

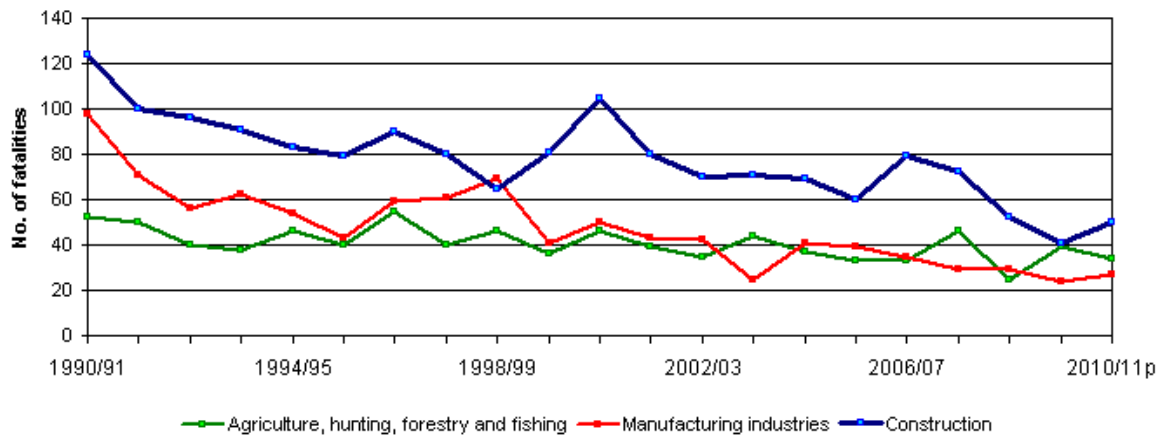
CHAPTER ONE

INTRODUCTION

1.1 Background of the study

The importance of the Construction Industry to national economies the world over cannot be over emphasized. According to Mike et al (2011), by 2020 construction will account for 13.2% of world GDP indicating an upward trend. This is seen in the provision of basic infrastructure such as road networks, commercial and residential buildings and facilities to the other sectors of economies. Also construction's sizeable amount of economic growth is through backward and forward linkages since construction activities utilize goods and services from other industries. Employment creation by construction activities is another important aspect in economic development. In the Kenyan's economy construction industry accounts for 5% of the country's GDP and employs about 1 million people with an estimated annual wage bill of K.sh. 3.2 billion according to recent findings of the first quarter of 2011 by Kenya National Bureau of Statistics (KNBS).

Despite the documented positive gains brought by the construction industry, there are negative attributes which are associated with construction work. Construction work is dangerous, the International Labour Organization (ILO) estimates at least 60,000 fatal accidents a year on construction sites around the world that is one in six of all fatal work related accidents. The global trade union federation puts the figure much higher at 108,000 with construction responsible for 30% of all work related accidents. In Britain for example a study report 2010/11 by Health and Safety Executive (HSE) states, the construction industry accounts for 27% of fatal injuries to employees and 9% of reported major injuries. This is illustrated by figure 1 below.



Source; <http://www.hse.gov.uk> (2011)

Figure 1 Comparison of fatalities in construction and other sectors of the economy – UK.

In Kenya, collapsing buildings while still in construction process trapping construction site workers has become a common occurrence, take for instance the killing of two workers and many injured at Spaki in Mombasa in April 2009 when a storey building in construction curved in burying alive many of the workers in a heap of concrete and steel rubble. (Construction risk management. *Construction Review*, Vol 18, 2006)

The International Labour Organization (ILO) in an effort to improve and maintain safe working environment at work places has held general conferences through the years since 1937 deciding and adopting conventions and recommendations geared towards health and safety in construction works. One such is convention C167 cited as the Safety and Health in Construction Convention, 1988 which revised and adopted the Safety Provisions (Building) Convention of 1937. This Convention carries provisions which apply to all construction activities. Accordingly, each Member Country which ratifies this convention undertakes that it will, on the basis of an assessment of the safety and health hazards involved, adopt and maintain in force laws or regulations which ensure the application of the provisions of the Convention through technical standards or codes of practice, or by other appropriate methods consistent with national conditions and practice. Articles 8 and 10 of the convention require that the principal contractor, or other person or body with actual control over or primary responsibility for overall construction site activities shall be

responsible for coordinating the prescribed safety and health measures and, in so far as is compatible with national laws and regulations, for ensuring compliance with such measures.

Further, 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. Generally, the convention outlines 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. (Safety and Health Convention in Construction, 1988)

The importance of these convention provisions is further emphasized by findings of a study carried out by Wilson D.J. et al (2007), 'The Ratification status of ILO conventions Related to Occupational Safety and Health and Its Relationship with Reported Occupational Fatality Rates' which confirms the fact that non-ratifying countries generally have higher fatality rates than ratifying ones. Therefore all countries should promote ratification of ILO conventions aimed at improving Health and Safety conditions. It is unfortunate to note that although Kenya is a member country of the International Labour Organization (ILO), to date

it has not ratified C167 convention of 1988 and this indication of low commitment to issues of health and safety in the construction industry by the regulating authority resulting to more accidents, injuries and deaths.

1.2 Statement of the problem

There is a growing interest on Health and Safety in Kenya following enactment of the Occupational Health and Safety Act, (OSHA, 2007). Most of the business enterprises in Kenya which were previously operating without institutional and individual capacity for occupational health and safety management now need to develop that capacity in order to improve the quality of the working environment and avoid expensive liabilities.

The occupational Safety and Healthy Act (2007) came into being after several revisions to the Factories Act (1951), amending and extending its scope of application to places of work other than factories. It applies to all work places where any person is at work, whether temporary or permanently. The Act seeks to secure the safety, health and welfare of persons at work and protect persons other than persons at work against risks to safety and health arising out of, or in connection with, the activities of the persons at work. Under the Act the employer has a duty to comply with any safety and health rules, regulations instructions and procedures in the act by taking all necessary precautions to ensure his own safety and health and that of any persons in his work place and at all times use appropriate safe systems of work, preventive and control measures. The employee at work place has a duty to ensure his own safety and health and that of other persons who may be affected by his acts or omissions at work place and to comply with the safety and health procedures, requirements and instructions given. The contravention of the provisions thus constitutes an offence. The Act provides for the appointment of a director and occupational safety and health officers to oversee the implementation of the provisions, but this notwithstanding, accident continue to happen in construction sites some with fatal implications. (Occupational Health and Safety Act, 2007).

The suffering caused by such accidents and illnesses to workers and their families is incalculable. In economic terms, the ILO has estimated that 4% of the world's annual GDP is lost as a consequence of occupational diseases and accidents. Employers face costly early

retirements, loss of skilled staff, absenteeism, and high insurance premiums due to work-related accidents and diseases. Yet many of these tragedies are preventable through the implementation of sound prevention, reporting and inspection practices. (Engineers against poverty report, 2008).

Unfortunately many companies do not follow strict health and safety guidelines as construction workers are more likely to be killed by construction accident than any other type of employment. Limitations on the part of supervisory authority in the construction industry means such guide lines exist but only on paper leaving the safety and well being of construction workers in Kenya at the mercy of employers. While other sectors of the economy have development policies to guide them, Building construction industry does not have a comprehensive policy frame work, in fact the Housing laws are fragmented and need harmonizing to enforce and monitor construction work to effectively curb malpractices in the construction sector. (Ministry of Public Works, 2011).

It is with such concern that this study attempted to examine the factors affecting implementation of occupational health and safety measures in the construction sector.

1.3 Purpose of the study

The purpose of the study was to examine factors affecting implementation of occupational health and safety measure in the construction sector in Mombasa County, Kenya.

1.4 Objectives of the study

The broad objective of the study was to examine the factors affecting implementation of occupational health and safety measures in the construction industry in Kenya, the case of Mombasa County.

The specific objectives of the study were:-

- 1) To establish the extent to which health and safety management systems affect implementation of occupational health and safety measures.
- 2) To establish the extent to which training and induction affect implementation of occupational health and safety measures in building construction sites.

- 3) To investigate whether the cost of risk control measures affect implementation of occupational health and safety procedures.
- 4) To assess how a building-project client influences implementation of occupational health and safety measures in a building project.

1.5 Research Questions

The research questions that guided the study were;

1. To what extent does health and safety management systems in a building construction firm affect implementation of occupational health and safety measures?
2. To what extent does training and induction affect implementation of occupational health and safety measures in building construction sites?
3. How does cost of risk control measures affect implementation of occupational health and safety procedures?
4. How does a building-project client influence implementation of occupational health and safety measures in a building project?

1.6 Research Hypothesis

1. (H₀): Most building contractors do not have health and safety management systems.
(H₁): Most building contractors do health and safety management systems.
2. (H₀): Training does not affect levels of accidents in building construction sites.
(H₁): If training at work place imparts information and enhances awareness, then providing training and induction will help improve occupational health and safety levels in building construction sites and reduce accidents.
3. (H₀): Risk control measures are not adhered to in building construction sites.
(H₁): Risk control measures are adhered to in building construction sites.
4. (H₀): Most project clients do not use formal contract agreements in their building projects.
(H₁): Most project clients use formal contract agreements in their building projects.

1.7 Basic assumptions of the study

The basic assumption of the study was that the respondents would appreciate the purpose of the research exercise and that they would be accessible and corporative in answering the questions.

1.8 Significance of the study

The findings of this study will help bring to the attention of the stakeholders in the building construction industry and more so to the building construction firms the importance of occupational health and safety culture in work places, in this case the construction sites.

The study also brings to light the fact that clients in a project do contribute significantly towards the implementation of occupational health and safety measures in their building projects when such requirements are included the tender documents.

The study will generally contribute to the body of knowledge in the subject of health and safety in the building industry sector.

1.9 Limitations of the study

The researcher encountered a number of challenges in the process of carrying out the study;

1. The spread of respondents identified in the sample over Mombasa County presented access problems in terms of transport and communication. This was overcome by use of e-mail communication as much as was practicable.
2. The costs involved in transport, stationary, communication, typing, photo copying and binding were fairly high. This necessitated borrowing from my employer to offset the high costs.
3. Time frame for the preparation of the research proposal document was squeezed hence proper time management was essential in order to meet the set time target.

