in treating and compensating workers affected by the hazards. Compliance to OSH provisions greatly reduces any fatalities that is subject to arise at the workplace.

In African states such as Nigeria, Namibia, Ghana, and Uganda a study by Manduku (2015) revealed that OSH compliance in Africa is a challenge due to the fact that, implementation of OSH provisions by the responsible agency is thwarted because of poor technology, inadequate training provided to the relevant stakeholders’ concerns, bribery and corruption predominant in the African continent thus compromising the OSH standards hence leading to fatalities.

Training takes a central stage in ensuring occupational Safety and Health compliance at the workplace (Ondieki, 2016). Moreover, Armstrong (2010), connotes that managers have a vital role in helping their people to learn and develop. Most learning takes place on the job but it will be more effective if managers provide the coaching, guidance and support people’s needs. To do this they need to know about induction training, how to ensure continuous learning and personal development planning processes. In induction training you are involved in helping people to learn every time you welcome new employees, plan how they are going to acquire the knowhow required, preferably as recorded in a learning specification, provided for them to carry out and see that the plan is implemented.

In Kenya, OSH is managed by the Directorate of Occupational Safety and Health Services (DOSHS). DOSHS is the designated national authority for collection and maintenance of a database, and for the analysis and investigation of occupational accidents and diseases, and dangerous occurrences. The Directorate’s policy and legal mandate are provided by the National Occupational Safety and Health Policy of 2012, OSHA 2007, and WIBA 2007 (International Labour Organization, 2013; Maina, 2014).

Safety issues have gained vital importance throughout the construction industry. Many construction companies around the world are implementing safety, health, and environmental management systems to reduce injuries,

eliminate illness, and to provide a safe working environment in their construction sites. Construction managers and professionals require careful management and development if they are to contribute positively to organization performance and effective implementation of its projects with high long-term retention of profits and workplace safety. In spite of the successful approach to expansion projects in Kenya, a myriad of challenges is facing its implementation and assuming the important factor of OSH. This involves environmental sustainability of the project where strive to achieve the set long term goals is hacked by short term economic consideration (Maina, 2014).

In Nairobi, Maina established that almost 90% of the land in Nairobi is invested on housing and roads. He further indicates that it is the county in Kenya that has the leading construction sites. Among the many construction sites few of those observe strictly the OSH rules at the workplace. If employees are to make the maximum contribution to safety and health, adequate arrangements must be in place to ensure that they have the necessary skills to do their work safely. This means more than simply training. Experience of applying skills and knowledge is an important ingredient and needs to be gained under adequate supervision. Managers should know the relevant legislation and be able to manage safety and health effectively. All employees need to be able to work in a safe and healthy manner. It is also necessary to check the abilities of contractors where they work close to, or in collaboration with, direct employees (Thomas 2006).

If employees are to make the maximum contribution to safety and health, adequate arrangements must be in place to ensure that they have the necessary skills to do their work safely. This means more than simply training. Experience of applying skills and knowledge is an important ingredient and needs to be gained under adequate supervision. Managers should know the relevant legislation and be able to manage safety and health effectively. All employees need to be able to work in a safe and healthy manner. It is also necessary to check the abilities of contractors where they work close to, or in collaboration with, direct employees (Thomas 2006).

There is an urgent need to ensure that OSH compliance is achieved in order to reduce human dangers at the workplace. In addition, Mutuma (2009) provides that though Directorate of occupation health and safety services is the enforcing agent, the responsibility for use of Personal Protective Equipment (PPE) on construction site should lie principally with the contractors, employers and workers. This responsibility must be embedded in the management culture and practices of all organizations involved in the planning and execution of construction operations for successful safety programs specially workers training in relation to the use of PPE.

Embakasi South is one of the rapidly growing areas in Nairobi City County in the construction perspective. Many construction sites are active and others have completed. However, there are those which have stalled due to financial constraints or not meeting legal requirements. OSH compliance has a direct relationship with the training programs based on safety and health. Therefore, it is an OSH

requirement that every individual on site ought to be trained on how to ensure eye to face protection, hearing protection, respiratory protection, hand and arm protection, foot and leg protection, head protection and general body protection. It is on this valid ground that the researcher found a valid gap that need to be bridged.

2.1 GENERAL OBJECTIVE

The overall objective of this study was to determine the influence of training on occupational safety and health compliance of the construction projects in Embakasi South of Nairobi City county, Kenya.

