

**OCCUPATIONAL SAFETY AND HEALTH TRAINING
AND PERFORMANCE OF CEMENT MANUFACTURING
FIRMS IN KENYA**

SELERINA SAMBA MWARUTA

**DOCTOR OF PHILOSOPHY
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**Occupational Safety and Health Training and Performance of
Cement Manufacturing Firms in Kenya**

Selerina Samba Mwaruta

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other university.

SignatureDate.....

Selerina Samba Mwaruta

This thesis has been submitted for examination with our approval as University Supervisors.

SignatureDate.....

Prof. Patrick Ngugi Karanja, PhD
JKUAT, Kenya

SignatureDate.....

Dr. Mary Kamaara, PhD
JKUAT, Kenya

DEDICATION

I dedicate this work to Mr. Francis Wanjau my husband; who has always been on my side ever since I began this program.

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ABBREVIATIONS AND ACRONYMS

DOSHS	Directorate of Occupational Safety and Health Services
EAP	Employee Assistance Programmes
HPWS	High Performance Work Systems
HRM	Human Resource Management
ILO	International Labour Organization
IMF	International Monetary Fund
JKUAT	Jomo Kenyatta University of Agriculture & Technology
KAP	Knowledge, Attitude and Practices
KPMG	Klynveld Peat Marwick Goerdeler
MSDS	Material Safety Data Sheets
NACOSTI	National Commission for Science, Technology and Innovation
OSH	Occupational Safety and Health
OSHA	Occupational Safety & Health Administration
OSHA ACT	Occupational Safety & Health Administration Act
SPSS	Statistical Package for the Social Science
WHO	World Health Organization

DEFINITION OF TERMS

Demography	Is socio-economic attributes of a population expressed statistically, such as sex, age, education level, income level, marital status, religion and occupation (Jong, Jinill & Jungjin, 2014).
Dosh	This is one of the Ministry of Labour and East African Community Affairs department in Kenya with its primary objective in ensuring health, safety and welfare of employees in all workplaces across the country. It has focus on probable environmental causes on accidents, disasters, diseases and environmental pollution (OSHA Act, 2010). It is Directorate of Occupational Safety and Health Services (DOSHS)
Occupational Accidents	The World Health Organization defines it as an unplanned event that mostly results in personal injuries with the equipment and machines taking the knock or as well ceasing production for some time (OSHA Act, 2010).
Occupational Health Programmes	These are programmes dealing with the prevention of Ill-health arising from working conditions. They are designed to lower the effects of sicknesses connected to the job (Armstrong & Taylor, 2014).
Occupational Safety and Health Act (OSH)	This is a comprehensive law that upholds and points on the need for the organizations to ensure the health and safety of the employees at the workplace (Noe, Hollenbeck, Gerhart & Wright, 2015).

Occupational Safety and Health Administration This is a body set to administer and manage the Implementation of the Act and ensure that the health

OSHA Standards among the employees are met by the organizations (Dessler, 2013).

Safety Programmes They deal with the prevention of accidents and with minimizing the resulting losses and damage to people and property. The main aim is to impart knowledge and skills required to reduce accidents (Dessler, 2013). They relate more to systems of work than the working environment but both health and safety programmes are concerned with protection against hazards and their aims and methods are clearly interlinked (Armstrong & Taylor, 2014).

Training expertise The skills and knowledge required to impart knowledge to the trainee. Manufacturing firms and other industries in Kenya have to invest in the expertise to have successful OSH training. They advise on policies and procedures and on healthy and safe methods of working. They conduct risk assessments, safety audits and investigations into accidents (in conjunction with managers and health and safety representatives), maintain statistics and report on trends and necessary actions (Armstrong & Taylor, 2014).

Training methods These are the approaches, the tools and procedures used to impart knowledge, where the content of the training relates directly to the training objectives and in this case, on safety and health at the workplace (Noe, Hollenbeck, Gerhart & Wright, 2011). They are designed to minimize the impact

of work related illnesses (Armstrong & Taylor, 2014).

Training programmes

The schedules drawn on how to carry out the regular safety and health training by the concerned institution. They consist of organization's planned efforts to help employees acquire job related knowledge, skills, abilities and behaviours with the aim of applying these on the job (Noe, Hollenbeck, Gerhart & Wright, 2015).

Training resources

The facilities required for training; they include finances, training venues, human resource, informational materials and time among others (Armstrong & Taylor, 2014).

ABSTRACT

This study sought to find establish the influence of occupational safety and health (OSH) training on the Performance of Cement Manufacturing Firms in Kenya. The cement industry in Kenya plays a crucial role in the ever-growing building and construction industry. These firms are incurring huge costs due to employee absenteeism and compensation caused by occupational accidents which are an unexpected and unintentional series of events leading to a physical injury of a person at the work place. It may be caused by lifting, fatigue, dehydration, poor lighting, etc. It is against this background that the study sought to fill the existing gaps by examining how occupational safety and health (OSH) training influence the performance of manufacturing firms in the cement sub-sector in Kenya. The study also sought to establish the moderating effect of management support on the relationship between occupational safety and health training and Performance of Cement Manufacturing firms. A Conceptual framework was drawn to depict how the conceptualized independent variables relate to the dependent variable. The study was supported by Occupational Safety and Health training model, Domino safety Theory, Epidemiological Theory, Human Factor Theory and Expectancy Theory. A descriptive research design was adopted since it explains the what, when and where of the phenomenon. The unit of observation was all the cement manufacturing firms while the unit of analysis was the employees working in the firms in Marketing and Production departments randomly picked. Both open and close ended questionnaires were used to collect data from the respondents. The study adopted a multi-stage sampling technique to select a sample from the six cement manufacturing firms in Kenya. In order to test for data integrity, Normality test, Multicollinearity, Heteroscedasticity and Hypothesis tests were carried out. In order to test for Strength and direction of the relationship between independent and dependent variables, Pearson correlation was carried out. A pilot study was conducted to test the reliability and validity of the data collection instrument. To test the influence of the conceptualized independent variables on the dependent variable, regression analysis was carried out. The study established that OSH training on Hazard Identification, OSH training on Occupational Accidents, OSH Training on Hazard Prevention and Employee Participation in OSH training, significantly influence performance of cement manufacturing firms in Kenya. It further established that management support moderates the relationship between the predictor variables and outcome variables. The study concluded that in order to address the issue of Occupational Accidents, Hazard Identification, Hazard Prevention and Employee Participation, there was considerable need to provide training on Occupational Safety and Health (OSH) training among employees. The study recommends that there is need for organizations through their management to provide adequate and frequent training on safety and health through which they ought to save on operational costs as well as instilling better productivity among their employees thus maximizing on performance.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Cement Manufacturing is one of the manufacturing activities that have the highest health effect on workers (WHO, 2013) Occupational Accidents is an unexpected and unintentional series of events leading to a physical injury of a person at the work place. It may be caused by lifting, fatigue, dehydration, poor lighting etc. The manufacturing companies have been spending millions of shillings in compensating injured employees plus the costs of absenteeism and low productivity due to work-related injuries (ILO 2018) In the modern business World, there are numerous hazards and safety risks facing employees at the workplace. Providing the necessary information on these hazards through training to the employee is therefore a good motive towards enhancing their productivity and effectiveness (ILO, 2018). On the other hand, Occupational Safety and Health Administration (OSHA) Act 2007 revised 2010, also provides that regular OSH training is required for the staff to keep up-to-date with the latest information on the diverse causes of health and physical hazards present at workplace (Charles, Joel & Samwel, 2012). According to Armstrong and Taylor (2014), safety and health training is key and part of the preventive programmes in any organization and that it should start as part of the induction course and should also take place following a transfer to a new job or a change in working methods. Safety training spells out the rules and provides information on potential hazards and how to avoid them. Further, refresher training should be provided and special courses lay out to deal with new aspects of safety and health or areas in which safety problems have emerged (Anderson, Collins, Devlin & Renner, 2012).

Training the employees on Occupational Safety and health remains an integral requirement for organizations in the manufacturing sector (Travis 2016) One way to obtain compliance with safety and health regulations is through enhancing employees'

knowledge, understanding and commitment which can be achieved through safety and health programmes (Travis, 2016). The purpose of safety training is generally the same as that of any other training programmes; to improve job knowledge and skills and to ensure optimum employee performance at the specified level (Chung & Rashad, 2014). In many cases, the sustainability of an organization is based on psychological and physical health of the employees as well as the skills and knowledge acquired through periodical trainings (Chung & Rashad, 2014). Furthermore, it is understood that organizations cannot avoid such cases like occupational illnesses, accident risks and environmental hazards (Demirkesen & Arditi, 2015). Internationally, for example, it is acclaimed that depression, pressure and tension cannot be escaped by employees and therefore means of handling them should be devised (Chung & Rashad, 2014). Laberge, MacEachen and Calvet (2014) were of the opinion that occupational safety and health training approaches should be tailored by the organization based on the work done and the nature of the workforce.