1.10 Delimitations of the study

Though the study was aimed at examining the factors affecting implementation of occupational health and safety measures in the construction industry in Kenya, the researcher narrowed it down and focused on Mombasa County hence targeting those building contractors registered with the Ministry of Public Works carrying out building construction business in the county.

1.11 Definition of the significant terms used in the study

Health is a state of complete physical, mental and social well being and not merely the absence of disease. This includes: The promotion and maintenance of physical, mental and social well being of workers, Prevention among workers of ill-health caused by the working conditions, Protection of workers in their employment from risk resulting from factors adverse to health, Placing and maintenance of the worker in an occupational environment adapted to his physical and psychological equipment.

Safety is identifying, evaluating and controlling workplace hazards and includes measures, methods or techniques or process to prevent human exposure to unsafe work practices, physical or even chemical agents. This may involve: Improving working conditions and safe methods of work, Reasonable hours of work, Provision of personnel protective equipment, Provision of first-aid and medical facilities.

Welfare is the provision of facilities to maintain the health and well-being of individuals at the workplace.

Accident is an unexpected, unwanted occurrence which interrupts or interferes with the orderly progress of work in an establishment by causing bodily injury to a person making him unfit to resume duty due to partial or total disablement or even death. It can also cause damage or loss to property, plant, materials or the environment.

Near miss is any incident that could have resulted in an accident. Research has shown that, approximately, for every ten 'near miss' events at a particular location in the workplace, a minor accident will occur.

Hazards is a potential condition which might be converted into an accident. It is a state having potential to injure a person or impair ones health.

Risk is the likelihood of a substance, activity or process to cause harm.

1.12 Organization of the study

This study is organized into five chapters. Chapter one outlines the background to the study, statement of the problem, purpose of the study, objectives of the study delimitations of the study and the organization of the study.

Chapter two outlines the relevant theories of the literature review in line with the objectives of the study.

Chapter three gives the research design, the target population, sampling procedure and the sample size, data collection methods, the validity and reliability of data collection instruments and the operational definition of variables.

Chapter four is about how the data collected was analyzed, interpreted and presented in line with the objectives of the study.

Chapter five gives the summary of the findings, discussions, conclusions, recommendations and suggested areas of further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction.

In this chapter the researcher emphasizes the importance of health and safety measures in the construction industry in the Kenyan context. The literature review attempts to highlight the common risks and hazards that construction workers encounter in their day to day job activities in the building construction sites. It also focuses on the need to understand the factors affecting effective implementation of health and safety measures and procedures so that appropriate actions may be instituted to make improvements in this area and safeguard the welfare of construction personnel.

2.2 Common risks and dangers in the construction sites

At a forum by government departments and ministries in Kenya aimed at averting construction site accidents that claim lives and lead to fatal injuries, Lonyangapuo (permanent secretary in the Ministry of Public Works) said, 'safe work is about preventive measures', emphasizing the fact that construction site accidents are preventable if adequate safety measures are put in place. He added that putting in place systems to propagate safety and health practices in construction industry and reliance on detailed planning, rigorous implementation of systems, procedures and training and effective monitoring would greatly assist in reducing accidents in construction sites. (Ministry of Public Works, 2011)

Here below are some of the common hazards facing construction site personnel in the course of the duties

Movement of people and vehicles – This happens as people walk around construction sites or come into contact with vehicles in or around the site.

Most common hazards to pedestrians at work are slips, trips and falls on the same level, falls from heights and collisions with moving vehicles, being struck by moving, falling or flying objects or striking against a fixed or stationary object. (ILO code of practice, 1992)

Manual and mechanical handling hazards - Manual handling of loads makes a great contribution to body injury accidents. Back injuries due to the lifting of heavy loads are very common and many working days are lost each year as a result of such injuries. This happens in every building site in Kenya where workers can be seen carrying bricks, bags of cement or sand and aggregates around the site or to different levels up the building on their backs or heads. Common injuries associated with poor manual handling techniques are musculoskeletal in nature and include muscular sprains and strains, back injuries, trapped nerve, hernia, cuts, bruises and abrasions, fractures, work-related upper limb disorders and rheumatism (severe pain in the joints). Mechanical handling equipment in construction sites include excavators, cranes and dumper trucks and cause hazards such as, hand trapped between rotating rollers and belts, loose cloth entanglement with power drive, overturning and collisions. (ILO code of practice, 1992)

Work equipment hazards – This involves the use of hand tools such as hammers, chisels and shovels. Power tools such as pneumatic drills, electric drills, disc-cutters, sanders, nail guns and chainsaws. Hazards posed by the use of these tools include eye puncturing, cuts, crushing, shearing and entanglement hazards, electric shocks, burns from hot parts of the engine, high noise levels, tripping on cables, fire and explosion hazards, hand-arm vibrations hazards and electrocution. (ILO code of practice, 1992)

Electrical hazards – Electricity is a widely used source of power energy, but its use has the potential to be very hazardous with possible fatal results. Electric shock accounts for most fatalities some leading to death. The main hazards include electric shock, electric burns, electric arcing, electrical fires and explosions most resulting from misuse of equipment or using defective or unsuitable equipment. (ILO code of practice, 1992)

Fire hazards – Fires, though not as common but do occur in construction sites creating damages and resulting in complete dislocation of building project schedules and delays.

Common causes of fires in construction sites are poor storage of highly flammable gases and other materials, damaged cables and improper fuses or failure of safety devices, overload or poorly maintained temporary electrical equipment, accumulation of rubbish against electrical equipment and discarding of smoking materials. Fire consequences include personal injuries, death and damage to materials and the buildings. (ILO code of practice, 1992)

Chemical and biological health hazards - Each year many people suffer ill-health caused by the work place than they suffer workplace injuries, but this receives less attention from management because of the difficult in linking the ill-health effect with workplace causes.(Hughes & Ferret, 2008). Construction activities generate dust, fumes, gases, mist, vapours and liquids which cause ill-health to workers when in contact by inhalation, absorption through skin or ingestion. Cement dust and wet cement contact can cause dermatitis or serious burns and ulcers. Silica dust from cutting or drilling building blocks when inhaled can lead to development tuberculosis. Lead metal hazards commonly associated with plumbing and roof works when inhaled or in contact with skin will result in headaches, nausea, anaemia muscle weakening and eventually coma. Asbestos dust from building materials such as roof sheets or ceiling tiles, when inhaled will damage the linings of the lungs and might lead to lung cancer. Wood dust can result to skin disorders, nasal problems and asthma. Tetanus can result from infected objects such as nails, wood splinters and will attack the nervous system. Biological agents such as algae, bacteria and viruses from contaminated water and food will lead to ill-health such as asthma, hepatitis, influenza, AIDS (HIV) among others. (ILO code of practice, 1992)

Physical and psychological health hazards - These include the manual handling and lifting of loads, pulling and pushing loads, prolonged periods of repetitive activities, working in poorly lit environment and work with vibrating tools which result in musculoskeletal disorders such as back injuries, upper limb disorders and deteriorating eye sight. Noisy working place can lead to ear damage. Excess heat and radiation as happens in most building sites, might cause heat exhaustion and heat stroke. Most activities in construction

sites are done under a lot of pressure to meet delivery dates, this workplace stress will likely lead to both physical and mental ill-health such as high blood pressure, peptic ulcers, skin disorders, depression and even violence. Physically demanding work leads to physical fatigue, decreased productivity and motivation, inattentiveness, poor judgement, poor quality work, job dissatisfaction, accidents and injuries (Tariq,2003). The effects of alcohol and drugs cannot be overlooked, abuse of these substances damages health and causes absenteeism and reduces productivity and lead to serious accidents in construction sites particularly when driving, working at heights or handling power tools. (ILO code of practice, 1992)

Working at heights hazards – According to Health and Safety Executive (HSE) UK, working at heights accounts for 50-60 deaths more than any other workplace activity each year in the UK. Most building construction activities involve working at some height such as, brick laying, plastering concrete repairs, roofing works, painting and decorating window cleaning, demolitions etc. The immediate hazard of working at heights is a fall which can result in fractures, serious body injuries or even death. There is always the risk of falling objects such as unsecure loads, unsecured equipment or materials which can seriously injure construction workers and members of the public. (ILO code of practice, 1992)

Excavation work and confined spaces hazards – Excavation work is an essential part of construction work involving building foundations, installation of drainages, sewerage and other services requiring trenches to be excavated, but it is one of the most hazardous since excavation walls can collapse, people vehicles or materials may fall into the trenches and worse still contact with buried electrical cables, water or fuel service pipes. Excavation work adjacent to existing structures can easily cause their collapse. All these can result to fatal injuries or even cause death. Work in confined spaces such as manholes, sewers, tunnels, pits and ducts poses a threat because of the possibilities of accumulation of vapour, gases or fumes and the lack of ventilation and may result to asphyxiation due oxygen depletion, poisoning by toxic substances or fumes, explosion due to gases, vapour

or dust, excess heat leading to heat stress and worse still diseases from animal wastes, infected materials or macro-organisms. (ILO code of practice, 1992)

Demolition hazards - Demolition is one of the most hazardous construction operations and one responsible for more deaths and major injuries than any other activity. (Hughes & Ferret 2008). Demolitions should therefore be well planned and supervised by competent persons in order to minimize the risks of death and injury to employees and others who might be affected by the work. Premature collapse of the structure is one of the main causes of serious injury resulting from demolition works. There is a danger of falling from height through fragile roofing material, open voids such as roof lights or from open edges of elevated platforms or scaffolding. There is also the hazard of being hit, trapped or struck by falling debris or failed structural member. During demolitions process dust and fumes is a considerable hazard which should be controlled to minimize the associated dangers. Noise and vibrations are a serious problem during demolitions because of falling debris and equipment such as compressors, drills and hand-held tools. Existence of services such as electricity, gas and water pose dangers of electric shock, fires and explosions. (ILO code of practice, 1992)

2.3 Issues of Health and Safety in building Construction sites

The issues of health and safety in building construction sites concern factors which if put in place in a working environment will have an impact in improving the levels of health and safety of the working personnel.

2.3.1 Health and Safety management systems

Construction like any other business success requires effective health and safety management to provide a sound basis for good performance. A good and effective health and safety management system will be guided by the following principles, according to Hughes & Ferret, (2008).