2.2 Specific objectives

This study was guided by the following objectives:

1. To establish how employees' induction influence occupational safety and health compliance of the construction projects in Embakasi South of Nairobi City county, Kenya.
2. To assess the extent to which education level of employees' influence occupational safety and health compliance of the construction projects in Embakasi South of Nairobi City county, Kenya.

3.1 LITERATURE REVIEW

Occupation safety and health training is very important during and after implementation of any project in order to increase compliance and reduce fatality (Lango, 2015). Training is important for any Personal Protective Equipment (PPE) program so as to at least cover aspects such as; when is PPE necessary, what PPE is necessary, how to properly put on, take off, adjust and wear the PPE, proper care, maintenance, useful life and disposal of PPE. However, studies by Mutuma (2009) reveals that, construction workers are not always provided with information and training on how to work correctly and safely with use of PPE, and opportunities to learn through practice may be withheld. Training can be done on an individual basis or in-group meetings. Training programs should reemphasize the major goals of the program and reinforce the fact that engineering controls have been considered as the primary prevention strategy. It is not good enough to tell someone to wear a respirator just because management and/or legislation require it. If the respirator is intended to prevent lung disorders, the workers should be informed of the hazards. Moreover, most exposures can be eliminated or minimized through mechanization, improvement of ergonomics, and better organization of work and training (Takale and Mengesha, 2006).

Occupational injuries, illness and even deaths are serious public health concerns. Everyone must work to earn a living. All of us must also work for economic development of our countries. This means that people spend most of their lifetimes working and in their work places, some five and others six days in a week. The work environment is therefore very important as it is the commonest setting in which occupational injuries, illness and even deaths occur. Yet, studies have shown that more than 90% of these injuries are preventable by the adoption of safety measures, appropriate and consistent use of PPE (Chepkener, 2013). Stake holders in the construction industry such as developers, contractors,

labor unions, training programs, manufacturers, and employees working in the construction industry have to cope with making decisions based on intuition and limited knowledge or awareness of the various types of personal protective equipment and clothing to undertake different construction trades (Mutuma, 2009). The study looks into the influence of induction and level of education of employees on occupational safety and health compliance for the construction industry as discussed below:

3.1.1 Employees' Induction and OSH compliance

Induction of employees is anchored in the National laws or regulations shall provide that workers shall have the right and the duty at any work place to participate in ensuring safe working conditions to the extent of their control over the equipment and methods of work and to express views on the working procedures adopted as they may affect safety and health and comply with the prescribed safety and health measures (Kirombo, 2012).

The Kenya Association of Building and Civil Engineering Contractors which is a body bringing together registered member building contractors should make the cue for its members to embrace health and safety matters by providing the relevant training and induction programs. Members could also be encouraged to seek ISO certification such as OHSAS – 18001, which is an Occupational Health and Safety Assessment series for health and management systems intended to help organizations control occupational health and safety risks in the work place. Another is ISO 9001:2008 Standard, which is a 3rd Party Certification on Quality Assurance through effective policies, practices and procedures and bench marking with best practice elsewhere. Making the 3rd Party Certification mandatory for registration as a contractor will give a positive boost to implementation of occupational safety and health in the construction industry (Kirombo, 2012).

According to Ondieki (2016) training and induction forms an important aspect in the implementation of occupational health and safety measures given the fact that training imparts information and instruction about work thus ensuring that persons engaged to undertake a particular task have a basic knowledge of preventive measures needed to address possible hazards. The study indicates that the category of workers most affected by accidents in construction sites are the unskilled labourers which confirms the fact that most accidents are a result of low skill and competence, tiredness, boredom, low morale and individual medical problems among other personal factors. Training and inductions in construction sites should therefore target this work category in order to reduce errors and mistakes by providing relevant information, instruction and training so as to improve the implementation of health and safety measures in the construction industry.

The safety training should outline the preventive and protective measures to the effect that appropriate precautions shall be taken to ensure that all workplaces are safe and without risk of injury to the safety and health of workers. Emphasis is also made in so far as information and training is concerned to the effect that workers shall be adequately and suitably informed of potential safety and health hazards to which they may be exposed at their work

place and instructed and trained in the measures available for the prevention and control of, and protection against, those hazards. Reporting of accidents and diseases is important, hence national laws or regulations shall provide for the reporting to the competent authority within a prescribed time of occupational accidents and diseases. On implementation the convention directs that each member shall take all necessary measures, including the provision of appropriate penalties and corrective measures, to ensure the effective enforcement of the provisions of the Convention and provide appropriate inspection services to supervise the application of the measures to be taken in pursuance of the Convention and provide these with the resources necessary for the accomplishment of their task, or satisfy itself that appropriate inspection is carried out (Kironbo, 2012).