In safety and health training, specified performance standards include attention to safety rules and regulations regarding safe work behaviour. Problems or training needs are identified by inspection, by accident reports and through discussion at the safety and health committees. Research has established and suggested that safety awareness training programmes only have a short term effect on employee's behaviour. It is further suggested that after employees have completed their safety training at the orientation stage, the human resource department should organize regular refresher courses. That is why safety and health training is a key part of the preventative programme and should start as part of the induction course and that it should also take place following a transfer to a new job or a change in working methods (Armstrong & Taylor, 2014).

Training employees would reduce the occupational accidents thus minimizing the losses incurred when an employee is injured in the line of duty (Armstrong & Taylor 2014). Since long time ago, knowledge about employee safety programmes has been conducted by different authors with different knowledge (Aires, Gámez, & Gibb, 2010). These authors discovered that employee safety programmes contributed to an employee

performance while management had the responsibility to know what is happening to the human resource and how to take care of them. Proper safety and health programmes would also ensure that the machines were operated safely, with efficiency and avoid breakdown (Saleemi, 2011). Armstrong and Taylor (2014) talked about safety programmes and said that it is the responsibility of everyone employed in an organization as well as those working under contract to try and achieve a safe place of work and eliminate hazards. According to Armstrong and Taylor (2014), Occupational Health Programmes were designed to minimize the impact of work-related illnesses. Management of any organization should also appreciate that an employee who is safe and protected from accidents in the place of work is believed to be a productive employee (Odhiambo, 2012). This is because once employees are assured of their safety and health, they are likely to fully commit to work thus enhancing productivity of an organization. It is essential to measure safety and health with performance as a means of identifying in good time where action is necessary taking into account not only current positions but also the noted trends (Armstrong & Taylor, 2014).

1.1.1 Occupational Safety and Health Training

Al-Nuseirat and Biygautane (2014) while writing a policy brief number 37 for the UAE (United Arab Emirates) government demonstrated how effective health programs on workplace could positively influence employee performance and in this case performance of cement manufacturing firms in Kenya. Learning activities were supposed to motivate the employees, enhance their skills in preventive care at workplace and consequently improve on the performance (ILO, 2018). It is widely acknowledged that training employees on OSHA has positive impact that can be utilized for the general efficiency and performance of employees (Trout, 2015). Most organizations have been compelled by the government and staff to provide effective training options for the workplace safety and health (Trout 2015). Business and Legal Reports, BLR, (2014a) stated that safety training was acutely needed since employee who were wearing respirators (safety gear) at workplace were wearing them improperly. This improper wearing of respirators was connected to poor communication and lack of training by the

organizations (Athey, 2015). Thus BLR (2014) recommended that there is need for more programs for training of employees on OSHA practices and even on multilingual communication.

According to Katsuro, Gadzirayi, Taruwona and Mupararano (2010), the World Health Organization (2013) estimated that over 160 million of new cases of work related illnesses occur every year while the International Labour Organization (ILO) estimated that 2.2 million employees died every year as a result of work related ill-health and injury and 350 thousand of these deaths are due to occupational illnesses and accidents. On top of this, ILO estimated that there were 264 million non-fatal accidents which occurred each year that resulted in more than three (3) days absence from work and 160 million people suffered from work-related diseases. In economic terms, the ILO (2013) estimated that 4% of the world's annual GDP is lost as a consequence of occupational diseases and accidents. During the year 2012, slightly more than three (3) million US employees suffered from occupational injuries and illnesses resulting from accidents at work (ILO 2013). These statistics resulted in an incidence rate of 3.3 cases per 100 equivalent to full time employees (Bureau of Labour Statistics, 2013). In the United Kingdom, 2 million people were reported to be suffering from illnesses believed to be caused or made worse by their current or past work. Overall UK performance was better than many other European countries such as Germany, France, Italy, Spain and Poland in the key areas of injuries, fatalities and self-reported work related ill-health (British Safety Council, 2014). According to John & Susan – Magid Glove and Safety Manufacturing Company (2017), every day, 9000 employees suffered a serious work-related injury costing employers nearly \$51 billion in wage payments and medical care hence the need for training which a crucial part of teaching good safety practices is.

Menger, Rosecrance, Stallones, and Roman-Muniz (2016) found 72 employees in dairy manufacturing industry in United States stated they received task-related training as they were joining the dairy manufacturing firms. Out of the selected 72, 57% received the training upon being hired while another 19.5% employees stated that they had not received any training on occupational safety and health. This study was conducted in

Colorado, Wisconsin and South Dakota dairies and found that around 25% of the milk handling machine operators were not trained on handling the machines and were not aware of the procedures to follow to handle occupational incidences (Liebman, Juárez-Carrillo, Reyes & Keifer, 2014) yet they were exposed to occupational accidents. Internationally, it was also acclaimed that depression, pressure and tension could not be escaped by employees and therefore the means of handling them needed to be devised (Chung & Rashad, 2014). Laberge, MacEachen and Calvet (2014) were of the opinion that occupational safety and health training approaches should be tailored to the organization based on the work done and the nature of the workforce.

1.1.2 Performance of cement manufacturing firms

Across Africa, majority of countries have many industries more focused on organizational success than the welfare of the employees (Umeokafar, Isaac, Jones, & Umeadi, 2014). Citing OSHA Act, the above OSHA violations were associated with construction industry and the second was hazard communication that involved proper channels of passing information through training and updating safety developments at the workplace. Othman (2012) provided a case study of South African construction industry and how the aspect of OSHA was ignored on the part of training. Othman (2012) indicated that construction as well as manufacturing industries in South Africa had overlooked health and safety regulations with low trends observed in training employees on occupational safety and health. In Tanzania, Greepherson (2013) writing about safety and health adherence and training at the Arusha Airport recommended that training and education of staff on OSHA, involving staff in planning training programmes and motivating employees should be implemented as they were lacking.

In Africa, the aspect of occupational health and other related practices has been ignored by most countries and organizations, for example, ILO (2013) reported that 63,900 work deaths occurred in the 54 African countries and that an estimated 1,560,000 disabling work injuries occurred. The fundamental perspective on why majority of African countries and organizations struggle to foster an effective occupational safety and health

workplace is that most employers put greater emphasis on productivity and profitability while compromising safety and health standards, procedures, policies and programmes (Ferret, 2015).

In Kenya, majority of the cement manufacturing industries work hard to ensure they follow OSHA guidelines like installing safety equipment at their right places, having safety guidelines placed at strategic places and having fire assembling points among other mandatory provisions (Wambilianga & Waiganjo, 2015). However, the aspect of training the employees on OSH and its effective adherence has not been keenly undertaken. The government of Kenya through the parliament amended laws as a way of taking care of developments and changes in the OSH. The Work Injury Benefits Act (WIBA) is one of the amendments done in 2007 as well as the OSH Act of the same year 2007 that facilitate provision of secure workplace for all employees and noting that compensation of the employee is essential in the event of accidents at the workplace (ILO, 2013) and therefore eating on organization's financial resources. OSHA Act 2007 provided guidelines for ensuring organizational safety with an emphasis on training to all employees in the organization. In addition to that, laws specific to manufacturing firms included the Factories (Woodworking Machinery) Rules, L.N. No. 431/1959, the Factories (Docks) Rules, L.N. No. 306/1962 and the Factories (First Aid) Rules, L.N. No. 160/1977 among others that guided manufacturing operations and protect employees in case of Occupational Safety and Health incidents (ILO, 2013) have been emphasized.

In Kenya, East Africa Portland Cement Company (EAPCC) in 2014, a total of 32 occupational accidents were reported from different departments (Economic Survey, 2015). In January 2015, Bamburi Cement ex-employee was awarded 7.9m compensation for allegedly losing his hearing ability while working at the Bamburi Cement Factory. Marowa Fumwo developed complications after being employed by the company. He was examined by Dr. Mukesh Shah upon the company's recommendation who concluded that Marowa lost his ability to hear as a result of noise trauma at the workplace and should be retired on medical grounds (Citizen Digital Report by Dzuya Walter, 2018). The Kenya Vision (2030), opines that Kenya aims at providing an

efficient, integrated and high quality affordable health care to all its citizens. Asfaw, Argaw and Bayissa (2015) and Wei and Yazdanifard (2014) remarked that in order for organizations to achieve optimum returns from their investment, there is imperative need to effectively manage health and safety training and development programs.

1.1.3 Cement Manufacturing firms in Kenya

The history of the cement industry in Kenya dates back to 1930s when in 1933, East Africa Portland Cement (EAPC) started importing cement. The plant's initial production was 60,000 tonnes per annum and by 2015, the capacity had grown by approximately 1066.67% to producing 700,000 tonnes per annum (East African Portland Cement - EAPC, 2015). EAPC has a market capitalization of 10 billion (Nairobi Stock Exchange records, 2007) and by December 2016, the company enjoyed a market share of 15.1% in the cement industry (Nairobi Stock Exchange, 2007)

In 1951, Bamburi Cement Limited was founded. Lafarge, an organization from France is the important investor of Bamburi Cement Limited. At the beginning, the yearly limit was 140,000 tons but had improved to 2.1 million tons per year and a market capitalization of 70 billion (Bamburi Cement, 2015). The organization appreciates a piece of the overall industry of 32.6% market share. Athi River Mining Limited-ARML was built up in 1974 and its guideline investor is the Paunrama family. At first it was a mineral extraction and handling organization and later in 1996, the concrete division started activity. The organization has a market capitalization of 8.7 billion (Athi River Mining Limited, 2015) and the percentage market share of the firm stands at 13.5% (Dyer & Blair, 2012).