Developing a health and safety policy. This involves developing monitoring and reviewing standards needed to address and reduce the risks to health and safety produced by the

organization. The policy should state the intentions of the organization in terms of clear aims, objectives and targets. There should be a health and safety policy statement of intent communicated in simple language so that it is understandable to all and posted on a prominent notice board throughout the workplace which should be dated and signed by senior officials to demonstrate management commitment to health and safety at the same time giving authority to the policy. The policy statement will indicate duties and responsibilities of the management and employees in health and safety matters.

A good health and safety management system will require a well defined management structure. It must be supported from the top with staff involvement and participation and financial resources made available. Every individual must be clear about his responsibilities and limits. Directors will set policy objectives and targets, supervisors to check day to day compliance, safety advisors to lead accident investigations and compliance, safety representatives to represent employees in consultations, employees to observe health and safety of self and others, while first aiders help the injured.

An affective health and safety management system will involve planning and implementation of performance standards, targets and procedures. The plan should be based on risk assessment methods to decide on priorities and set objectives for effective control and elimination of hazards and the reduction of risks.

To gauge the effectiveness of the health and safety management system, achievements are measured against practice plans and performance targets. According to Drucker (2003), you cannot manage what you cannot measure. Hence the main purpose of measuring performance is to provide information on the progress and the current status in terms of health and safety strategies, processes and controls. Active monitoring looks at the premises, plant, the people, procedures and systems, while reactive monitoring investigates accidents and incidents and why controls failed. It is important that the organization is measured against its long term goals and objectives.

Accidents should be properly investigated, recorded and reported since most accidents involve multiple, interrelated causal factors occurring whenever significant deficiencies, oversights, errors, omissions, or unexpected changes occur. This will help prevent more serious events and enable appropriate actions to prevent recurrence. Good investigation is

key in making improvements in health and safety performance. Approximately, for every 10 'near miss' events at a particular location in the work place, a minor accident will occur, therefore accidents, incidents and near misses should be recorded and reported to relevant authorities.

Performance reviews are part of the organization's commitment to continuous improvement of the health and safety policy, since reviews enable evaluation of the performance against the objectives and targets established allowing for any necessary changes to improve standards.

Auditing becomes an important tool to assess compliance with the health and safety management arrangements and procedures in the workplace since it helps bring out weaknesses and identify unrealistic or inadequate standards and targets in the health and safety policy and procedures and ensures that what has been planned is being implemented.

According to Cole (2000), every employer with more than five employees is required to prepare and keep an up to date written statement of the safety policy drawn to the attention of all employees. This reflects the employer's commitment to safety and healthy at work. The policy should indicate what standards of behavior are aimed at in Health and Safety.

Armstrong (2000) suggests work places should have occupational Health and Safety programs to deal with ill health arising from the working conditions which he says should include: Conducting of risk assessments which identify hazards and assess the risks attached to them, Carrying out of Health and Safety audits and inspections, Implementation of Health and Safety audits and inspections, Management of stress, Prevention of accidents, Measuring Health and Safety performance, Communicating the need for good Health and Safety practices, Training in good Health and Safety practices and Organizing Health and Safety.

The role of the management in the Health and Safety issues is stressed by Betts (1983) who emphasized that management should: Issue a written statement of safety policy, Establish an organization and allocate responsibilities for health and safety matters, Train members of the company in health and safety matters, Establish a safety committee, Ensure first aid

facilities exist, Provide appropriate procedures and documents to minimize accidents, Consult with safety representatives with a view to making and maintaining arrangement which promote and develop measure for safety and health of employees and checking the effectiveness of such measures.

2.3.2 Training and inductions at workplace

According to Armstrong (2000), 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.

Betts (1983) argues that lack of experience and poor training are the main causes of accidents at work.

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)

According to article 6(c) of the Occupational Safety and Health Act, (2007), it is the duty of the employer to ensure the health, safety and welfare at work of all persons in the workplace, this involves the provision of such information, instruction, training and supervision as is necessary to ensure that health and safety at work of every person employed. Every employee should be made aware of any risks from new technologies,

imminent danger and ensuring that every person employed participates in the application and review of health and safety measures.

Management commitment gives a powerful message to the workforce by what they do for health and safety. They should personally get involved in health and safety inspections and audits, health and safety consultation meetings and also in the investigation of accidents, ill-health and incidents. Supervisory and management training will play a pivotal role in avoiding common managerial failures such as, lack of health and safety awareness, enforcement and promotion, lack of supervision and communication with employees and lack of understanding of the extent of the responsibility of the supervisor.

Some activities in a construction site require specialist training such as first aid, fire prevention, forklift truck driving, overhead crane operation, scaffolding inspection and statutory health and safety inspections. Job specific training ensures that employees undertake their jobs in a safe manner. Skill training can be conducted 'on the job' or 'toolbox training' to cover issues like emergency procedures, correct use of protective personal equipment (PPE) and work activities which are more hazardous. Health and safety training includes training on personal protective equipment, emergency preparedness and documentation of accident courses. (Bhat, 1998)

Induction training therefore should always be provided to new employees to enhance their awareness regarding health and safety policy of the organization, employee responsibility for health and safety, the accident reporting procedures of the organization, the fire and other emergency procedures and a brief summary of the health and safety management system in the organization. An important aspect to be brought to the awareness of the employees is published disciplinary procedures such that a particularly serious accident is followed by some disciplinary action or a penalty.

In his article, 'Dirty Construction Workers', Langford (2003), brings out the negative stereotypical attitudes associated with the building industry that construction workers are characterized by images of dirt, unsafe working practices, macho and sexist behavior and unsatisfactory workmanship. He further concludes that, such perceptions are known to have damaged the image of the construction industry and may have lead to large sections of the construction workforce being stigmatized and hence carry out their tasks with a

carefree attitude. This therefore underlines the importance of training and inductions in construction site activities.

2.3.3 Risk control measures

According to Burchill (1997), a number of regulations on management of health and safety at work came into force in 1993 requiring employees to undertake risk assessment exercise intended to identify potential dangers to the health and safety of employees or anyone likely to be affected by the firms operations. Health and safety 1992 requires the management of the firm to: Devise and implement specific procedures for dealing with emergencies, Train employees in safety matters and ensure they are capable of avoiding risks, Take into account working conditions and local work place hazards when selecting equipment, Identify and avoid risks in relation to handling operations, having regard to the shape, size and weight of load and ergonomic conditions in work place and humidity available etc.

Armstrong (2000), adds that risk assessment identify specific hazards and quantify the risks attached to them, while health and safety audit provide more comprehensive review of all aspects of health and safety policies and procedures and practices for the whole organization or department. Risk assessment therefore evaluate and predict risks in qualitative and quantitative terms and are focused on predicting the probability of effects on health of human and environmental resources. This therefore aims at: Hazard elimination through design improvement and change of production; Substitution through replacement of chemicals; Use of barriers; Use of warning systems like signs, labels, instructions etc; Use of personal protective clothing etc. While health and safety audits should focus on use of: Policies; Procedures; and Safety practices so as to generate action by assessing the practices and costs and draw up action programs.

Safety is, without doubt, the most crucial investment we can make. And the question is not what it costs us, but what it saves, MacKee (2009). Many building contractors like any business are profit oriented and would go to any lengths to maximize their profits even if it means avoiding health and safety control measures in order to cut costs, all at the expense of exposing the workers to workplace hazards.

The control of risks is essential to secure and maintain a healthy and safe construction site and should comply with the relevant legal requirements. Safety is controlled through a combination of engineered measures (Hughes & Ferret, 2008), which include, avoidance of risks, elimination of hazards or substitution for something less hazardous, reducing or limiting the duration of exposure to the hazard, isolation or segregation, safe systems of work, training and information, personal protective equipment, welfare and monitoring and supervision. For a sound and effective health and safety management system, financial resources need to be set aside to ensure implementation of the measures and procedures to guarantee employee's safety. Costs will be incurred in a number of ways in the process of establishing and putting in place health and safety measures.

Employment of additional personnel such as a health and safety officer will be necessary to advice on various aspects concerning safety, including formulating a health and safety policy with clear aims and objectives, safe measures of work and method statements, risk assessments, accident investigations, accident reporting and health and safety performance monitoring, reviews and audits. A person with first aid competence employed in a construction site to deal with cases of accidents, injuries and emergencies and equipped with the necessary facilities to carry out his tasks effectively.

Training and inductions which are aimed at helping people acquire the skills, knowledge and attitudes to make them competent in the health and safety aspects of their work in order to avoid or eliminate hazards at work, need management support in terms time and financial resources during planning and conducting.

All workplaces need to display safety signs and signals in cases where a risk has not been controlled by other means. Signs should be placed where they are clearly visible and cause minimum inconveniences, they should carry the correct warning symbol where appropriate, they should be relevant to the hazard, they should be easily understood, they are used when required, they should be clean durable and weatherproof where necessary and they should be obeyed to be effective. Such safety signs may include prohibitive signs to indicate that a certain behavior is prohibited such a no smoking sign. A warning sign will denote a safety sign that gives warning of a hazard such as danger of falling objects. A mandatory sign can denote a symbol indicating that a specific course of action must be

taken such as 'safety helmets must be worn'. There can be a safe condition sign indicating availability of information about safe condition. A fire equipment sign will indicate the location of firefighting equipment. All these signs and symbols are standardized through legislation for purpose of easy understanding and are therefore procured at a cost.

The provision of temporary protective works such as scaffolds and hoarding is important. Personal protective equipment (PPE), are means of accident prevention and must be applied if work conditions demand. These include head protection items such as hard hats and helmets. Eye and face protection such as goggles. Foot and leg protection include safety shoes and boots. Hand and arm protection devices include gloves, hand guards, hand pads, sleeves and cuffs. Body protection needs aprons, overalls jackets and complete head to toe protective suits. Ear muffs will be required in noisy operations while masks are a must in dusty activities. The provision of these devices will require financial resources by the management. (Pratibha & Anupama, 2007)

The provision of welfare facilities in a construction site such as safe drinking water, food and sometimes accommodation is within the workers entitlements though costly in most cases. Such costs can be borne by the project's client depending on the nature of the agreement and the contract conditions, though not in all cases. According to Amarjit S., (1999), research revealed that where safety costs are included in a contract tender document and accepted by the client, the frequency of accidents involving loss of time is considerably reduced.