According to Abuga (2012) workplace injuries can force employees to miss shifts, or slow down their performance because they are not physically capable of maintaining their typical pace. Long-term unsafe work conditions cause long-term consequences such as repetitive stress injuries or respiratory ailments from breathing unsafe particles without proper protection. These conditions interfere with an employee's ability to perform a job for long term, increasing turnover and forcing your company to waste valuable time training replacements. Health and safety prevention and intervention programmes play a critical role on employee's performance as these types of programmes can improve the physical and psychological well-being of the workforce, which in turn reduces absenteeism and presenteeism. Such programmes improve the organizational climate, which enhances employees' desire to work and directly raises human performance. Improved organizational climate, morale, and employment relationships as well as higher profits have the potential to reduce the health and safety risks (Oxenburgh, et al, 2004).

Safety induction primarily deals with the development of the mind, the broadening one's knowledge and understanding in a particular area. For example, developing safety mindedness, that is a creation of awareness of the importance of eliminating accidents and development of mental awareness in recognizing and correcting conditions and practices that might lead to injury (Ndege, 2003).

Researchers (Nyambu, 2011; Nyakango, 2011) established that employee induction boosts workplace morale over 70%. In nutshell, increased moral reduces workplace stress, accidents and improves OSH compliance levels. However, Ondieki (2016) disputes in his research that, even though induction is done still the level of compliance of OSH still remains a college due to improper procedures of carrying out the induction process. It is on this ground that the researcher set a center stage further re-examining induction as a factor that influence of OSH compliance.

3.1.2 Employees' Level of education and OSH compliance

The ability to read or write greatly attributes to OSH compliance because of literacy and ability to read OSH instructions and obeying safety and health commands (Nyakango, 2011). Studies by Nyambu (2011) have also concurred that the higher the level of education the greater the OSH compliance.

Research by Kyalo (2016) reveals that, the training strategies that are used to enhance the level of use of PPE, on job training was rated the highest (68%) followed by apprenticeship (62%) with college/university being rated lowest at (28%). In regard to the frequency of use of PPE, majority of the workers (36%) did not remember the last time they used PPE, with only (27%) reported to using PPE often and only (9%) were using PPE very often and consistently. On the same note, (2004) concurs that, bigger firms had better safety performances. This was attributed to formal safety programmes as evidenced by prevalent use of accident reports, more formal training for new employees and safety personnel, more extensive use of safety incentives and more rigid company requirements on general safety.

A study by Ndege (2004) targeting the level of employee education influence safety at workplace established that, a total of 76.47% of the foremen surveyed had attained secondary level of education and 23.53% primary education level. Regarding skills, a total of 88.24% of the foremen surveyed indicated their skill status as skilled while, interestingly, 11.76% of the foremen surveyed indicated their status as semi-skilled. Most of the foremen (62.5% of the sample) had acquired their skills through on-job training, 25% through formal training and 6.67% through both informal apprenticeship and family business. A total of 82.35% of the sampled foremen, including some of the semi-skilled, indicated training apprentices.

The level of education is congruent to skill acquisition (Ondieki, 2016). Ondieki further indicates that the higher the level of knowledge gained the better the compliance levels. Conceptual skills, human relation skills and technical skills are important at the workplace.

3.2 Theoretical framework

This research is theoretically grounded on the systems theory. This model is ideal since they support the influence of the independent variables on the dependent variable under study.