Mombasa Cement Company forms the fourth largest controlling cement company with 15.8% as its controlling stake in the market. It started operations in 2013 besides being founded in 2007. The company is a subsidiary of Toronto Cement limited in Uganda and is headquartered in Nairobi with operations in Athi River. The company has an annual production capacity of 2.0mT with an increasing price competitiveness expected to

increase its market share to 20%. The National Cement Company produces the Simba brand of cement. This company started operations in 2008 having been founded by the Devki Group of Companies. The company controls about 8% of the cement market in Kenya and has an annual production capacity of over 1.0Mt (Dyer & Blair, 2012).

Savannah Cement company was opened in 2012 and the main shareholders are Chinese Investors Wan Ho controlling 40%, the Savannah Heights controlling 40% with the other shareholder Acme Wanji controlling 20% of the shares (Dyer & Blaire, 2012). The company is exclusively focused on export markets to Tanzania, Uganda, Burundi, Rwanda, Somalia, DRC and South Sudan. The company has an annual capacity of 1.5mT and a market share of 15% in the cement industry (Dyer & Blair, 2012)

Training opens opportunities to master new operations and give the manufacturing firms an advantage in improving operational efficiency. At the same time, training of employees has effects on improved organizational performance as Al-Nuseirat and Biygautane (2014) agreed that having effective training methods is associated with substantial improvement in performance of an organization. Effective training has potential impacts on performance since training builds strong proficient and qualified personnel who can deliver on their job and enhance the overall performance (Walters, 2016). According to Asfaw, Argaw and Bayissa (2015) and Chung and Rashad (2014), training is an aspect of improving employee performance. This points to the required need of training employee on OSH aspects thus ensuring that the bulging cases of industrial accidents are minimized or eliminated completely.

The history of the cement industry in Kenya dates back to 1930s when in 1933, East Africa Portland Cement (EAPC) started importing cement. The plant starting generation was at 60,000 tons for every annum. By 2015, the limit had improved and was delivering 700,000 tons for every annum (East African Portland Cement - EAPC, 2015). EAPC had a market capitalization of 10 billion (Nairobi Stock Exchange records, 2016). In 1951, Bamburi Cement Limited was established. Lafarge, an organization from France was the chief investor of Bamburi Cement Ltd. At origin the yearly limit was

140,000 tons of concrete however later on it remained at 2.1 million tons every year and a market capitalization of 70 billion (Bamburi Cement, 2015).

Athi River Mining forms the third largest cement manufacturer in Kenya controlling around 13.5% of the market share. It produces Rhino brand of cement. The company was formed in 1974 operating as a family business, with the majority shareholder being the Paunrana family with 46% of the total shares. The company was listed in the Nairobi Stock Exchange in 1997. Athi River Mining Limited-ARML was built up in 1974 and its guideline investor is the Paunrama family. At first it was a mineral extraction and handling organization and later in 1996, the concrete division started activity. The organization has a market capitalization of 8.7 billion (Athi River Mining Limited, 2015). Currently Kenya's cement factories are owned by six manufacturing firms located in Mombasa, Nairobi's Athi River branch and in Lukenya in Machakos County (Dyer & Blair Investment Bank, 2012).

Bamburi Cement Company operates the Nguvu brand cement from its establishment in 1951. The company was listed at the NSE in 1970 thus becoming the second cement manufacturer to be listed on the Nairobi Stock Exchange. It is the leading company in cement manufacturing with the Lafarge Group having the largest share at 58.6% as quoted by Dyer and Blair (Obaga, 2014). The company controls about 32.6% of the market share. The company employs over 851 employees spread across different departments. The company got a net income of KSh.5.87 billion in 2015. The company also owns the Hima Cement, the second largest cement producer in Uganda.

East Africa Portland Cement (EAPC) is associated with the Blue Triangle cement. The company is the oldest cement manufacturing firm in Kenya and started its operations in 1933. The company established a production plant at Athi River in 1956. The firm is owned by few major shareholders including NSSF at 27%, Government of Kenya at 25.3%, Lafarge Group at 14.6% and Bamburi cement with 12.5%. The company controls around 15.1% of the cement market and its products in Kenya. Ten major shareholders control 96.1% of the overall shares at EAPC Company. The company has

over 600 employees. Mombasa Cement Company forms the fourth largest controlling cement company with 15.8% as its controlling stake in the market. It started operations in 2013 besides being founded in 2007. The company is a subsidiary of Toronto Cement limited in Uganda. It is headquartered in Nairobi with operations in Athi River. The company has an annual production capacity of 2.0mT with an increasing price competitiveness expected to increase its market share to 20%.

National Cement Company produces the Simba brand of cement. This company started operations in 2008 having been founded by the Devki Group of Companies. The company controls about 8% of the cement market in Kenya. The company has an annual production capacity of 1.0mT. Savannah Cement company was opened in 2012 and the main shareholders are Chinese Investors Wan Ho controlling 40%, the Savannah Heights controlling 40% with the other shareholder Acme Wanji controlling 20% of the shares (Dyer & Blaire, 2012). The company is exclusively focused on export markets to Tanzania, Uganda, Burundi, Rwanda, Somalia, DRC and South Sudan. The company has an annual capacity of 1.5mT and a market share of 15%.

1.2 Statement of the Problem

While it is expected that training on occupational safety and health would improve performance, it has not been the case and a major concern to the top management in many manufacturing firms. According to Bratton and Gold (2017), the cost of occupational accidents can be as high as 37% of associated profits and 5% of operating costs. Cement Manufacturing is one of the manufacturing activities that have the highest health effect on workers due to lack of proper mechanisms of hazard identification, hazard preventions, training on occupational accidents and employee's participation in occupational safety and health policy development. This has resulted to over 160 million of new cases of work-related illnesses occurring every year (WHO,2013), while the International Labor Organization (ILO) estimates that 2.2 million employees die every year as a result of work-related ill-health and injury and 350 thousand of these deaths are due to occupational illnesses and accidents (Kaynak, Arzu, Meral & Ismail ,2016).The

net effect of this is that companies are spending huge amounts of money on compensating injured employees, replacement of damaged equipment, time wasted, low productivity due to accidents of skilled staff, interrupted production due to injuries, lost work days, high insurance premiums and low market growth (ILO 2018). This has had a negative impact on performance due to reduced employees' productivity, reduced market share, low return on investments and customer satisfaction. Time lost and the financial implications that accrue due to the occupational accidents add to the operational costs of the manufacturing firms (Zhao et al, 2016).

A study by Otieno (2012) in a case study of Industrial Area, Nairobi observed that industrial accidents kept on increasing in cases where training and refresher courses were ignored and that most of the occupational accidents occurred mostly to those who were new or with less than five years stay in the company. This indicated that frequent OSH trainings were not available and thus the exposure to risks was high yet the country's aim was to provide an efficient, integrated and high-quality affordable health care to all its citizens (Republic of Kenya, Big 4 Agenda). On the other hand, Occupational Safety and Health Awareness and Training, Ontario Regulation 297/13 (2015) did not establish influence of OSH trainings on organizational performance, hence the gap this study is seeking to address.

Management Support has a major role to ensure effective communication within the organization in terms of decisions made pertaining to the welfare of the employees. Management especially the top level managers have a role to play in terms of resource allocation to ensure smooth operations of the organization and to ensure proper maintenance of the equipment being used by employees so as to avoid some of the occupational accidents which happen as a result of poor equipment. The management plays a big role in organizing for training programs which will help them ensure that employees comply to the Occupational Health and Safety Administration (OSHA) Act.

1.3 General Objective

The general objective of this study was to determine the Relationship between Occupational Safety and Health Training (OSHT) and Performance of cement manufacturing firms in Kenya.

1.3.1 Specific Objectives

1. To determine how OSH training on occupational accidents affects Performance of cement manufacturing firms in Kenya.
2. To establish the effect of OSH training on hazard identification on performance of cement manufacturing firms in Kenya.
3. To establish how OSH training on hazard prevention relates with performance of cement manufacturing firms in Kenya.
4. To determine how employee participation in OSH training effects performance of cement manufacturing firms in Kenya.
5. To examine the moderating effect of management support on the relationship between occupational safety and health training and performance of cement manufacturing firms in Kenya.