2.3.4 Project's client influence on health and safety issues in a project

A client in a building project being the ultimate beneficiary of the construction process should be in the forefront in making sure that health and safety matters are observed by the contractor on site, but unfortunately that is not always the case in Kenya's construction industry.

For the private individual clientele their concern is to get a good product and of course at a good bargain. This is often the case in open competitive tender, where contractors keep their costs down in order to win a tender, but unfortunately the winning tender might be one that does not provide safety, equipment and a safe working environment. The scenario

changes in cases where the project client is a corporate company who in most cases makes it their concern that laws and regulations pertaining to the construction process are followed by the book, and as such any building contractor prospecting for a job should show evidence of adherence to such regulations to avoid accidents and legal claims.

Since the onus of maintaining health and safety in a construction site lies with the building contractor by the fact that they are in direct contact with the workers on site, the project client has a duty put forth conditions regarding the health and safety of workers on site during the procurement process. Such can be enforced in a contract arrangement between the client and the contractor when a formal agreement is entered using a standard document as that published by The Joint Building Council (JBC), 2004 which contains agreement and conditions of contract for building works. In this document, clause 11.1 states, 'The contractor shall be liable for and shall indemnify the client against any expenses, liability, loss, claim, or proceedings whatsoever arising under any statute or at common law in respect of personal injury to or death of any person arising out of or in the course of or caused by the carrying out of the works, unless the injury or death is due to any act or neglect of the client or of any person for whom the client is responsible'. In the same document, clause 12.1 makes it mandatory for the contractor to maintain such insurance as are necessary to cover the liability of the contractor or his subcontractor in respect of personal injuries or deaths arising out of or in the course of or caused by the carrying out of the works. (Joint Building Council, 2004)

Procurement procedures and contract documents therefore have the potential to act as important mechanisms to raise the standard of health and safety in building projects by ensuring compliance with existing legislation and the terms and conditions of a project. This is also critical in ensuring that the responsibility is taken seriously by all parties and that the interests of the client are safeguarded. For this to be feasible it is important that the client develops and disseminates a clear policy for safeguarding the health and safety of the workers on their construction projects. It is important for the client to remind the project consultants of their responsibilities and to set out very clearly what is expected of them, to ensure the project is designed, constructed, maintained and used with minimal

risks to the health and safety of the workers and occupants by addressing the risks at the earliest possible stages. (Engineers against poverty report, 2008).

This is echoed by the UK Office of Government Commerce (OGC, 2007) in the statement, 'Many of the common health and safety problems encountered during construction and operation could be avoided if due consideration and effort were invested during the project brief and design phases'.

The client may ensure the appointed contractor has a sound understanding of health and safety requirements, knowledge of national regulations and a commitment to continuous improvement which can be evidenced by a health and safety policy signed by the management, a full time qualified health and safety officer, and a health and safety management system.

Monitoring and reporting during the course of a project can be used to help raise the profile of health and safety by ensuring compliance with contract procedures. The reporting chain involves subcontractor to main contractor, to consulting engineer to the client. Thus it is important that all parties to the contract work together to monitor compliance even though the prime responsibility for managing activities and people on construction site rests with the main contractor. (Engineers against poverty report, 2008)

2.3.5 Government policy on health and safety

While we celebrate the positive gains our economy accrues from the construction industry, the plight of poor Kenyans who in an effort to eke a living confront the risks and hazards affecting their health and safety need to be addressed with the seriousness it deserves. Unfortunately existing legislation and approved code of practice give advice, but leave building contractors with a leeway to take other routes to achieve their health and safety goals so long as they do what is reasonably practicable. This scenario is made worse by the outdated legislation, inadequate controls and enforcement, unethical practices, corruption and easy entry by unqualified people in the construction industry. This has had the effect of creating, 'The informal workforce phenomena' which according to Njeri I., (2003), employees 75% of all the labourforce in the construction industry, but lacks regulation and recognition and has limited potential in terms of skill advancement, protection from exploitation and safety.

The Government through the Ministry of Public Works is developing a Public Works Policy whose central objective is to promote occupational safety and health as well as sound environmental practices in the construction industry and seek to hold accountable those involved in the development of the built environment. To compliment this policy, the ministry is also pushing for the enactment of the National Construction Authority Bill, which will not only help transform the construction sector into a safe and secure environment, but will also bring order in the sector by getting rid of quacks and unscrupulous contractors.(Ministry of Public Works).

The Ministry of Labour has been in the forefront championing the workers issues, thus in its Strategic Plan (2008 – 2012) it endeavours to develop and implement policies and programmes for a highly productive workforce through creation of a safe working environment, promotion of industrial peace, effective human resource planning and development, social security, productivity promotion and sustainable job creation. In recognizing the importance of occupational safety and health for workers at work places, the strategic plan outlines activities that are aimed at creating the link between preventive and compensation of occupational safety and health risks. Institutional and legal frameworks to be established aim to achieve a strong and proactive occupational health and safety systems, through awareness creation, research and capacity building. (Ministry of Labour,2011)

Though Kenya is a member state at the International Labour organization (ILO), it is yet to ratify ILO conventions that are relevant to managing occupational health. This fact notwithstanding, the government has through the Ministry of Labour, made strides in keeping with the ILO spirit of workers concern and enacted laws to promote health and safety. The enactment of The Occupational Safety and Health Act, (2007) has been a step forward, and for the purpose of administration of the act, the office of Director of Occupational Safety and Health Services has been established in Nairobi with other 17 zonal offices across the country whose main function is to promote education and training in occupational safety and health, collect and disseminate information on occupational safety and health, to promote occupational safety and health in all workplaces, to encourage a safety and health culture in workplaces, to conduct training for enterprises,

self employed persons, individuals and occupational safety and health officers, and may after consultation with the technical advisory committee, approve in writing training institutions providing occupational safety and health training. There are currently 70 such institutions across the country according Makhonge W. (2012).

According to Waweru (1984), government inspectors should visit firms periodically to ensure they are complying with legal requirements on health and safety practices. Inspections also occur following complaints by workers or members of the public after serious accidents. On finding an offence has been committed the inspector may: Inform the employer of the unsatisfactory item and ensure a remedial action; Serve an important notice compelling positive action; Prosecute the firm before a court of law.

The Occupational Safety and Health Act, (2007), brings out the duties and responsibilities of the employers and employees with regard to promotion of health and safety in workplaces, the contravention of which amounts to an offence. For these measures and procedures to be effective in the improvement of health and safety in building construction sites, an appropriate legal framework is needed, an effective inspectorate to enforce compliance is required, and the workers and supervisors need training. This is a big challenge to the government because of the limited capacity in as far as administration of the act is concerned, hence more occupational safety and health officers need to be trained and deployed in the field to ensure employers comply with the provisions of the act.

2.4 Conceptual framework

The conceptual framework outlines the independent variables, dependent variables and moderating variables.

Independent Variables

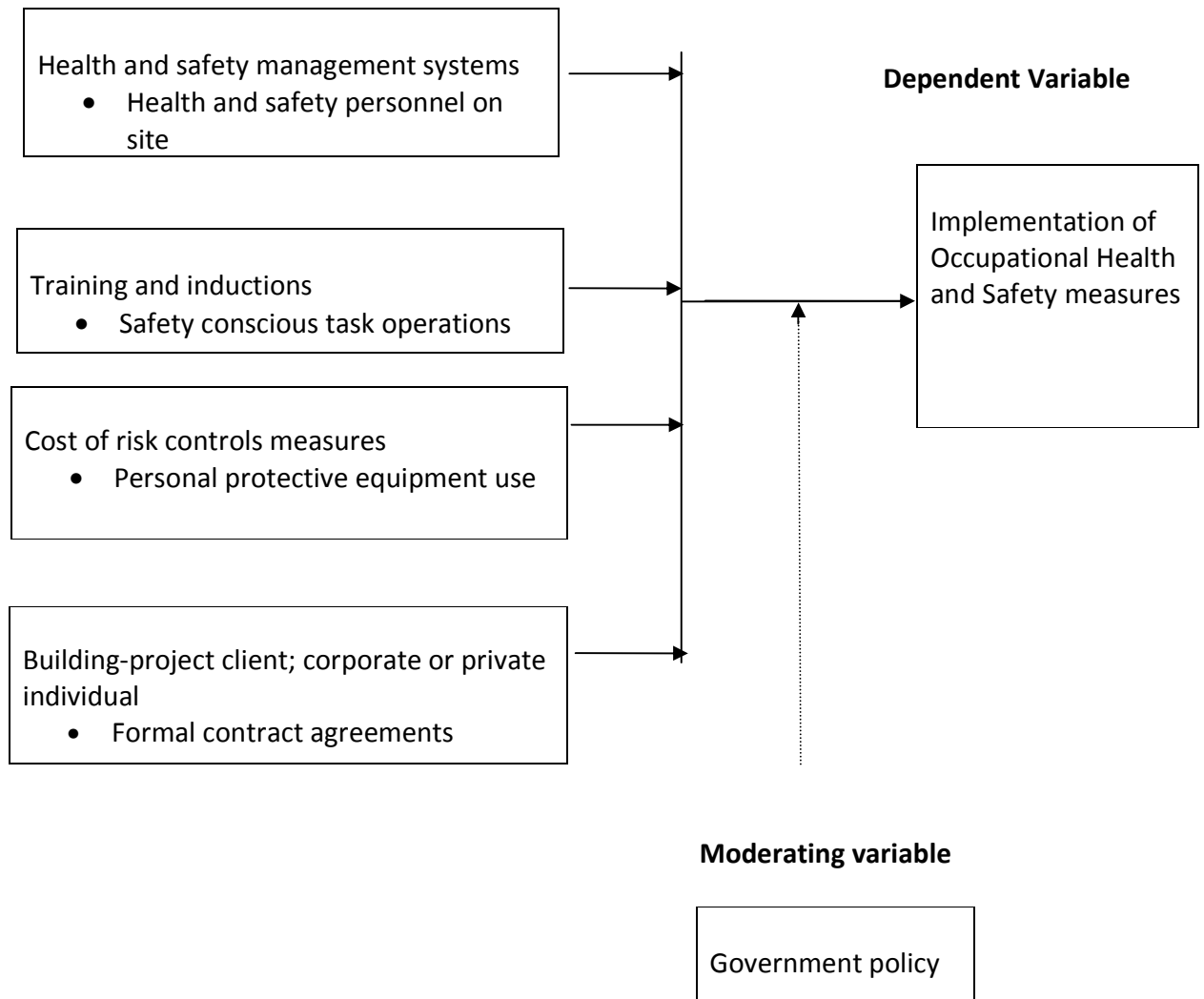


Figure 2 Conceptual Framework.