3.2.1 Systems Theory

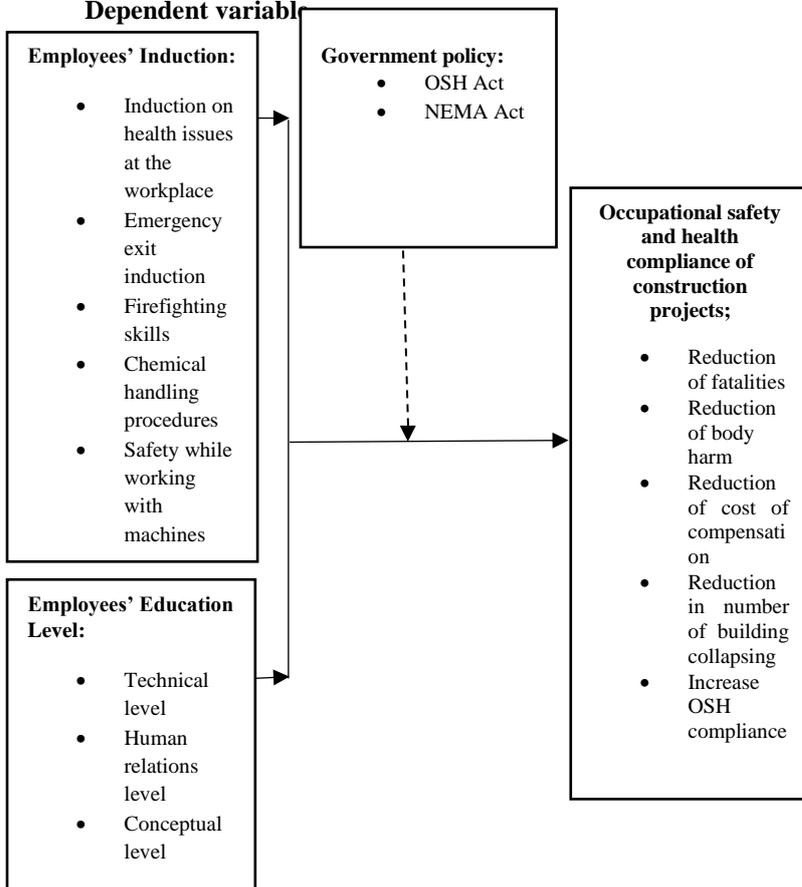
Ondieki (2016) analysed Systems theory and pointed out that it describes the interrelatedness of all parts of an organization and how change in one area can affect multiple other. The origin of systems theory is that all the components of an organization are interrelated, and that changing one variable might impact many others (Maignan *et al.*, 2012). Walker and Brammer, (2009) organization act as systems interacting with their environment. Any equilibrium is constantly changing as the organization adapts to its changing environment. Construction projects are viewed as open systems, continually interacting with their environment. They are in a state of dynamic equilibrium as they adapt to environmental changes. System theory views organizational structure as the established pattern of relationships among the parts of the organization (Lozano & Valles, 2013). Of particular importance are the patterns in relationships and duties. These include: Integration (the way activities are coordinated); Differentiation (the way tasks are divided); the structure of the hierarchical relationships (authority systems); and the formalized policies, procedures, and controls that guide the organization (administrative systems) (Lango, 2015).

When the structures of any construction project within and outside a system interrelate well, any form of compliance is achieved. Therefore, to achieve OSH compliance in the construction industry, systems and subsystems should be cultured in a manner that can give a good working environment. Effective communication through provision on safety instruction materials, clearly labelling the chemicals, providing machine user manuals, provision of personal protective gears like: helmets, boots, dust masks, gloves, googles, overalls and putting barriers on conveyer belts will foster reduction of fatalities and enhance compliance (Mwangi, 2016).

The systems theory acknowledges that occupational safety and health projects requires a employees' to be trained, effective communication to be done based on the emergency exits and by giving the employees with protective gears (Otieno et al., 2010).

3.3 Conceptual Framework

Independent variable Moderating Variable
 Dependent variable



Source: Researcher (2021)

Figure 1 : Conceptual framework showing the inter-relationship between the variables

4.1 RESEARCH METHODOLOGY

The current research used descriptive research design to describe the characteristics of the variables and at the same time investigate the cause effect relationship between variables (Saunders, Lewis and Thornhill, 2007). This research design offered the researcher the opportunity to establish the relationship between independent variables and

dependent variable. According to Mugenda and Mugenda (2003) this design is economical and allows collection of quantitative data from a sizeable population.

4.2 The Population

A population refers to all items or people under consideration in any field of inquiry (Orotho, 2004). According to Nairobi City county physical planning office (2019) there were 20 registered active registered construction in Embakasi South Constituency of Nairobi county, Kenya. The 20 registered construction sites have an average of 20 worker each giving a total of 400 workers. Since it was difficult to study the total population due to its large size, limitation of time and resources, the study population consisted of 10 sites were selected and in each 4 respondents through purposive random sampling procedure to arrive at a sample size of 40 respondents as explained below in the sample size determination.