1.4 Statistical Hypotheses

1. **H₀**: There is no effect of OSH Training on occupational accidents on Performance of cement manufacturing firms in Kenya.
2. **H₀**: OSH Training on hazard identification has no effect on Performance of cement manufacturing firms in Kenya.
3. **H₀**: OSH Training on hazard prevention has no relation with Performance of cement manufacturing firms in Kenya.
4. **H₀**: Employee participation in OSH training has no influence on Performance of cement manufacturing firms in Kenya

5. **H₀**: There is no moderating effect of management supports on the relationship between Occupational Safety and Health training and performance of cement manufacturing firms in Kenya.

1.5 Justification of the Study

The study sought to underpin the influence of OSH training on the performance of cement manufacturing firms in Kenya. The findings from this study should be beneficial to several parties and stakeholders in the sector and other sectors as herein presented. These include managers, researchers, Government and policy makers. The beneficiaries are as herein stipulated: -

1.5.1 The Management of Cement Manufacturing Firms

The findings from the study point out to the need for occupational safety and health measures and how they contribute to the performance of the cement manufacturing firms. This is a plus to the management of cement manufacturing firms where a lot of safety issues arise due to the work involved hence they should be able to identify the approach through which they can steer the safety of the employees while at the same time focusing on performance.

1.5.2 Researchers and Academicians

The results of this study are invaluable to researchers as it forms a basis for further research. This study is also expected to add to the body of knowledge on OSHA practices besides filling gaps in research which could prompt other researchers to do similar studies in other regions. The students and academicians would use this study as a basis for discussions on the influence of employee safety and health training on performance of cement manufacturing firms in Kenya. The study will also be a source of reference material for future researchers on other related topics. On the other hand, it would also help other academicians who would undertake the same topic in their studies.

1.5.3 General Public

This study will be beneficial to the general public because they will be in a position to know their rights to have safety training before they start operations and even as regularly as possible. In many circumstances, employees operating machines are exposed to health hazards and have less knowledge on their privileges when working for a manufacturing firm. Employees need frequent and periodic safety training and updates on security at their workplace. This study therefore adds to the public knowledge about the needs, guidelines for occupational safety training and the requirements by employers to provide not only occupational safety and health equipment but also training on how to use the provided safety equipment and the associated safety practices. The cement manufacturing sector is also of national interest since it contributes substantially to the nation's economic growth, job creation and reduces poverty.

1.5.4 Government of Kenya and Policy Makers

The findings of this study will be important to the government, in that, it will assist in unveiling the challenges facing different organizations on implementing safety programmes as per the OSHA Act. In addition, it will provide updated practices on how OSH ought to be undertaken to enhance firm performance especially in the manufacturing sector. Providing adequate training to the employees on how to embrace safety and health plays a key role in promoting not only the safety but the productivity of the employees. This is to mean that if organizations sideline it, then there might be an operational gap towards ensuring safety preparedness. The study therefore focuses on providing literature on the training of safety programmes in Kenya and the world and due to lack of adequate information on training on safety; this study will be of great importance.

The study had the general aim of establishing any significant influence of OSH training among the cement manufacturing firms in Kenya. Significant influence of the study would be realized from the recommendations on improving approaches towards OSH

training among the employees (Weinstock & Slatin, 2012). There are possibilities that the traditional approaches of safety training have not been updated and this can expose the staff to operational gaps in terms of handling disasters if the approaches are not modern or up to date (Othman, 2012). The management of various organizations will improve on the methods and approaches of training employees on safety and health if they have interest towards the programmes (Tuna & Training, 2016). The government and other policy makers will be able to gain insight on OSH training programmes that can be implemented in order to promote employee and employers welfare.

1.6 Scope of the Study

The motive of the study was to assess how OSH training influences the performance of cement manufacturing firms in Kenya. The study focused on Employees in the Production, Human Resource and Marketing Departments. These were specialized OSH implementation officers and employees handling machines and exposed and at risk of occupational hazards. The study focused on establishing the influence of OSH training on the performance of cement manufacturing firms in Kenya.

The independent variables considered for the study were occupational accidents, hazard identification, hazard prevention and employee performance with the objective of establishing the influence on performance in cement manufacturing firms. The study focused on the nature of accidents, their causes and the frequencies. Hazard identification was the other variable focusing on how OSH training aids in identifying incidents, their assessment, evaluation and follow-up as well as feedback. Hazard prevention formed the other independent variable covering the ways and methods of preventing hazards, their appropriateness and the monitoring aspect of the OSH training. Employee participation in terms of the nature and the level of participation, the time of participation and compliance to the OSH training was also covered. The moderating variable in the study was management support where resource allocation, communication and training programmes, skills, competence and experience were examined in relation to OSH training and the moderating influence on relationship

between OSH training and performance of cement manufacturing firms in Kenya. The dependent variable of the study was the performance of cement manufacturing firms in Kenya where aspects of return on investment, market share and productivity were measured. The study focused on Mavoko Constituency within Machakos County where these firms are housed and this formed the sample frame. This Constituency is in Machakos County and has the largest concentration of cement manufacturing firms as well as general industries thus making it the focal point of ensuring compliance and implementation of the OSH training programmes.

1.7 Limitations of the study

According to James and Judy (2004), limitations of a study are those characteristics of design or methodology that influenced the interpretation of the findings from your research. They are the constraints on generalizability, applications to practice and/or utility of findings that are the result of the ways in which you initially chose to design the study or the method used to establish internal and external validity or the result of unanticipated challenges that emerged during the study.

This study was limited by the idea of convincing some respondents to give information to the researcher because they feared the consequences of revealing the secrets of their organizations. Another limitation was delays of some respondents. Another limitation encountered during the research was bias from the respondents during the rating of the responses and other questions in the tools. The researcher realized that some of the respondents were not experienced and lacked knowledge about their safety and security at work place and therefore could not respond to the questionnaire accordingly. Logistical challenges were also experienced. The limitations were mitigated through visiting and familiarization with the respondents. Assurance was also given that data collected was for academic purposes and would not be shared or leaked to the public.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter deals with the literature review from academic and professional sources that relate to the employee training on occupational safety and health and their influence on performance of cement manufacturing firms in Kenya. According to Beins and McCarthy (2012), literature review is an overview of published journal articles, books and other professional work on a given topic. It comprises of the conceptual framework showing the independent variables, moderating variable and the dependent variable. Critique of the fundamental theories of employee safety programmes as stated and discussed by various authors and the research gaps, was done by the researcher.

2.2 Theoretical Framework

A theoretical framework consists of concepts and together with their definitions and reference to relevant scholarly literature, existing theory that is used for a particular study. The hypothetical system is the structure that can hold or bolster a hypothesis of an exploration study. It presents and explains the hypothesis that clarifies why the examination issue under investigation exists. The theoretical framework must demonstrate an understanding of theories and concepts that are relevant to the topic of your research paper and that relate to the broader areas of knowledge being considered (Gabriel, 2013). Theories are formulated to explain, predict, what's more, get wonders and as a rule, to challenge and expand existing learning inside the points of confinement of basic jumping presumptions. This study sought to highlight how the following theories relate to the OSH training.

2.2.1 Occupational Safety and Health Training Model

Alexander Cohen and Michael Colligan 1998 proposed a model ‘Occupational Safety and Health training model’ that avers that training is the process of acquiring skills, knowledge concepts or attitudes necessary to function effectively in a specified task/ situation. With regard to OSH, training consists of instructions in hazard recognition and control measures, learning safe work practices and proper use of personal protective equipment, acquiring knowledge of emergency procedures and preventive actions. Hinze, Hallowell & Baud (2013), cited that training can also provide workers with information about potential hazards and their control; they could gain skills to assume a more active role in implementing hazard control programs or effecting organizational changes that would enhance worksite protection (Ashfaw, Argaw & Bayissa 2015). Performance represents observable actions or behaviors reflecting the knowledge or skill acquired from training to meet a task demand. With regard to OSH, performance can mean signs of complying with safe work practices, using protective equipment as prescribed, demonstrating increased awareness of hazards by reporting unsafe conditions to prompt corrective efforts and executing emergency procedures should such events occur (Armenti, Moure-Eraso, Slatin & Geiser, 2011).

Motivation refers to processes or conditions that can energize and direct a person’s behavior in ways intended to gain rewards or satisfy needs. Setting goals for performance coincident with learning objectives and use of feed-back to note progress have motivational value (Armstrong & Taylor, 2014). With regard to OSH, motivation means one’s readiness to adopt or exhibit safe behavior, take precautions or carry out self-protective actions as instructed. Bonuses, prizes or special recognition can act as motivational incentives or rewards in eliciting as well as reinforcing these behaviors when they are displayed. Knowledge or skills acquired in training may not always result in improved performance in actual work situations This may indicate lack of suitable motivation, training content does not fit job demands that is, a problem in defining suitable training objectives or dissimilarity or conflicts between the instruction/practice

in training conditions when compared to actual job conditions that is, a problem in transfer of training (Abrahamsen, Asche, & Milazzo 2013).