2.5 Summary of the literature review

From the literature review it is evident that health and safety measures are necessary in a work place environment to ensure worker's safety and well being so as: To maintain and improve productivity and quality of work; To minimize absenteeism and labour turnover; To reduce indiscipline and accidents; To improve employee motivation and morale; To reduce spoilage and cost operations and; To reserve the physical and mental health of employees. But for this to be realized a good health and safety management system and program should be put in place by providing; a written statement of safety policy, organization and allocation of responsibilities for health and safety matters, train employees in health and safety matters, establish safety committee, ensure first aid facilities, provide appropriate procedures and documentations to minimize accidents and to regularly consult with employee representatives. Construction firms should have training and induction to all employees so that they made aware of potential hazards and given instruction on how to avoid the possible risks. Risk control measures to be put in place with the aid of sound risk assessment procedures to identify specific hazards and quantify the risks attached with the aim of hazard elimination through design improvement and change, substitution through replacement, use of barriers, use of warning systems and use of personal protective clothing. Procurement procedures and contract documentation can be a useful way to enhance health and safety in construction projects by ensuring compliance with existing legislation and with the terms and conditions of a project. The government on the other hand should intensify measures to strengthen the institutional framework and inspectorate activities in order to achieve a meaningful administration of the occupational health and safety act, (2007).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

In this chapter the researcher explains the procedures employed in carrying out the study, which include; the research design, the target population, the sample size and the sampling procedure, research instruments and their validity and reliability, data collection techniques, ethical considerations and the operational definition of the variables.

3.2 Research design

The research design adopted was a descriptive survey study in an attempt to explain the factors affecting implementation of occupational health and safety measures in the construction industry. Descriptive survey study was used because it was best suited to answer the 'what' and 'how' research questions in the study.

3.3 Target population

The targeted population in this study was the building construction firms doing building construction business in Mombasa County. The researcher established the population to be three hundred and seven (307) from the Ministry of Public works head office register in Nairobi, and considered this to be adequate in providing data for the study.

3.4 Sample size and Sampling procedure

One hundred and fifty three (153) subjects formed an ideal sample size for the study, this followed the recommendations of Nkapa, (1997) that, for a population running into hundreds, the sample size should be 50%, the researcher therefore aimed at least for 50% subjects in each group as reflected in table (3.1).

The registration of building construction companies in the Ministry of Public works is categorized in groups from A to H according to capacity limited by the value of work in of millions of shillings, beginning from category A and reducing to category H. The researcher

therefore using stratified sampling grouped the categories as A and B, C and D, E and F, G and H to get homogenous subjects within each group. Simple random sampling enabled selection of subjects from each group, with each subject having a known nonzero chance of selection.

Table 3.1 Population and sample description

Group	Target population	Sample size	percentage
A and B	8	4	50
C and D	30	15	50
E and F	121	60	50
G and H	148	74	50
Total	307	153	50

3.5 Data collection methods

Primary data for the study was gathered using self-administered questionnaires, supplemented by interviews and observations. Secondary data was derived from published material such journals and books with content material related to the study. Self-administered questionnaires formed the researcher’s tool of data collection for this study. The researcher formulated a questionnaire with closed ended multiple choice questions as well as simple short answer questions which were mailed to the correspondents. The correspondents constituted the management personnel in the selected building construction firms. A letter of introduction and an explanation about the purpose of the study was attached to the questionnaire.

3.6 Validity and Reliability of data collection instruments

Validity and reliability of data collection instruments is essentially to minimize bias in the study findings.

3.6.1 Reliability of data collection instruments

Reliability of data collection instruments refers to the accuracy and precision of the measuring procedures. In order to ensure reliability of the data collection instruments, the researcher carried a out pre test by randomly selecting a few building construction firms 10 in number, administered the questionnaire and observed the response to note if the questions were understood, and if the answers given were relevant to the study. Observed weaknesses in the data collection instrument were and noted corrections made.

3.6.2 Validity of the data collection instruments

This refers to the relevance of the data collection instruments in relation to the anticipated outcome of the study. To ensure validity of the data collection instruments the researcher formulated simple easy to understand questions whose answers had a critical bearing to the variables under investigation so as to guide the study achieve its purpose.

3.7 Data analysis and presentation methods.

Data collected was analyzed both qualitatively and quantitatively using the SPSS computer software and results presented in tables as percentages and frequencies.

3.8 Ethical considerations

This concerned the confidentiality of the information obtained from the respondents for the purpose of this study. It was important that the respondents were guaranteed of confidentiality of the information they divulged in case they felt the questions were personal or sensitive in nature. The researcher had to bring to light the fact that the study was basically academic for the purpose of fulfilling the requirements of the degree, and that the report will not be published for public consumption. In this respect an introduction letter from the university administration was a necessity.

Table 3.2 Operational Definition of Variables

The table below explains how the researcher went about measuring the inferences he indicated for the study.

Objective design	Variables	Indicators	Measurement	Study
1.To establish the extent to which health and safety management systems affect implementation of occupational health and safety measures	<u>Independent</u> Health and safety policy	health and safety personnel on sites	Number of accidents	Descriptive
2.To determine the extent to which training and induction affect implementation of occupational health and safety measures	<u>Independent</u> Training and inductions	Safety conscious tasks operations	reduced record of accidents and injuries	Descriptive

Objective	Variables	Indicators	Measurement	Study
design				
3.To investigate weather the cost of risk control measures affect implementation of occupational health and safety procedures.	<u>Independent</u> Safety control measures	warning signs and personal protective equipment	number of workers in protective equipment	Descriptive
4.To assess how a building-project client influences the implementation of occupational health and safety measures in a building project	<u>Independent</u> type of client (corporate or individual)	Contract Agreement	Adherence to health and safety measures	Descriptive

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter is about the description and analysis of data obtained from the respondents in an attempt to explain the factors affecting the implementation of occupational Health and Safety measures in the construction sector in Mombasa County, Kenya.

4.2 Response Rate

The researcher was able to distribute 153 copies of the questionnaire to the sampled respondents comprised in the four clustered categories of registered building contractors doing business in Mombasa County i.e, A and B, C and D, E and F, G and H. The distribution was mainly by use of e-mail correspondence supplemented by physical issuing of the same in cases where availability in person was possible. This was administered to the management of the companies. Table 4.1 below depicts a summary of the response.

Table 4.1 Respondents Return Rate

Target group	Copies issued	Copies returned	Response percentage
A and B	4	3	75%
C and D	15	9	60%
E and F	60	39	65%
G and H	74	41	55.4%
Total	153	92	60%

Mugenda and Mugenda (2003) recommends that a response rate of 50% is fairly adequate, therefore a response rate of 60% in this case was considered to be representative of the study population.

4.3 Health and Safety Management systems

The study focused on establishing the effects of health and safety management systems in building construction enterprises to their workers on site.

Table 4.2 indicates the respondent's position with respect to establishment of a health and safety policy in their construction sites.

Table 4.2 Health And Safety Policy In Construction Site

Options	Frequency	Percent	Valid Percent	Cumulative Percent
YES	53	57.6	57.6	57.6
NO	39	42.4	42.4	100.0
Total	92	100.0	100.0	

From the table 4.2 majority of the respondents 57.6% indicate to have established and do maintain a health and safety policy in their construction site as compared to 42.4% of those respondents who don't. This paints an encouraging picture of a health and safety culture in their building construction sites.

The researcher probed the respondents further to verify the response in table 4.2 above, by asking the respondents who indicated to maintain a health and safety policy in their building construction sites to identify the principle elements in a health and safety management system which they have put in place to enhance health and safety issues in their work place as corresponds with the list below.

Health and Safety Management System check list.

- (i) Developing a company's health and safety statement
- (ii) Organization of safety roles and responsibilities
- (iii) Planning and implementation of health and safety performance standards and targets
- (iv) Measuring health and safety achievements
- (v) Health and safety performance reviews
- (vi) Auditing to assess compliance with health and safety management arrangements and procedures.

Table 4.3 Respondent's Reaction to the Health and Safety Checklist

Item	Observed Frequency	Expected frequency
Developing health and safety statement	16	53
Safety roles and responsibilities	21	53
Planning and implementation	12	53
Measuring achievements	13	53
Performance reviews	5	53
Auditing for compliance	8	53
Total		53

From the results in table 4.3 it is evident that although majority of the respondents 57.6% agree to have established health and safety policy at their work places but have limited knowledge about the guiding principles on health and safety that are paramount in inculcating a health and safety culture in any work environment. It's the guiding principle of organization of safety roles and responsibilities seems to be familiar to a handful of the respondents at only 39.62 %, the rest of the guiding principles fall below 30%.

4.4 Testing of hypothesis 1

Null hypothesis (H_0): Most building contractors do not have health and safety management systems.

Alternative hypothesis (H_1): Most building contractors do have health and safety management systems.

Table 4.4 Testing of Hypothesis 1

O	E	O - E	(O - E) ²	(O - E) ² /E
16	53	-37	1,369	25.8
21	53	-32	1,024	19.3
12	53	-41	1,681	31.7
13	53	-40	1,600	30.2
5	53	-48	2,304	43.5
8	53	-45	2,025	38.2
				Total=188.7

Chi – Square Test Result

Calculated value of $X^2 = 188.7$

χ^2 Table value with $v = 5$ degrees of freedom using 5% level of confidence = 11.07

Therefore since X^2 greater than χ^2 we accept the null hypothesis (H_0) that: most building contractors do not have health and safety management systems and reject the alternative hypothesis (H_1) that: most building contractors do have health and safety management systems.