4.3 Sample size determination

Sekaran (2003) defines a sample as subgroup or subject of the population. The assumption in studying samples is that the characteristics of the sample will adequately reflect the characteristics of the population in question and the researcher should be able to draw conclusions that would be generalized to the population of interest (Gary, 2009; Mugenda, 2008); Sekaran, 2003). There are 20 active sites in Embakasi South, the researcher through purposive random sampling selected 10 most active sites and further selected 4 respondents from each of the 10 sites thus giving a sample size of 40 respondents to represent the entire population of 400 workers.

4.4 Data Collection method

Data was collected by use of a self-administered structure questionnaire. The questionnaire was developed based on review of studies related to occupational health and safety. The questionnaire contained open ended, closed ended questions and likert scales. Open ended questions allowed the respondent to answer the questions in any way they chose while closed ended questions asked the respondents to make choices among a set of alternatives given by the researcher (Senkaran, 2003; Kothari, 2006). The likerts were used to measure the employees' opinions, perception, feelings and attitudes (Mugenda & Mugenda 2003).

5.1 RESULT

5.1.1 Background of the Respondents

The researcher established the characteristics of the respondents who participated in the study and the results are given in table 1

Table 1 Characteristics of the Respondents

Gender	Frequency	Percent
Male	30	75
Female	10	25
Total	40	100.0
Age		
Below 25 years	3	7.5
26-35	20	50
36-45	7	17.5
46-55	6	15
56 and above	4	10
Total	40	100.0
Education Level		
Degree	10	25

Diploma	20	50
Certificate	3	7.5
Secondary	7	17.5
Total	40	100.0

Table 1 shows the gender, age and education level of the respondents who participated in the study. Out of the 40 actual respondents, 30 (75%) were males while 10(25%) were females, a disparity that could primarily be a reflection of the normal gender disparity in the country coupled with the fact that construction industries are male dominated due to the nature of work involved as clearly expressed in figure 1 below:

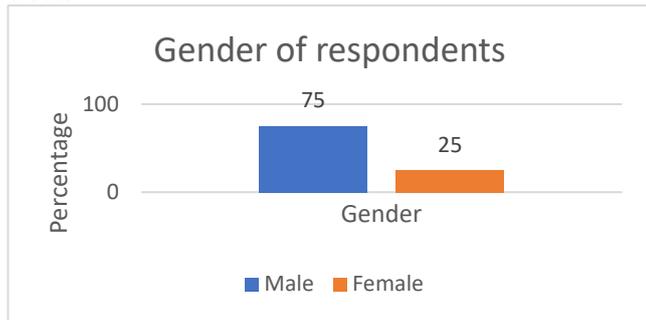


Figure 1 showing the gender of respondents

The age of the respondents ranged between 25-56 years with the majority respondents falling between the age of 26-35(50%) and 36-45(17.5%) years. This was expected as it is at this point of career life that most workers start entering into supervisory and management positions; again, in some of the construction companies the persons who were in charge of occupational health and safety were either chairpersons of OSH committees or other employees deployed into the position at a supervisory level as shown in the figure 2 below:

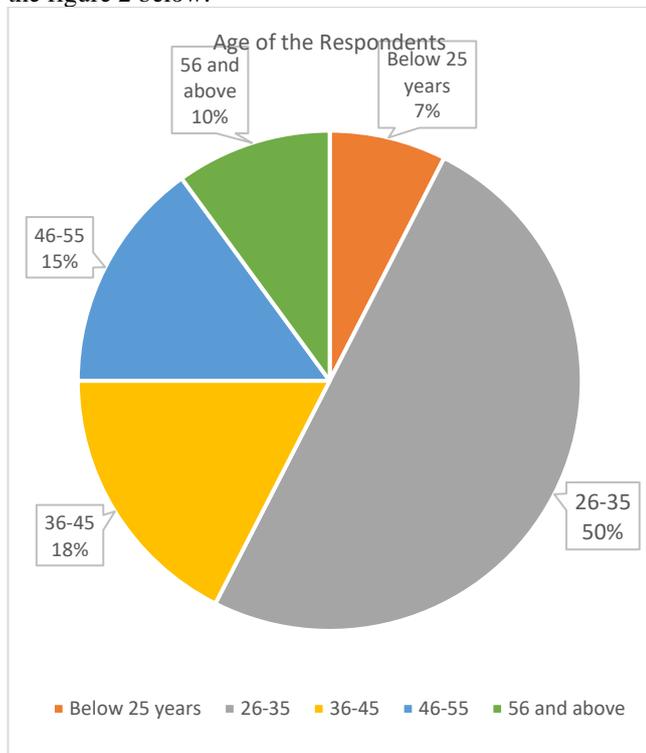


Figure 2 showing the age of the respondents

The study findings show that majority of the respondents were of diploma and degree level of education rated as 50 % (20) and 25% (10) respectively. The minority 7.5% (3) and 17.5% (7) held certificate and secondary qualifications respectively as expressed in the figure 3 below:

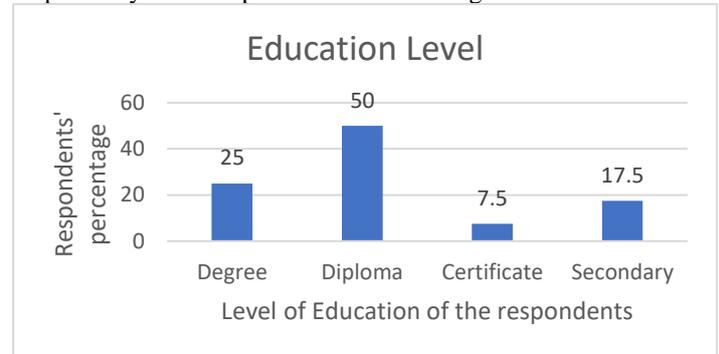


Figure 3 showing the level of education of the respondent who took part in the study.

Those with degree qualification were majorly in management and occupational health and safety positions. However, there were diploma holders who still held those senior positions with a staggering number of certificates and secondary level education holders deployed into health and safety positions as supervisors. The level of education was significant in this study because it was an indicator of the management commitment to health and safety going by the intellect of the person it had charged with the responsibility of health and safety.

5.1.2 Descriptive analysis

The study sought to find out whether employees training on occupational safety and health issues influences compliance for the construction projects. This section provides an explanation of the descriptive statistics on the study variables. To a greater end the study provides a descriptive analysis of the respondents' views on the overall issue of training on OSH compliance on the basis of variables in the study: Extent to which Employees' induction influence occupational safety and health compliance in the construction projects; Extent to which employees' level of education influence occupational safety and health compliance in the construction projects.

5.1.2.1 Descriptive Analysis for Independent Variables

Opinions were sought on the influences of training on Occupational Safety and Health compliance of the construction projects in Embakasi South of Nairobi City County. Findings showed that, in Nairobi City County to be more specific in Embakasi South Constituency, workers in those construction sites still stand at a risk of fatalities due to poor implementation of OSH regulations. However, over 90 percent of the respondent concurred that OSH based training on matters of safety in handling machines, equipment, running conveyor belts, risk of falling objects, explosion of chemicals, exposer to dust and high vibrating sounds and health at the workplace is very vital.

This study concurred with the study which was carried by Kiroombo (2012) which established that safety training spells out the rules and provides information on potential hazards and how to avoid them. It is part of a preventive program done through: Induction course; Transfer to new job or

change in working methods; Refresher course and training should be provided to deal with aspects of health and safety to employees. In addition, Kirombo, further established Training and inductions in construction site workplace helps inculcate in employees a positive health and safety culture. Preventive training and induction procedures in the workplace environment are important tools in preventing accidents at work. All new employees should receive a full induction as soon as possible after starting a new site so that they are made aware of potential hazards and given instruction on how to avoid the possible risks. Construction sites pose a large variety of risks, making the possibility of an accident quite high due to, changes in job responsibilities, the introduction of new work equipment, introduction of a new system of work, or even the employment of more vulnerable persons such as young and disabled. Working with dangerous equipment, working around hazardous and unstable materials or simply putting your body through demanding work and strain could lead to a construction accident. (Hughes & Ferret 2008)

The findings based on the influence of employees' induction on safety issues and OSH compliance as well as the influence of employees' level of education and OSH compliance revealed that those two factors influence OSH compliance of the construction projects to a greater extent as it was rated by the respondents who participated in this study as described in the table 2 below.

Table: 2 Descriptive Statistics on Training of employees

Areas	Not At All	Small Extent	Moderate Extent	Large Extent	Very Large Extent
Extent to which Employees' induction influence occupational safety and health compliance in the construction projects	0%	7.5%	17.5%	50%	25%
Extent to which employees' level of education influence occupational safety and health compliance in the construction projects	5%	2.5%	25%	17.5%	50%
	0	3	7	20	10
	2	1	10	7	20

The results showed that 92.5% of the respondents agreed that induction of employees on occupational safety and health issues greatly influence OSH compliance of the construction project whereas, 7.5% of the respondents concurred that employees' induction influence occupational safety and health compliance of the construction project at a small extent.