Different authoritative reviews of the general training literature (Goldstein & Buxton (1982), Campbell (1988), Tannenbaum & Yukl (1992) as quoted by Pitblado, (2011), and job training, emphasize the importance of certain elements as critical to an effective program. The OSHA set of voluntary training guidelines to assist employers in furnishing safety and health information and instruction to workers (Brauer, 2016) mimics most of the same elements within an OS&H context (Braker, 2016). Needs Assessment: According to the general literature, training goals presuppose consistency with organizational goals, the presence of jobs designed to yield performance outputs that meet the organization's goals, performance levels dependent on knowledge of the job tasks, skill, attentiveness to the work or factors where training can make a difference (Dawson & Zanko, 2011) expecting training to solve problems related to internal organizational conflicts or to overcome deficiencies in equipment or work methods is unrealistic. Job analyses determine which of the relevant performance factors comprise the highest priority training needs either now or in the future. The process includes defining the tasks involved, their order of importance (in terms of frequency, criticality, complexity) and details of the steps necessary to accomplish them (Badri, Gbodossou & Nadeau, 2012)

Establishing OSH Training Objectives, in OSH programmes, Ferret, 2015 cited that the needs assessment provides the information to establish the objectives of the training programme. These are stated as observable behaviors expected of the trainee after the instruction, and they may acknowledge the conditions under which they should be performed and the required level of proficiency (Business & Legal reports, 2014a) Specifying OSH Training Content and Media: Demirkesen & Arditi (2015) opined that according to the general training literature, content represents the knowledge or skill that the trainee must master to be able to meet their behavioral objectives. The judgement of those who know the job demands is the most common approach to specifying training contents. Other approaches may be the products of problem- solving exercises, or be

based on mistakes people make in using a skill such as to design corrective learning measures. Evidence that one teaching method such as lectures, Audio-visual instructions, computer-aided instruction, or interactive video methods are superior to another is not that clear (Kearsley, 1991). Much depends on the specific training needs, makeup of trainee group and other factors. Why or how a particular method facilitates learning and how it can be made more effective are issues requiring further study (Dawson & Zanko, 2011).

Accounting for Individual Differences: Dessler (2013) agrees that effective training should take account of the characteristics or attributes of the trainees. Apart from differences in aptitude, literacy, or pre-training skill levels, how trainees view the training program in terms of improving their job performance or self-efficacy may dictate variable approaches. The kind and level of OSH training for new job applicants versus long-term or older workers reassigned to the same tasks also has to be addressed.

Specifying OSH Learning Conditions: Podgorski (2015) agrees that instructional events comprising the training method should not inhibit, conflict with or be unrelated to the processes that lead to mastery. If the learning is to develop OSH capabilities in problem-solving techniques, the instructional approach should stress thinking or reasoning approaches not memorization. Training methods should require the trainee to use the training content in active or productive ways, for example, restating or applying principles rather than just recalling them or adapting the information to new situations rather than mere repetition in the same one. The current literature in OSH suggests that using learning events that require productive behavior or that provide appropriate feedback (positive/accurate/credible) and opportunities for practice under conditions that promote transfer to the actual job are ideal (Reese, 2015).

Evaluating OSH Training: According to Rebbitt & Erickson (2016), training evaluations can take four forms which are viewed as a series of steps or levels which include: Reaction which encompasses how the OSH trainees like the program did. Typically, this is done through evaluation sheets completed at the end of the training. Typical items inquire as to whether the material was well organized, relevant to the trainees

needs, made interesting through the instructor's manner of presentation or use of visual aids and demonstrations (McKinnon, 2012). Knowledge Gain (or Skills Acquired) Knowledge of facts and principles should be evaluated via pre/post paper-and-pencil tests or questions. Assessment of skills may be done through performance tests before and after training. An OSH untrained or control group can be similarly tested to indicate any differences resulting from just the test-retest experience (Nkomo, Niranjana & Reddy, 2018).

Behaviour Change which highlights changes in behavior occurred as a result of the program. For this purpose, reports by the trainees themselves (self-appraisals) of their on-the-job performance, or observations by their peers, supervisors, instructors can be used. A time interval between the end of training and the observations may be necessary to allow for the training to be put into practice. Post-training OSH measures taken at different time points are also suggested to determine if the training effect is sustained or needs refreshment (Walters, 2016). Again similar observations for a control group are recommended to acknowledge any effects from repeated testing. These control data also provide an added reference for gauging the significance of the apparent behavior changes in the OSH training group (O'Connor, Flynn, Weinstock & Zanoni, 2014). Results which includes what were the tangible results of the program in terms of its objectives or goals for the organization? Did it result in reduced injuries or illness, lower medical costs, improved productivity? Extra- or post-training factors can affect these types of outcomes, and it is not always possible to design evaluations that can isolate the specific OSH training contributions (Tweedy, 2013). Undertaking evaluations where these "extra-training factors" are held constant during the pre-and post-stages of the training assessment or can be segregated as to their influence through use of suitable control groups are ideal. Needless to say, training impacts at the organization level can require an extended time line especially in using injury/illness outcomes owing to their infrequencies (Reese, 2015)

Criteria for rating training effects are the focus of much discussion in the literature. Several points that deserve mention or added emphasis in light of the subject of this

report are: Past surveys have shown that most in-house assessments of training programme measure only trainee reactions of how well they liked the instruction (Sherrat, 2014). Efforts to determine the extent to which the training content was absorbed or resulted in changes in actual on-the-job behaviors, or had impacts on organizational measures (for example, quantity/quality of production, sales, absences/turnover, injury/illness rates) were rarer. Among reasons offered for the lack of more intensive efforts at evaluating training were the unquestioned beliefs that training works, that workplace conditions do not readily lend themselves to systematic assessments of training, and that more rigorous attempts will entail high costs. Increasingly, however, there is the call for more extensive OSH training evaluations to verify the benefits as witnessed in this exercise (Trout, 2015).

Reinforcing: Extensive OSH training, evaluation criterion, stipulates trainee reactions to instruction may bear little relationship to the extent of actual learning. Hence, it should not be used as the sole criterion to gauge OSH effectiveness. Similarly, pre-and post-training questions or tests on skill showing the gains from instruction may or may not be related to improved on-the-job performance. Needs for multiple measures of effectiveness are apparent (Young & Levenson, 2014). The effect of training is greatly affected by other organizational factors both in the training and post-training environment. Evaluations will need to account for these factors in terms of their influence on the OSH training outcome (Walters, 2016) Simple OSH performance outcome measures representing various levels of achievement may be critical in determining the validity of the instruction but may not indicate the factors that influenced these results. Provision of “process” measures, reflecting various amounts of training time, modes of training, trainer attitude/competency, can indicate why the overall results were or were not achieved. This can be important in pushing for the revision of OSH training to improve its efficacy (Tweedy, 2013)

Revising the Training the evaluation of training as noted by Goldstein and Buxton (1982) as cited by Travis, (2016) offers information as to whether the instruction has had its intended effect on the measures set out for that purpose. Seldom do the data indicate a

programme was a complete success or a failure, given multiple criteria for gauging the results. Rather, the data may indicate better understanding, retention or application of some course material as compared with others. Gaps or variations in knowledge or competencies resulting from the training may reflect needs to consider more training time, alternative instructional techniques or more capable OSH instructors (Sinclair & Cunningham, 2014).

2.2.2 Entropy Model of Accident Causation

The entropy model developed by Mol (2003) encompasses the safety of operations and productivity of staff together. This model accounts for incorporation of risks, prevention and ensuring safety of employees in a bid to enhance productivity (Mol, 2014). This model asserts that risks are concepts that are linked to negative outcomes like loss, damage and regrets. The presence of OSH management helps alleviate presence of hazards that have capacity to cause harmful consequences like personal injuries and/or property damage. The model asserts that the right steps to eliminating occupational hazards included identifying risks; in this case two categories of risks including entropic and residual risks. The entropic risk is associated with the degradation of the business operations/systems while the residual risks are associated with all firms'/organizational activities.

The selection of this model was based on its balanced and comprehensive approach towards hazard control. The model challenges the present-day perceptions about safety and productions as incompatible business objectives. The model states that having an organizational culture of embracing safety at workplace is highly appreciated with the aspect of OSH training. The entropy model further asserts that focusing on human resources as the center of operations significantly minimizes occurrences of accidents (LaBelle, 2005). Majority of the accidents could be prevented and averted if human resources (staff) were equipped through proper training on safety operations and measures.

The entropy model has system factors that include processes (work practices), technology (that includes plants, tools, chemicals and equipment), physical environment (dealing with structural and location factors) and human resources, who are the staff. Embracing technology and safety training for the employees is highly recommended as it enhances behavioural practices towards ensuring safety at the workplace. On the other hand, entropy risks are eliminated through many organizational strategies like safety training; equipping the companies with safety equipment and ensuring all staff adhere to the set safety measures (Odhong & Omolo, 2014). Residual risks are likely to linger for long as they are more complex to eliminate as they are also connected to the mental/physical demands of the staff. The entropy model provides a strategy that enables organizations to manage and eliminate occupational hazards (Geller & Veazie, 2014). The four-fold strategy suggested by the entropy model entails taking immediate corrective action to eliminating both residual and entropic risks; establishing strategies that prevent future entropic risks; handling all potential residual risks in the short term and minimizing all potential residual risks in long term. The model closes with suggestions and questions that focus on education/training of the staff about the residual risks, vigilance on the residual risks and acquiring of adequate knowledge about risk management through safety training and adherence to the set rules. This theory supports the first independent variable which is training on occupational accidents.