4.5 Accidents recorded in the last 5 years

Table 4.5 below shows accidents recorded in construction sites in the last 5 years

Table 4.5 Accidents Record In The Last 5 Years

Option	Frequency	Percent	Valid Percent	Cumulative Percent
YES	66	71.7	71.7	71.7
NO	26	28.3	28.3	100.0
Total	92	100.0	100.0	

Table 4.5 indicates 71.7% of the respondents have recorded an accident in their construction sites in the last 5 years as compared to 28.3% who claim to have been accident free in their work operations. This is a clear testimony that a lot needs to be done to lower the number of accidents that happen in building construction sites.

4.6 Nature of accidents recorded in the last 5 years

The researcher probed further to establish the nature of these accidents and the results are shown in table 4.6 below.

Table 4.6 Nature of Accidents Recorded in Construction Sites in the Last 5 Years

Options	Frequency	Percent	Valid Percent	Cumulative Percent
Fatal injury	1	1.1	1.5	1.5
Severe injury	6	6.5	9.1	10.6
Minor injury	41	44.6	62.1	72.7
Near miss	18	19.6	27.3	100.0
Total	66	71.7	100.0	
Missing	26	28.3		
Total	92	100.0		

Results obtained from the respondents depicted in table 4.6 above, majority of casualties fall in the minor injuries bracket at 62.12 % as compared to fatal injuries at 1.5%. It is important to observe that while the proportion of fatal injuries is small in comparison to minor injuries, this can mean possible loss of life, loss of a limb or an injury that brings along permanent disability to a worker hence loss of gainful earning abilities in life. It is important to know the category of workers that are mostly affected by these accidents in building construction sites and why.

4.7 Work category of the accident victims

The table 4.7 below shows the work categories in which the building construction site accident victims belong.

Table 4.7 Work Category of Site Accident Victims

Options	Frequency	Percent	Valid Percent	Cumulative Percent
Unskilled labour	47	51.1	72.3	72.3
Skilled labour	13	14.1	20.0	92.3
Others	5	5.4	7.7	100.0
Total	65	70.7	100.0	
Missing	27	29.3		
Total	92	100.0		

From the table 4.7 above the most affected cadre of workers in building construction sites are the unskilled labour at 72.3% compared to the skilled labour at 20.0%. The group comprised in the category of 'others' include administrative personnel in the construction companies, professionals like architects, engineers and quantity surveyors who visit building construction sites during site meetings, specialist sub contractors or even members of the public.

4.8 Possible causes of the site accidents

Table 4.8 below shows the possible causes of the accidents recorded by the respondents in their building construction sites in the past 5 years.

Table 4.8 Possible Causes of Accidents in Building Construction Sites

Options	Frequency	Percent	Valid Percent	Cumulative Percent
Worker's negligence	34	36.95	51.5	51.5
Worker's incompetence	3	3.26	4.55	56.05
Faulty equipment	11	11.95	16.67	72.72
Inappropriate work methods	13	14.13	19.7	92.42
Other causes	5	5.43	7.58	100.00
Total	65	71.72	100.0	
Missing	27	29.34		
Total	92	100.0		

Table 4.8 above indicates that most of the recorded accidents in the last 5 years were due to the worker's negligence resulting to 51.5% of the possible causes that the building construction site accidents can be attributed to.

4.9 Training and Inductions

Another objective of this study was to establish the impact of training and induction towards health and safety in building construction sites.

The training and induction is generally aimed at preventing or minimizing possibility of injury, illness or dangerous incidents on construction sites.

The researcher therefore sought to find out from the respondents whether they carry out training and induction on issues of health and safety to their staff in building construction sites.

Table 4.9 Respondent’s Feedback To Conduct Training and Induction

Options	Frequency	Percent	Valid Percent	Cumulative Percent
YES	70	76.1	76.1	76.1
NO	22	23.9	23.9	100.0
Total	92	100.0	100.0	

From table 4.9, majority of the respondents 76.1% indicate they do conduct training and inductions in their building construction sites as opposed to 23.9% who don’t carry out any training or inductions.

4.10 Worker’s response to training and inductions

Table 4.10 below depicts the worker’s response to training and inductions in sites

Table 4.10 Workers Response to Training and Inductions

Options	Frequency	Percent	Valid Percent	Cumulative Percent
Very good	18	19.6	25.7	25.7
Good	42	45.7	60.0	85.7
Poor	10	10.9	14.3	100.0
Total	70	76.1	100.0	
Missing	22	23.9		
Total	92	100.0		

The respondents indicate that the training and inductions are fairly well received by their staff, only 14.29% of them say their staff have a poor attitude towards training and inductions.

4.11 Testing of hypothesis 2

Null hypothesis (H_0): Training does not affect levels of accidents in building construction sites

Alternative hypothesis (H_1): If training at work place imparts information and enhances awareness, then providing training and induction will help improve occupational health and safety levels in building construction sites and reduce accidents.

Table 4.11 Testing of Hypothesis 2

		Do you conduct health and safety training and inductions of your staff in construction sites?		Total
		YES	NO	
Have recorded accident(s) in your sites in the last 5 years?	YES	66	0	66
	NO	4	22	26
Total		70	22	92

Table 4.12 Chi – Square Test Result

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	73.398 ^a	1	.000	
Continuity Correction ^b	68.821	1	.000	
Likelihood Ratio	78.889	1	.000	
Fisher's Exact Test				.000
Linear-by-Linear Association	72.600	1	.000	
N of Valid Cases ^b	92			

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.22.

b. Computed only for a 2x2 table.

From the results obtained in table 4.12 the Pearson Chi – Square Test the significant value is so small in the range of 0.00 indicating a relation between the two variables, hence the

researcher accepted the alternative hypothesis (H_1). that, If training at work place imparts information and enhances awareness, then providing training and induction will help improve occupational health and safety in building construction sites thereby reducing site accidents We and reject the null hypothesis (H_0).

4.12 Cost of risk control measures

Risk control is taking actions to eliminate or reduce the likelihood that exposure to a hazard will result in injury or disease.

4.13 Risk back up control measures

The researcher posed a checklist of 'back up' control measures towards health and safety in building construction sites to the respondents in a bid to gauge whether these are regularly put to use when need arises in the course of their construction activities in the sites.

Risk back up control measures check list.

- (i) Health and safety adviser
- (ii) Training and inductions
- (iii) Appropriate lifting equipment
- (iv) Personal protective equipment
- (v) First – aid facilities
- (vi) Warning signs and symbols
- (vii) Routine safety inspections
- (viii) Safe work methods
- (ix) Permit - work

Table 4.13 Respondent’s Reaction to the ‘Back up’ Risk Control Measures checklist

Item	Observed Frequency	Expected Frequency
Health and safety adviser	33	92
Training and inductions	70	92
Appropriate lifting equipment	31	92
Personal protective equipment	45	92
First aid facilities	49	92
Warning signs	36	92
Routine safety inspections	42	92
Safe work methods	55	92
Permit to work	11	92
Total		92

From table 4.13 above majority of respondents 70 in number are positive about training and inductions at work place but whether this reflects into less accidents and injuries in building construction sites is a different case. 55 respondents are conscious about safe work methods as a measure of control in safety at work. Permit to work received the least concern 11 respondents, probably because it is only necessary in high risk tasks such as work in confined spaces or working in areas with highly flammable liquids and chemicals.

4.14 Respondent’s opinion on cost of risk control measures

Table 4.14 below show the respondent’s opinion on cost of risk control measures.

Table 4.14 Respondent’s Opinion on Cost of Rick Control Measures

Options	Frequency	Percent	Valid Percent	Cumulative Percent
Very expensive	20	21.7	21.7	21.7
Expensive	47	51.1	51.1	72.8
Affordable	21	22.8	22.8	95.7
Cheap	4	4.3	4.3	100.0
Total	92	100.0	100.0	

Table 4.14 above indicates providing and maintaining the risk control measures is a costly arrangement, with 72.8% of the respondents saying it is either expensive or very expensive. Only 27.2% of them seem comfortable with the costs involved in providing and maintaining the risk control measures in building construction sites, hence affordable and even cheap to some respondents.

4.15 Testing of hypothesis 3

Null hypothesis (H_0): Risk control measures are not adhered to in building construction sites.

Alternative hypothesis (H_1): Risk control measures are adhered to in building construction sites.

Table 4.15 Testing of Hypothesis 3

O	E	O - E	(O - E) ²	(O - E) ² /E
33	92	-59	3,481	37.83
70	92	-22	484	5.26
31	92	-61	3,721	40.44
45	92	-47	2,209	24.01
49	92	-43	1,849	20.09
36	92	-56	3,136	34.08
42	92	-50	2,500	27.17
55	92	-37	1,369	14.88
11	92	-81	6,561	71.31
				Total=71.31

Chi – Square Test Result

Calculated value of $X^2 = 71.31$

IX²I Table value with $v = 8$ degrees of freedom using 5% level of confidence = 15.51

Therefore since X^2 greater than IX²I we accept the null hypothesis (H_0) that: Risk control measures are not adhered to in building construction sites and reject the alternative hypothesis (H_1) that: Risk control measures are adhered to in building construction sites.

4.16 The influence of building-project client on health and safety measures implementation

One of the study's objectives was to investigate the influence of a project-client in their building project. This is illustrated by the result in table 4.16 below.

Table 4.16 Type of Clientele

Result	Frequency	Percent	Valid Percent	Cumulative Percent
Private individuals	43	46.7	46.7	46.7
Private corporate companies	21	22.8	22.8	69.6
Government sponsored projects	28	30.4	30.4	100.0
Total	92	100.0	100.0	

The results of the table 4.16 above suggest most respondents do work for Private individual clientele hence 46.7% while Government sponsored projects and Private corporate companies are 30.4% and 22.8% respectively.

4.17 Adherence to use of formal agreement in building projects

Table 4.17 below indicates client's use of formal agreements in their projects.