On the variable whether the level of education of employees influences occupational safety and compliance of the construction projects, the study revealed that 50% of the respondent rated it as 'very large extent', 'Large extent' (17.5%), 'Moderate Extent' (25%), 'Small Extent' (2.5%) and 5% of the respondents gave a 'Not at All' extent. Therefore, findings of this study holds that both induction and level of education of employees' influence OSH compliance of construction projects over 90%.

5.1. 3 Inferential analysis Using Chi-square method

5.1.3.1 Chi-square test on the relationship between employees' induction and OSH compliance

Respondents who participated in an interview gave their views and rating of influence of employees' induction on OSH compliance for the Construction projects. The findings from key informants were used to test hypothesis are as follows:

H₀: There is no significant relationship between employees' induction and OSH compliance for construction projects

H₁: There is a significant relationship between employees' induction and OSH compliance for construction projects

Using the chi-square test of the statistics availed the results table 4.

Table 3: Showing chi-square testing on the influence of employees' induction on OSH compliance

	O	E	O-E	$\frac{(O - E)^2}{E}$
Not at All	0	20	-20	20.00
Little Extent	3	20	-17	14.45
Moderate	7	20	-13	8.45
Large Extent	20	20	0	0.00
Very large Extent	10	20	-10	5.00
				$\frac{\Sigma(O-E)^2}{E} = 47.90$

$F = n-1 = 5-1 = 4$; where F is degree of freedom.

$\chi^2 C = 47.90 > \chi^2 = 9.488$ at 4 degrees of freedom and 5% level of confidence.

Since the calculated chi-square value of 47.90 is greater than the critical chi-square value at 5% level of confidence, we reject the null hypothesis. Thus, there is significant relationship between employees' induction and OSH compliance for construction projects in Embakasi South of Nairobi City County.

5.1.3.2 Chi-square test on the relationship between employees' level of education and OSH compliance

Respondents who participated in an interview gave their views and rating of influence of employees' level of education on OSH compliance for the Construction projects. The findings from the respondents were used to test hypothesis are as follows:

H₀: There is no significant relationship between employees' level of education and OSH compliance for construction projects

H₁: There is a significant relationship between employees' level of education and OSH compliance for construction projects

Using the chi-square test of the statistics availed the results table 4.

Table 4: Showing chi-square testing on the influence of employees' level of education on OSH compliance for Construction projects

	O	E	O-E	$\frac{(O - E)^2}{E}$
Not at All	2	20	-18	16.20
Little Extent	1	20	-19	18.05
Moderate	10	20	-10	5.00
Large Extent	7	20	-13	8.45
Very large Extent	20	20	0	0.00
				$\frac{\Sigma(O-E)^2}{E} = 47.70$

$F = n - 1 = 5 - 1 = 4$; where F is degree of freedom.

At 5% level = 9.488

Calculated value = 47.70

The standard table of χ^2 gives a value of 9.488 at 5% level with 4 degrees of freedom. Yet the calculated value is 47.70 which is higher than the table value. we reject the null hypothesis. Therefore, there is significant relationship between employees' level of education and OSH compliance for construction projects in Embakasi South of Nairobi City County.

5.2 CONCLUSIONS

Safety related training not only reduces fatality and accidents but also builds employees' confidence, boosts the employees' morale, results to gaining of skills to deal with emergency situations, conduct basic firefighting techniques, knowing danger zones and managing stress at the workplace. Induction also increases employee competence thus promoting performance and occupational safety and health compliance.

Induction and level of education form an important aspect in the implementation of occupational health and safety measures given the fact that training imparts information and instruction about work thus ensuring that persons engaged to undertake a particular task have a basic knowledge of preventive measures needed to address possible hazards. The study indicates that the category of workers most affected by accidents in construction sites are the unskilled labourers which confirms the fact that most accidents are a result of low skill and competence, tiredness, boredom, low morale and individual medical problems among other personal factors. Training and inductions in construction sites should therefore target this work category in order to reduce errors and mistakes by providing relevant information, instruction and training so as to improve the implementation of health and safety measures in the construction industry. Hypothesis testing result also attest to the fact that increased OSH awareness through training and

inductions will help reduce the levels of accidents in construction sites thus achieving compliance.