2.2.3 The Domino Safety Theory

The Domino Safety Theory was pioneered by industrial experts Lateiner and Heinrich (1931) in an effort to provide information on how industrial injuries occur as well as how they can be avoided. The theory holds that there are five dominos that are necessary for the causation of an accident in an industrial setting (Young & Leveson, 2014). The first domino talks about the background of the industrial accident that should be taken care of to prevent health hazards in the organisation. The proponents of the theory argue that accidents are as a result of chain reaction that can act in a row to cause the accident. If one of the steps or dominos is extracted from the chain, then the chances of the accident happening are reduced. The background defines the employee's personality and

lifesupport whereby in many cases, employees' personality is closely related to the chances of experiencing industrial injury or accident. Understanding of OSH trainings depends on the employees' background in terms of their lifesupports and personalities. Careless employees are likely to ignore safety training and practices thus having higher chances of causing occupational accidents. Lifesupport of employee also to an extent determines the rate and likelihood of causing accidents at workplace. For instance, staffs working under influence of drugs have a higher potential of causing occupational accidents (Reniers, 2010).

The second domino is about personal characteristics of the employee that represent the level of knowledge of employees, their attitudes, mental and physical conditions. The attitude of the employee represented their determination to comprehend the training, their desire to keep safe at the workplace and their knowledge on how to handle exposure cases when they appear. The mental and physical conditions of the employee also affect the probability of being exposed to occupational hazards. The third domino is about unsafe conditions and unsafe acts at the workplace. The employees' behavior at work and during the operations has significant connection to the rate and probability of having occupational incidents. When employees are under unsafe conditions, they are likely to be more exposed to occupational hazards. In addition, occupational safety and health training helps eliminate unsafe acts and conditions through providing guidelines and procedures to enabling a safe working environment (Reniers, 2010).

The fourth domino is the accident that indicates the unplanned event that is as a result of unsafe condition or unsafe act. Occupational accidents could be prevented through proper planning and training of employees. The accidents are unwanted and thus organizations are required to have measures to tame any possible accident occurrence. The fifth domino is the actual injury that represents the unwanted occurrence to the staff and therefore organizations needed to embrace protective measures that include safety trainings, providing protective equipment and emphasizing strict adherence to safety guidelines. Lateiner and Heinrich (1931) posited the five metaphorical dominos that caused accidents at workplace. He further observed that working on the social

environment of the employee, fault of the person, the physical hazard, the actual accident and the injury to the employee in the order as the best approach to avoiding occupational incidents. One of the approaches also suggested was through adhering to safety rules including safety training. Overall, the Heinrich's Domino theory asserts that occupational accidents are as a result of chain of consequential events that can be controlled and manipulated to reduce the rate and probability of accidents (Young & Leveson, 2014). Frank Bird further developed the loss control theory based on the Domino Theory in 1970. He observed that the underlying causes of accidents were lack of management controls as well as poor management decisions. Some of the important organizations' management controls include having safety training for the employees and ensuring safety practices are adhered to throughout the industrial processes. The Heinrich's Domino theory was further advanced through developing the Behavioral Based Safety that recognized safe working habits as well as offering punishments or rewards to employees (Young & Leveson, 2014).

The problem of this advanced theory Behavioural Based Safety on Dominos Theory is that it focused more on rewarding the employees and not on the occupational hazards and keeping the environment safe through training employees and outing mechanisms to eradicate any possibility of experiencing occupational hazards (Landucci et al., 2016). The Domino theory further asserted that 2% of the occupational/industrial accidents were considered unavoidable, 10% of the accidents were as a result of unsafe conditions of workplace and 88% of the accidents occurred from unsafe acts committed by employees. This data was based on 75,000 industrial accidents that Herbert Heinrich analyzed in his study (Young & Leveson, 2014). This theory supports the second research objective: To assess the extent at which OSH training may assist in hazard identification and the performance of cement manufacturing firms in Kenya.

2.2.4 Epidemiological Theory

The epidemiological theory pioneered by Iskrant (1962), is a model that focuses on casual relationship between diseases or occupational incidents and environmental

factors. The model thus indicates that the environment of the employee has a significant relationship with the rate and probability of occurrences of accidents and incidents (Robertson, 2015). The epidemiological theory asserts that there are two characteristics associated with employees that can lead to occupational accidents. The two include situational and predisposed characteristics that could either cause or prevent incident/accident conditions. The predisposed characteristics included perceptions, environmental factors and susceptibility of the employees. Their perceptions and susceptibility could be improved through performing safety training and ensuring strong adherence to the safety guidelines. Situational characteristics included peer pressure at work, attitudes of employees and priorities of the supervisor (Robertson, 2015). Majority of the employees have attitudes towards workplace environment and this informs their intent and determination to comprehend safety training. This model also encompasses the idea of monitoring where the situational characteristic of risk assessment among individual is embraced. This theory supports the third research objective which is to determine how training employees on safety and health may assist in hazard prevention and performance of cement manufacturing firms in Kenya.

2.2.5 Human Factor Theory

The human factor theory pioneered by Petersen (1984), singles out three aspects that are associated with accidents at the workplace. These include work overload, inappropriate response and inappropriate activities. These aspects push the employee to conditions that compromise their exposure to occupational hazards (Hignett et al., 2015). The aspect of overload encompasses environmental factors, internal factors of the employee and the situational factors. Organizations need to train their staff to avoid work overload and other internal factors that can expose them to accidents. The other aspects of inappropriate responses focus on early detection of occupational hazards at the workplace and not correcting them (Weinstock & Slatin, 2012).

Safety training is indicated as the measure that helps in detecting hazards at the workplace while the aspects of ignoring safety practices at the workplace were

associated with increased exposure to occupational incidents (Tweedy, 2013). Inappropriate responses also included removing safeguards from equipment and machines that increase the exposure to occupational hazards. The third category of human factors include the inappropriate activities like performing tasks without requisite and adequate training and misjudging the degree of risk that is associated with a given task (Jelimo,2013). The factors associated with inappropriate activities are linked to personality and behavior of employees. The human factors theory states that focusing on training of employee and involving them in the training programmes has capacity to increase safety and minimize occupational accidents (Kiani & Khodabakhsh,2015). This theory supports the fourth research objective which is to establish how employee participation in training programmes may influence their performance at cement manufacturing firms in Kenya.

2.2.6 The Expectancy Theory

Expectancy theory of performance management was proposed by Victor Vroom in 1964. As indicated by him, people act in a particular way since they get propelled by the alluring result of such conduct. Execution of an individual ought to consistently be lined up with authoritative assumptions about accomplishment of recognized objectives in future. The inspiration that impacts people to carry on in a specific way over different types of conduct is their hope (Zhao, McCoy Kleiner & Feng,2016). Hope is dictated by individual conviction that exhibition of a particular kind of conduct will absolutely help the person in achieving wanted execution objectives. Accordingly, this property helps people in deciding whether they have the required ranges of abilities for achieving work precisely, that is, Knowledge, Skills and Abilities (KSA). Be that as it may, when execution objectives are past the accomplishment, the relating inspiration additionally decays (Weinstock & Slatin, 2012).

Anticipation hypothesis is applied for all intents and purposes in practically a wide range of associations. This is fundamentally utilized in all parts of business association with the primary spotlight on observing representative execution. Execution of anticipation

hypothesis is seen in hierarchical procedures, for example, enlistment and determination of representatives for a specific activity. Likewise, it is additionally utilized so as to examine the results of association preparing and evaluation of work execution according to authoritative objectives (Rebbit & Erickson, 2016). Then again this hypothesis is additionally applied to recognize the factors that inspire singular employee in the association. In the event of evaluation of hierarchical execution, this hypothesis progresses in the direction of translating the particular conduct that the employee display dependent on their individual anticipation figurings. Here it needs referencing that hope hypothesis additionally hypothesizes that various individuals need various things from their association. This reaches from great pay to employer stability to scopes for expert improvement (Weinstock & Slatin, 2012). Thus, this hypothesis maps social result in regard of authoritative preparing. At the end of the day this hypothesis helps in distinguishing explicit determiners behind a specific social result of individual students (Zhao, McCoy, Kleiner & Feng 2016). This theory instigated the fifth research objective: To examine the moderating effect of management support on the relationship between occupational safety and health training and performance of cement manufacturing firms in Kenya.