Table 4.17 Adherence to use of Formal Agreement in Building Projects

Result	Frequency	Percent	Valid Percent	Cumulative Percent
Private individuals	19	20.65	20.65	20.65
Private corporate companies	44	47.83	47.83	68.48
Government sponsored projects	29	31.52	31.52	100.0
Total	92	100.0	100.0	

From the respondents feedback private corporate companies are more concerned with contract documentation at 47.8% while private individuals are more liable to avoid contract documentation in their building projects probably in an attempt to cut costs by limiting professional involvement, hence 20.7%.

4.18 Respondents opinion about clients influence in enforcing health and safety measures in their projects.

The researcher sought the respondent’s opinion on the level of clients influence in enforcing health and safety measures in their building projects.

Table 4.18 Client’s Influence in Enforcing Health and Safety in Their Building Projects

Options	Frequency	Percent	Valid Percent	Cumulative Percent
Very good	21	22.83	22.83	22.83
Good	37	40.22	40.22	63.05
Poor	29	31.52	31.52	94.57
Very poor	5	5.43	5.43	100.0
Total	92	100.0	100.0	

From Table 4.18 above majority of respondents at 46.61% say their clients are not very responsive to enforcing health and safety measures in their building projects, while 40.22% of the respondents think the clients have a good response in enforcing health and safety measures in their building projects.

4.19 Testing of hypothesis 4

Null hypothesis (H_0): Most project clients do not use formal contract agreements in their building projects.

Alternative hypothesis (H_1): Most project clients use formal contract agreements in their building projects.

Table 4.19 Testing of Hypothesis 4

O	E	O - E	(O - E) ²	(O - E) ² /E
25	68	-43	1,849	27.19
29	35	-6	36	1.02
24	44	-20	400	9.09
				Total=37.3

Chi – Square Test Result

Calculated value of $X^2 = 37.3$

χ^2 Table value with $v = 2$ degrees of freedom using 5% level of confidence = 5.99

Therefore since χ^2 greater than χ^2_{table} we accept the null hypothesis (H_0) that: Most project clients do not use formal contract agreements in their building projects and reject the alternative hypothesis (H_1) that: Most project clients use formal contract agreements in their building projects.

4.20 Government policy

The researcher attempted to find out from the respondents their awareness of the existence of the occupational safety and health act, (2007).

Table 4.20 Possession of a Copy of The Occupational Safety and Health Act, 2007

Options	Frequency	Percent	Valid Percent	Cumulative Percent
YES	42	45.7	45.7	45.7
NO	50	54.3	54.3	100.0
Total	92	100.0	100.0	

The results from table 4.20 paints a grim picture since only 45.7% of the respondents claiming to possess a copy of the Occupational Safety and Health act, (2007) a document that serves as guide line and code of practice on issues of health and safety at work place. 54.3% admit not to possess a copy of the document. This therefore means the government has to step up inspectorate measures to increase awareness and enforcement of the Act among building contractors in the country.

4.21 Site inspection visits by government health and safety officials.

Tale 4.21 below shows the frequency of site visits by government health and safety officials

Table 4.21 Site inspection visits by government health and safety officials

Options	Frequency	Percent	Valid Percent	Cumulative Percent
Very often	8		8.69	8.69
Often	17		18.47	27.17
Rarely	24		26.09	53.25
Not at all	43		46.75	100.0
Total	92		100.0	

Table 4.21 above shows limited inspection visits by the government’s health and safety officials to building construction sites with only 27.18% of the respondents indicating ‘often’ and ‘very often’ site inspection visits while 26.09% of the respondents say they rarely get visits by the government health and safety officials and 46.75% of the respondents have never had a visit by the government officials.

4.22 Respondents opinion about government policy

Given the above findings from the respondents the researcher sought to get the respondents opinion about government policy on health and safety in the building construction industry. Their response is given in table 4.22 below.

Table 4.22 Respondent’s Opinion about Government Policy on Health and Safety in Building Construction Industry.

Options	Frequency	Percent	Valid Percent	Cumulative Percent
Very good	14		15.21	15.21
Good	31		33.70	48.91
Poor	35		38.04	86.95
Very poor	12		13.05	100.0
Total	92		100.0	

The result in table 4.22 above shows the respondents as having little faith in government commitment towards health and safety issues in the building construction industry. Majority of them gave a 'poor' and 'very poor' opinion of the government's policy at 51.08% while those who feel the government is committed were only 48.92%.

CHAPTER FIVE

SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents summary of the study findings as guided by the research objectives, discussion of the findings, conclusion, recommendations and suggested further research.

5.2 Summary of the study findings

Establishing and maintenance of health and safety management system in a working environment is critical in cultivating a health and safety culture among the employees in an establishment, more so in building construction where the levels of accidents are documented to be higher than most other work places, ILO report (2010) as we observed in the literature review. From the data collected 57.61% of the respondents claim to have established and do maintain a Health and Safety policy in their construction sites as opposed to 42.39% who don't.

However, the results of the Health and Safety management system check list indicated a worrying trend since most of the respondents who claim to have established and maintain a health and safety system in their construction sites have limited knowledge about the guiding principles of a Health and Safety management system. Only 39.6.7% are familiar with the principle of 'organization of safety roles and responsibilities', the response on the other guiding principles which include; Developing a company's health and safety statement, Planning and implementation of health and safety performance standards and targets, Measuring health and safety achievements, Health and safety reviews, Auditing to assess compliance, all score below 30%. Result of the hypothesis test 1 confirms that most building contractors do not have health and safety management systems.

71.74% of the respondents have recorded accidents in their construction sites in the last five years as compared to 28.26% who didn't. Though the accidents were mainly minor injuries in nature with only 1.5% and 9.09% being fatal and severe respectively, this shows

the level of danger construction site workers encounter in the course of carrying out their tasks.

Majority of the construction site accident victims according to the respondents are unskilled labour at 72.3% while skilled labour and others account for 20.0% and 9.09% respectively. While the major cause of the accidents recorded was worker's negligence at 51.5%, followed by inappropriate work methods at 19.7% and faulty equipment at 16.67%. Worker's incompetence scored the least at 4.55% while other causes accounted for 7.58%.

The researcher was able to examine the extent to which training and inductions affects occupational health and safety measures implementation in the building construction sites. The study established that 76.08% of the respondents do conduct training and inductions in their construction sites an indication of safety consciousness. The respondents, 68.18% sited 'reduced accidents and injuries' as the immediate benefit accruing from training and induction of their staff on site. Other benefits noted by the respondents include; increased staff awareness 56.06% while improved worker motivation and performance 27.27%. Result of hypothesis test 2 confirms the fact that if training at work place imparts information and enhances awareness, then providing training and induction will help improve occupational health and safety levels in building construction sites and reduce accidents.

The study further sought to investigate whether the costs of risk controls affect implementation of occupational health and safety measures. Results from a back up risk control measures check list posed to respondents by the researcher indicate, training and inductions, and safe work methods as back up measures put to use by many respondents 70 and 55 in number respectively. While other measures on the check list recorded less than 50 respondents. Majority of respondents 78.82% shy away from putting to use these back up risk control measures because of the costs saying providing and maintaining these measures is either expensive or very expensive. Results of hypothesis test 3 confirms that, risk control measures are not adhered to in building construction sites.

Another of the study objective was to assess how a building-project client influences implementation of occupational health and safety measures in a building project. While 46.61% of the respondents feel their clients are not responsive to enforcing health and safety measures in their projects, only 40.22% think their clients have a good response. Private corporate clients are more inclined to use formal contract documentation in their projects (82.8%) followed by government sponsored projects (54.5%) and private individuals who hardly use formal agreements in their projects (36.76%). Result of hypothesis test 4 confirms that most project clients do not use formal contract agreements in their building projects.

The government by formulating sound policy and good implementation framework can make a good impact in raising occupational health and safety awareness among the building contractors, but going by the respondent's feedback much more needs to be done on the government's part. Only 45.7% of the respondents are in possession of a copy of the Occupational Safety and Health act, 2007. 46.74% of the respondents have never seen government health and safety officials in their building construction sites. While only 26.08% say they rarely record any visits by the government officials. Hence the respondent's opinion about government's policy on health and safety in building construction industry is mainly poor (38%), very poor (13%) and good making 15%.

5.3 Discussions

The study had a number of specific objectives among them; To establish the extent to which health and safety management systems in a building construction company affects implementation of occupational health and safety measures, being guided by the research question; To what extent does health and safety management systems in a building construction company affect implementation of occupational health and safety measures?. From the study findings majority of building contractors haven't really established any meaningful health and safety management systems in their companies to help create a health and safety culture in their staff. From the literature review Hughes & Ferret, (2008) suggests guiding principles which include; developing a company's health and safety policy

statement with clear aims and objectives; the company should organize roles and responsibilities so that every individual is clear about his responsibilities and limits; planning and implementation of health and safety performance standards and targets in the company based on risk assessment methods so that all workers are aware of the set goals towards health and safety at work and endeavour to achieve the desired results; measuring of health and safety achievements to provide information on the progress and current status whether set targets are being met; health and safety performance reviews to be done regularly in order to address any shortcomings and changes; auditing must be carried out to ensure compliance with health and safety management arrangements and procedures by all from top personnel to subordinate staff. Therefore if accidents are properly investigated, recorded and reported, this will help prevent serious occurrences in future. The study findings point at an urgent need to enlighten the building contractors on the importance of developing and maintaining a sound health and safety management system.

The study sought to assess the extent to which training and inductions affect occupational health and safety measures implementation in building construction sites, being guided by the research question; To what extent does training and inductions affect implementation of occupational health and safety measures in building construction sites?. From the literature review, training and inductions involves providing information and instruction about work, health and management plans in a construction site, this therefore ensures that persons engaged to undertake construction work have a basic knowledge of the preventive measures needed to address possible hazards identified in a particular task. The training and induction is therefore aimed at preventing or minimizing the possibilities of injury, illness or dangerous incidents on construction sites. The findings of the study indicate 76.08% of the respondents do conduct training and induction in their building construction sites but on the other hand the level of accidents recorded in the building construction sites in the last 5 years by the respondents is still high at 71.74%. Although most of the recorded accidents are minor in nature 62.12% and mostly affected unskilled labourers (71.21%) this observation begs the question about the category of staff included

in the training and induction programs in construction sites and the effectiveness of such training and induction.