6.0 REFERENCE:

- [1] Abuga, G. (2012). Effects of Occupational Health and Safety Programs on Employee Performance (A case study of Pyrethrum Board of Kenya): MBA thesis for Kenyatta University.
- [2] Armstrong, M. (2006). *Human Resources Practice*, Kogan, 10th Edition, London
- [3] Chepkener, A. C. (2013). *Knowledge, Attitude and Practice of Eye Safety among Jua Kali Industry Workers* in Nairobi, Kenya.
- [4] Kirombo, H. M. (2012). *Factors affecting implementation of Occupational health and safety measures in the construction industry: The case of Mombasa County*, Kenya: MPPM thesis of The University of Nairobi
- [5] Lango, O., B. (2015). Critical Factors Influencing Success of Fire Safety Projects: A Case Study of Kiambu County Fire Stations). *International Journal of Social Sciences and Entrepreneurship*, 3 (1), 186-220
- [6] Maina, H. W. (2014). *Evaluation of Occupational Safety and Health in Construction Projects; in Nairobi County*: University of Nairobi Project Report.
- [7] Makori E. M. et al. (2012). *Influence of occupational health and safety programmes on performance of manufacturing firms in western province, Kenya*. Masinde Muliro University of science and technology. African Journal of History and culture. Vol 4(4), pp 46-58.
- [8] Manduku, F. M. (2015). *Extent of the Implementation of the Occupational Safety and Health Act 2007 in The Sarova Group of Hotels in Nairobi*: MBA thesis of The University of Nairobi.
- [9] Mugenda O.M., Mugenda A.G., 2003. *Research Methods: Quantitative and Qualitative Approaches*, Acts Press Nairobi, Kenya
- [10] Musyoka, R. S. (2014). *Relationship Between Health and Safety Programmes and Performance of Manufacturing Firms in Mombasa County, Kenya*; MBA thesis of The University of Nairobi
- [11] Mutuma, N. K. (2009). An Investigation into the Provision of Personal Protective Equipment (PPE) to Construction Workers and its Enforcement Mechanisms. A Case Study of Construction Projects in Nairobi Area.
- [12] Mwangi, S. N. (2016). *An Investigation of the Causes of Accidents and Health Hazards on Construction Sites and Their Management in Kenya (Case Study of Nairobi County)*; Master of Construction Management thesis of the University of Nairobi
- [13] Mwaruta, S.S. (2013). *Effect of Occupational, Safety and Health Administration Practices on Employee Performance in Machakos County, Kenya*: MBA thesis of Kenyatta University
- [14] Ndege, R. O. (2004). Safety Awareness in Informal Construction Sector: A Case Study of Nairobi City: Master of Arts in Construction Management thesis of The University of Nairobi.
- [15] Nyakango, J.B. (2011). *Status of Occupational Health and Safety in Kenya Workshop on IUPAC-NESCO-UNIDO Safety Training Programme*, part of IUPAC Congress in Beijing, China
- [16] Nyambu, C. (2011). *Perceived Relationship Between Occupational Health and Safety and Organizational Commitment: A Case of Mombasa Oil Refineries* (Unpublished MBA research project). University of Nairobi.
- [17] Ondieki, S. (2016). Influence of work environment on project teams' performance; Unpublished Thesis; University of Nairobi
- [18] Otieno, K., O., Apida, M., Eric, O., N, Graca, A. (2010). *Factors Influencing Fire Stations Response to Disasters: A case of Kenya*. *International Journal of Disaster Management and Fire Engineering*. Vol. 3, Issue No.2, ISSN: 2221 – 6799.
- [19] Takele, T. & Mengesha, A. (2006). *Occupational Safety and Health; Lecture Notes For Environmental and Occupational Health Students*: In collaboration with the Ethiopia Public Health Training Initiative, The Carter Center, the Ethiopia Ministry of Health and, and The Ethiopia Ministry of Education

7.0 BIBLIOGRAPHIES



Phires Mokeira Abaya
54913-00200, Nairobi, Kenya

Qualifications

Bachelor of Philosophy in Technology – Construction Mgt.
Master of Construction Project Mgt.
H. Dip. In Technical Education
H. Dip. In Construction Mgt.
H. Dip. In Building & Civil Engineering
Dip. Technical education (Building & Civil Engineering)
Diploma in Building

Certifications

M.AAK – (CPM 3887)
IQSK – Q1038

Books/Journals: 1



Stephen Ondieki
54099-00200, Nairobi, Kenya

Qualifications:

Bachelor of Project Planning & Mgt.
Master of Project Planning & Mgt.
DHRM
CPR
FM&E

Books/ Journals: 3