2.3 Conceptual Framework

A conceptual framework is a concise description of the phenomena under study accompanied by graphic or visual depiction of the major variables of the study (Mugenda & Mugenda, 2013). The conceptual framework shows the relationship between the key variables that were measured to determine the influence of health and safety training on performance of cement manufacturing firms in Kenya. The conceptual framework shows the independent variables as occupational accidents, hazard identification, hazard prevention and employee participation. The dependent variable is performance of cement manufacturing firms in Kenya. The solid arrow line, therefore, is an indicator of the effect of one variable on the other. The conceptual framework, therefore, explains the possible connection between the variables and answers the why

question. The independent variables were discussed first, followed by the moderating variable then the dependent variable.

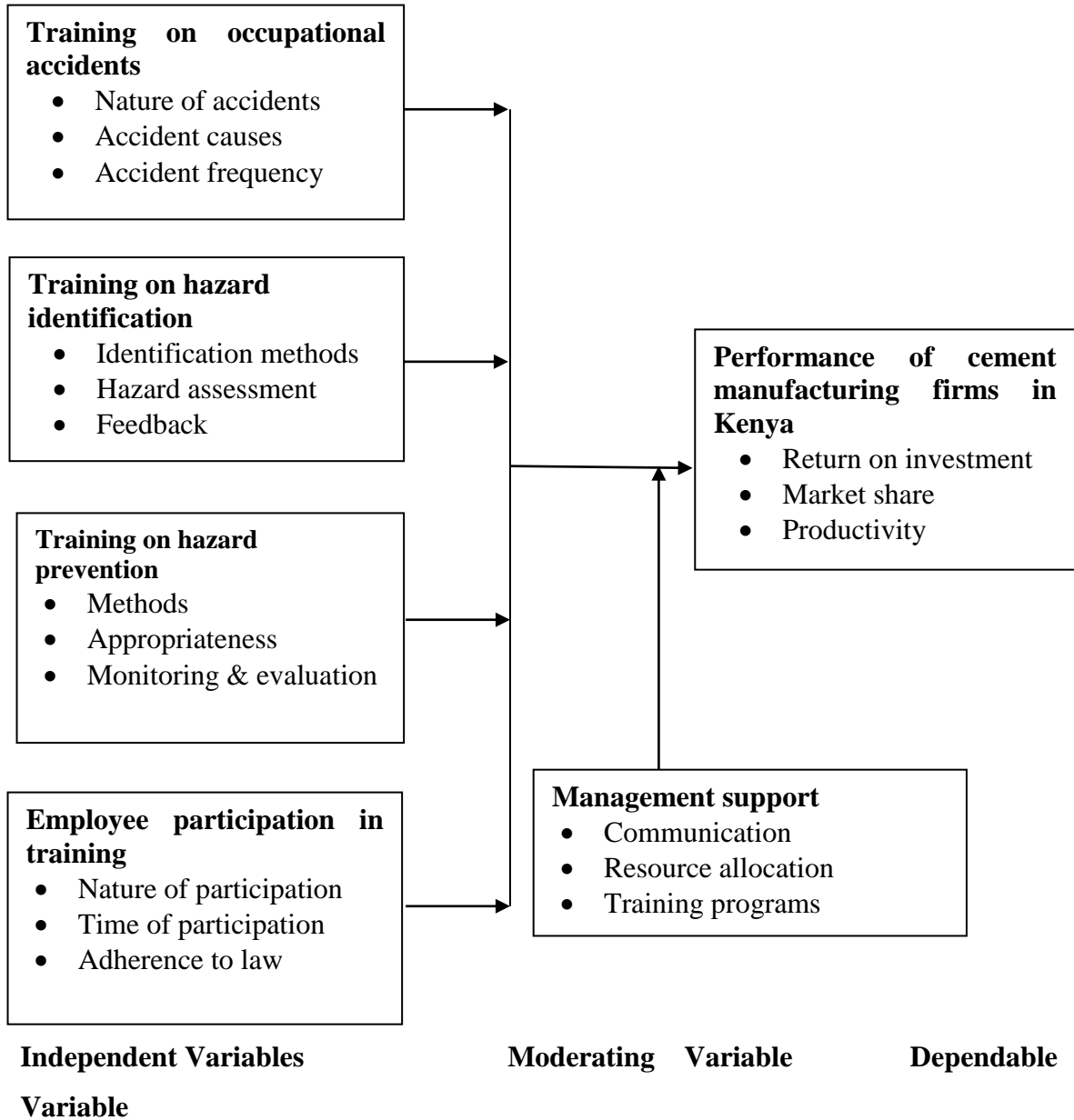


Figure 2.1: Conceptual Framework

2.3.1 Training on Occupational accidents

According to Bratton and Gold (2017), the cost of occupational accidents can be as high as 37% of associated profits and 5% of operating costs. Indirect costs include overtime payments necessary to make up for lost production, cost of retaining a replacement employee, a wage cost for the time spent by Human Resource Management (HRM) personnel, recruiting, selecting and training the new employees, loss of revenue through cancelled orders and court hearings if necessary (Kiani & Khodabakhsh, 2015).

One aspect of occupational accidents that was focused in the study is nature of the accidents. This is the magnitude in which the accidents at the workplace occur and how severe they are. Some accidents may be severe than others thus calling for different measures to handle them. Training of employees is made initially to impart knowledge and further compel the trainees to act on and implement gained knowledge. This will include hands-on training and passive learning where hands-on training enables the employee to acquire skills that they can implement daily at their workplace (Otieno, 2012)

The other aspect of occupational accidents is the cause of accidents. When training the employees on accidents, it is appropriate to focus on the causes of the accidents through which they are avoided or prevented. All organizations are under the OSHA Act which was created within the Department of Labour in Kenya to encourage employers and employees reduce work place hazards and to implement new or improve existing safety and health programmes. The other aspect is the issue of frequency of accidents which should also be emphasized when training the employees on occupational accidents. Through teaching employees on how to handle emergencies like having first-aid training or through workshops, employees would be able to appreciate and get prepared to handle incidents and accidents at the job place (Mckinnon, 2012). Safety training was expected to have an influence on accidents in an organization (Lekusye, 2016). The research focused on how OSH training affects the overall handling of occupational accidents in order to determine whether the training has an influence on the performance

of cement manufacturing firms in Kenya.

As far as nature of accidents is concerned, a typical workplace exposure hazards may include Chemicals and other hazardous materials, excessive noise and vibrations, temperature extremes, biohazards including those that are normally occurring (such as mold) and manmade (such as anthrax) ergonomic hazards (such as poorly designed equipment that forces employees to do their jobs while contorted in unnatural positions) and the more familiar related hazards such as slippery floors and blocked passageways. However, one of the major causes of occupational accidents according to Gary Dessler (2013) is employee resistance. While employees have a responsibility to comply with OSHA Standards, they often resist and in most cases the employer remains liable for any penalties.

The other causes of occupational accidents are chance occurrences, unsafe conditions and unsafe acts on the part of employees. Unsafe conditions include such things as; improperly guarded equipment, defective equipment, hazardous procedures in, on or around machines or equipment, unsafe storage that is congestion, overloading, improper illumination, glare, insufficient light and improper ventilation – insufficient air change, impure air source etc. Chance occurrences (such as walking past a plate-glass window just as someone hits a ball through it) are more or less beyond management's control. The unsafe can actually undo even the best attempts to minimize unsafe conditions. These unsafe acts may come through selection and placement of employees and may also be due to lack of training, lack of motivation, lack of employee participation, where there are no Safety and Health Audits and inspection (Armstrong & Taylor 2014).

2.3.2 Training on Hazard Identification

Hazard identification is a key element in determining whether Occupational Safety and Health (OSH) training has an influence on the performance of cement manufacturing firms in Kenya. The failure to identify or even recognize hazards remains a root cause of workplace injuries. Hazard identification as well as assessment should help in

identifying areas needing improvement and working on them to ensure that staff are safe at workplace (Kumie et al., 2016). A situational analysis study by Kumie et al. (2016) in Ethiopia pointed out that safety training among employees was associated with identifying risks and handling incidents when they arose. Identification and evaluation of hazard were among the measures of the variable.

Participative hazard identification would help the employee and the management to increase their knowledge, attitude/behaviour and practices on Occupational Safety and Health, thus adhering to the recommended practices. When hazards are identified, adverse effects can be prevented leading to preservation of resources (Namian, Albert, Zuluaga & Behm 2016). In addition, when hazards are identified and communicated to the employees, awareness may be raised through the training leading to better preparedness in terms of workplace accidents (Pitblado, 2015)

2.3.3 Training on Hazard Prevention

This study sought to establish whether hazard prevention has an influence on the performance of cement manufacturing firms. Hazard prevention should be a function of safety precautions and ultimately performance of the firm (Isik & Atasoylu, 2017). Occupational Safety and Health training has been associated with hazard prevention and control. When organizations have adequate safety materials as well as personal protective equipment, then they are likely to reduce the number of incidents and accidents at workplace (Podgorski, 2015). It is expected that Occupational Safety and Health training has an effect on hazard prevention that translates to changes in the performance of the organization.