Another of the research objectives was to investigate whether the costs of risk control measures affect implementation of occupational health and safety procedures, guided by the research question; How does cost of risk control measures affect implementation of occupational health and safety procedures?. Risk control is taking actions to eliminate or reduce the likelihood that exposure to a hazard will result in injury or disease. In the hierarchy of control measures towards risks the first approach is eliminating the hazard but if completely eliminating the hazard is impractical then ways of minimizing the risk posed by the hazard can be employed. The third option is introduction of 'back up' control measures which are put in place if elimination and minimizing the risk completely is not possible. These 'back up' control measures include; Appropriate lifting equipment, Personal protective equipment, Routine safety inspections, Safe work methods, Warning signs and symbols, Permit to work, First aid facilities, Training and induction and Health and safety adviser. From the results of the study majority of the respondents indicated limited use in their sites of such risk back up measures with many items of the risk back up control measures checklist scoring less than 50 respondents. This observation is explained by the fact that majority of the respondents at 72.82% find providing and maintaining the risk control measures in their construction sites as expensive or even very expensive. This therefore has the effect of retarding occupational health and safety measures in building construction sites.

The other objective of the study was to assess how a building project client influences implementation of occupational health and safety measures in a building project, guided by the research question; How does a building-project client influence implementation of occupational health and safety measures in a building project?. It is imperative that clients take measures to ensure a good standard of health and safety in projects in which they are involved since causes of accidents and ill-health are well known and all of the deaths and injuries that occur in building construction sites are foreseeable and therefore preventable. On this note therefore, an appropriate use of procurement procedures and contract

documentation has the potential to raise the standards of occupational health and safety on individual building projects and this forms one direct way the clients can exert their influence in their projects. Results from the study show private corporate companies are more inclined to use of formal contract agreements in their projects at 47.83% as compared government sponsored projects at 31.52% and private individual clients at 20.65%. Feedback from the respondents about their opinion on the level of clients influence in enforcing health and safety measures in their building projects show 46.61% think their clients are not responsive to enforcing health and safety measures in their projects while only 40.22% think their clients have good response. This therefore means that if building-project clients strictly adhere to use of formal agreements with occupational health and safety clauses clearly pointed out, then the levels of occupational health and safety measures in building construction sites would definitely be enhanced.

The study has government policy as a moderating variable from the fact that government plays a pivotal role by way of formulating appropriate policies which should be followed up by sound institutional and legal framework to see effective implementation. The enactment of the occupational health and safety act, 2007 is one such step in the right direction but a lot remains to be done to tame the spate of accidents and injuries being experienced in the building construction industry. Results from the study show only 45.7% of the respondents are in possession of a copy of the Occupational Safety and Health Act, 2007 while 54.3% do not have, this therefore points to ignorance on the part of most respondents since the contents of this act should serve as a guide and code of practice on issues pertaining to health and safety in construction sites. This is probably because most respondents claim government health and safety officials rarely or in some cases never visit building construction sites hence 72.82%, while only 27.18% of the respondents claim government health and safety officials often visit their building construction sites. Thus majority of the respondents gave a 'poor' and 'very poor' opinion about government's policy to health and safety in the construction industry at 51.08% while those who felt the government is committed were only 48.92%.

5.4 Conclusion

Results from the study point to an emphasis on establishing health and safety management and development of safe systems of work in building construction enterprises so as to positively effect implementation of occupational health and safety measures in construction sites. The success of this begs for the participation of all in an organization including top management and all staff for the purpose of creating a positive health and safety culture through commitment, corporation and effective communication. The senior managers should help in setting the organization's health and safety policy statement with clear objectives and targets. Supervisors should help checking on day to day compliance of health and safety procedures. Safety advisors to advise on accidents investigations and reporting. Safety representatives to consult with employer on behalf of employees. Employees to care for their health and safety as well as for the others. First aiders to assist the injured. The success of the health and safety management system will rely on the following; accident investigation and reporting, health and safety monitoring and audit, monitoring of plant equipment its maintenance and risk assessment, management and employee safety committees, health and safety training and information and general surveillance.

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. Hypothesis testing result also attest to the

fact that increased awareness through training and inductions will help reduce the levels of accidents in building construction sites.

Although the respondents confirm the fact that provision and maintenance of risk control measures is expensive hence impeding the implementation of health and safety measures in construction sites, this is made worse by the probable attitude of the enterprising building contractors of putting their business profits considerations ahead of safety requirements. A change of attitude on the part of the contractors in this case can make a positive change towards occupational health and safety in the construction industry.

Results of the study indicate project-clients influence in enforcing occupational health and safety in their building projects is still wanting, especially in the case of private individual clients this could be attributed to an attempt to cut costs in their projects since procurement procedures and contract documentation attracts additional costs by involving the relevant professionals.

Building contractors have little faith in government's commitment to issues of occupational health and safety in the construction industry this could be explained by the small number of building contractors who are in possession of a copy of the Occupational Safety and Health Act, 2007 only (45.7%) and emphasized by the fact that government health and safety officials rarely make inspection visits to construction sites.

5.5 Recommendations

From the foregoing the construction industry is bedeviled by many factors in attempts to implement health and safety measures in building construction sites, this therefore begs the concern of all stakeholders in the industry in efforts to correct the status quo. The researcher came up with several recommendations;

1. On the issue of development of health and safety management system in construction activities, this can be propagated through national sensitization programs and other forums where professional bodies such as The Architectural Association of Kenya in

partnership with government departments can enlighten contractors about the importance of health and safety culture in their work places in a bid to reduce risks and accidents.

2. 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.

3. Contract documentation and strict procurement procedures if made mandatory for every building construction project, will make project-clients more proactive to issues of health and safety in their projects in prevention of accidents instead of the usual reactive response to compensation claims when an accident has already happened and injuries suffered.

4. The government should channel more resources towards enforcement of the Occupational Safety and Health Act, 2007 by employing more health and safety officials to ensure effective inspectorate and compliance through the office of the Director of Occupational Safety and Health Services (DOHSS). Institutional framework should be strengthened in order to weed out unethical and corrupt practices in the sector by bringing punitive measures to the culprits. The Ministries of Public Works and that of Labour should up their act by formulating and enacting policies which are sensitive to issues of health and safety to replace the outdated legislation which does not include health and safety provisions. Last but not least, Kenya being a member country at The International Labour

organization should move in and ratify the ILO conventions that focus on health safety at work to signify its commitment.

5.6 Suggestions for further research.

Further research need to be undertaken on the issue of construction site accident investigations, reporting and records so as to advice the government on policy formulation and implementation on issues of health and safety in construction work.

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APPENDIX I

LETTER OF TRANSMITTAL

Harris M. Kirombo,
P. O. Box 97397,
Mombasa
April, 2012

The Management.

Dear Sir/ madam,

RE: ACADEMIC RESEARCH PROJECT FOR A MASTERS DEGREE PROGRAMME

I am a student at the University of Nairobi (UON) pursuing a masters degree course in project planning and management. It is a requirement that I conduct and submit a research report on **'Factors affecting implementation of Occupational health and safety measures in the construction industry: The case of Mombasa County', Kenya.**

Please note that information you give is to be used in this study for academic purposes only, and as such it will be treated with utmost confidentiality.

Your corporation and honesty in filling this questionnaire will be greatly appreciated.

Thank you for your time.

Yours Faithfully,

Harris M. Kirombo.

APPENDIX II

QUESTIONNAIRE

1. Identification

Respondent's position (optional)

Name of Organization

Note:- if your reply is by e-mail, to mark your answer please click in the box, click insert, click format then shape/styles.

2. Health and safety management systems

a) Have you recorded accident(s) or incident in your construction sites in the last 5 years?

YES

No

b) If your answer to the question above is **YES**, what was the nature of the accident(s)

Fatal injury

Severe injury

Minor injury

Near miss

c) In which work category did the accident victim belong?

Unskilled labour

Skilled labour

Others

d) What in your opinion what could have be the main cause of the accident(s)?

- Worker's negligence
- Worker's incompetence
- Faulty equipment
- Inappropriate work methods
- Other causes

e) Do you maintain a health and safety policy in your construction sites?

- YES
- No

f) If your answer to the question above is yes, which of the following have you put to use?

- Developing a Company's Health and Safety statement
- Organization of safety roles and responsibilities
- Planning and implementation of Health and Safety performance standards and targets
- Measuring Health and Safety achievements (Monitoring, investigating and reporting accidents)
- Health and Safety performance reviews (evaluating performance)
- Auditing to assess compliance with Health and Safety management arrangements

3. Training and inductions

a) Do you conduct health and safety training and inductions of your staff in construction sites?

- YES
- No

b) What would you say is the response of the workers towards the training and inductions?

- Very good
- Good
- Poor

c) In your opinion what do you see as the benefits resulting from the training and inductions towards health and safety levels in your construction sites?

- Increased staff awareness to matters of health and safety
- Reduced accidents and injuries
- Worker motivation and improved task performance
- No benefit

4. Cost of Risk control measures

a) Which of the following measures have you put in place to enhance health and safety in your construction sites

- Health and Safety adviser
- Training and inductions
- Appropriate lifting equipment
- Personal protective equipment
- First-aid facilities
- Warning signs and symbols
- Routine safety inspections
- Safe work methods – scaffolds, ladders, harnesses etc
- Permit to work – for risky tasks

b) What in your opinion is the element of cost in providing and maintaining these health and safety measures?

- Very expensive

- Expensive
- Affordable
- Cheap

5. Building-project client's influence on Health and Safety measures implementation

a) Which clientele do you mostly work for?

- Private individuals
- Private Corporate companies
- Government sponsored projects

b) Which of your clientele use formal contract agreement in their building projects?

- Private individuals
- Private Corporate companies
- Government sponsored projects

c) In your opinion, what is the level of client's influence in enforcing health and safety measures in their building projects?

- Very good
- Good
- Poor
- Very poor

6. Government policy

a) Do government health and safety officials visit your construction sites for inspections?

- Yes
- No

b) If your answer to the above question is **Yes**, how often do government health and safety officials visit your construction sites?

Very often

Often

Rarely

Not at all

c) What is your opinion about government policy on health and safety in the construction industry?

Very good

Good

Poor

Very poor

d) Do you have a copy of the Occupational Safety and Health Act, 2007?

Yes

No

Thank you for your participation.