Ways and methods of hazard prevention should be emphasized when training employees on hazard prevention and control. Training employees on Hazard prevention helps in averting work injuries through using the recommended hierarchy of control whereby the control is participative with employees engaged in providing insights on how to prevent hazards. The participative nature, the communication and engagement of employees

should be able to aid in developing knowledge, instilling attitude and promoting practices geared towards protecting employees and minimizing occupational incidences (Chang, Wang, Liao, Cheng & Wang, 2016).

Monitoring the prevention measures put on the day to day operations of the firm is critical in enhancing the idea of prevention. Appropriateness is another aspect that has been pointed out as far as hazard prevention is concerned. The measures put to prevent risks ought to be appropriate so as to avoid mistakes that could worsen the problem. Prevention of hazards takes a multi-faceted approach where the staff, the management and other stakeholders observe actions and incidents that when implemented can have a change on overall productivity of the firm (Podgorski, 2015).

A study by Yu, Li, Qiu, Wan, Xie, and Wang (2017) on the effectiveness of participatory training in preventing accidental occupational injuries identified identification as well as control of such hazards as key in reducing the number of incidents and accidents at an organization, an action which had a positive effect on the overall firm productivity. Armstrong and Taylor (2014) cited that hazard prevention and control includes the following actions: identifying the causes of accidents and the conditions under which they are most likely to occur. Taking account of safety factors at the design stage will build safety into the system. Designing safety equipment and protective devices and providing protective clothing plus carrying out regular risk assessment audits, inspections and checks and taking action to eliminate risks is very essential (Hignett, Wolf, Taylor & Griffiths, 2015)

Investigating all accidents resulting in damage in order to establish the cause and to initiate corrective action and maintaining good records and statistics in order to identify problem areas and unsatisfactory trends is very essential in every organization. (Ferret,2015). Of importance is also conducting a continuous programme of education and training on safe working habits and methods of avoiding accidents and encouraging approaches to leadership and motivation that do not place excessive demands on people

(Hopkin, 2014). The analysis of the data revealed a positive relationship between hazard prevention and performance of cement manufacturing firms in Kenya.

2.3.4 Employee Participation in Training

Employees need to be given opportunities to participate in all phases of Occupational Safety and Health practices, including designing and implementation. Involving employee in all phases and eliminating barriers to participation would encourage hands-on experience in implementing the OSH practices that leads to improved knowledge on OSH practices, improved attitude and practices towards adhering to OSH recommended practices (Kiani & Khodabakhsh, 2015). In addition, access to information remains a critical part in acknowledging the hazards, improving Knowledge, Attitudes and Practices (KAPs) and consequently reducing the level of exposure to occupational accidents (Chung & Rashad, 2014).

The employee participation variable was assessed through level/nature of participation, time of participation and loyalty/adherence. To achieve better KAPs and reduced levels of accidents, the management needed to establish whether the employee participation, for example, reporting any safety and health concern and giving employees access to information was essential in ensuring the success of OSH training programmes. The nature of participation explains whether the employees are effectively involved and their views taken into consideration or not. The study also sought to establish whether engaging employees in occupational safety and health training had any change in the way employees perceived their work, whether their attitudes changed as well as their morale as sighted by (Nguyen & Hens, 2015). The study sought to establish whether employee participation in occupational safety and health training had any influence on the overall performance of cement manufacturing firms in Kenya. It was noted that many organizations go well beyond these minimal requirements with a more proactive approach to safety and health. In these firms safety and health programmes are based on a strategic human resource philosophy whereby employees represented a valued asset of the firm and a significant source of the firm's competitive advantage.

(Platon & Hionis, 2014) cited that Employee level and Nature of participation involved employee in coming up with programmes to minimize occupational risks through training. This would enhance the wellness of the employees, thus enhancing performance since they were able to understand the nature of work hazards and their possible solutions. One of the most common and effective strategies of involving employees is the use of company safety committees consisting of management and non-management employees (Lnducci, Argenti, Spadoni & Cozzani,2016). These committees identified safety hazards through self-inspection, statistical analyses and employee input. Safety committees also arrange for training seminars and other activities to increase employee awareness of safety and employee ownership of the safety programmes represented a valued asset of the firm and a significant source of the firm's competitive advantage (Lnducci, Argenti, Spadoni & Cozzani,2016).

Employee Level and Nature of Participation involved employees in coming up with programmes to minimize occupational risks through training. Through this, the wellness of the employees was enhanced thus enhancing their performance since they were able to understand the nature of work hazards and their possible solutions. One of the most common and effective strategies for involving employees was the use of company safety committees consisting of management and non-management employees. These committees identified safety hazards through self-inspection, statistical analyses and employee input. Safety committees also arrange for training seminars and other activities to increase employee awareness of safety and employee ownership of the safety programmes (Ricci, Chiesi, Bisio, Panari & Pelosi, 2016).

2.3.5 Management Support

Leigh (2011) indicates that management should be committed to implementing effective safety and health programs. Effectiveness of any OSH training program would depend on how the management implements it and allows the employees to view their opinions on the success or failure of previous programs (Podgorski, 2015). The management should have activities that lead employee and other stakeholders in identifying the

importance of adhering to the OSHA recommended practices. There should be a culture that ensures safety and health practices are implemented and adhered to, throughout the operations of the organization (Reniers,2010). When the organization visibly demonstrates and communicates its commitment to employees' safety and health, then employees would adopt the OSH practices, participate in their implementation and improve their OSH KAPs thus leading to reduced occupational accidents. The management should also fully commit to eliminating hazards, protecting employees and continuously improving the workplace to ensure it is safe (Reniers, 2010). The management should act as an example in adherence to the OSH recommended practices.

Through communicating the management's commitment to safety and health program, defining the organization goals towards OSH practices and allocating resources to achieve safer workplace is likely to impact the employees in appreciating and comprehending the OSH practices thus leading to a safer workplace experienced through reduced workplace accidents and reduced operational costs. Management develops and implements safety and health policies and ensures that procedures for carrying out risk assessment, safety audits and inspections are implemented. Essentially, management has the duty of monitoring and evaluating safety and health performance and taking corrective action as necessary (Armstrong & Taylor, 2014). Top management support is a key ingredient in the availability and success of safety and health training. Management can ease a frustrating work environment by giving employees an outlet to air their grievances without fear of reprisal. Management can avail Employee Assistance Programmes (EAP) which are specific programmes designed to help employees with personal problems (Bernardin, 2010).

Sadri & Bowen (2011) cited that through learning, management has learnt that maintaining a competitive edge is through embracing better management, participative team and strict adherence to the organizational charters. Another study by Hallowell (2011) on the safety-knowledge management in American construction organizations indicated that knowledge was critical in ensuring organizations improved their overall performance. The author further indicated that investing in employees through trainings

and short-courses was important as it helped develop the human resources thus further improving productivity. When employees know that they are valued, they are motivated to deliver and improve performance of the organization (Ngigi & Kipkebut, 2014)

The management should ensure mechanical security which is the utilization of security systems such as locks, intrusion alarms, access control systems and surveillance systems in a cost-effective manner that will reduce the need for continuous human surveillance. Many mailrooms for example, now use special scanners to check on the safety of incoming mail and organizational security which means using good management to improve security like, properly training and motivating security staff and lobby attendants. Management of organizations should be making sure that security staff has written orders that clearly define their duties, especially in situations such as fire, elevator entrapment, hazardous or terrorist attacks, suspicious packages, civil disturbances and work-place violence (Sadri & Bowen, 2011)

2.4 Empirical Literature Review

This section looked at studies previously done on Occupational Safety and Health training. The independent variables were discussed as follows: Occupational accidents, Hazard identification, Hazard prevention and Employee participation. According to Zikmund (2010), exact writing survey is a coordinated hunt of distributed work which incorporates books and periodicals. Miller and Yang (2008) express that using a precise way to deal with past insightful work, exact survey enables a specialist to put his/her exploration work into a scholarly and verifiable setting, that is, it empowers the analyst to announce why his examination matters. In this section the independent variables were discussed first, followed by the moderating variable and lastly the dependent variable that is, Performance of Cement Manufacturing Firms in Kenya.

2.4.1 OSH Training in Occupational Accidents and Performance

Khantzode, Maiti, and Ray (2012) conducted a study with the objective of understanding the concepts of occupational injuries and accident causations. The authors indicated that for an organization to effectively reduce the rate of accidents at the workplace, systematic hazard identification of the working process was required and Intervention strategies needed to be installed at every stage of operation (Boutras, Hadjimanolis, Economides, Yiannaki, & Nicolaidis, 2015). The study indicated that the number of accidents in an organization highlight the preparedness of handling emergencies as well as having right mechanisms for prevention of accidents. They also found that occupational accidents are directly related to the state of implementation of safety and workplace programmes. The rate of accidents in any organization is also dependent on the willingness by the management to focus on implementing programs that enable employees to reduce the exposure to workplace risks. Katsuro *et al.*, (2010) indicated that programs dedicated to discovering the causes of accidents were recommended at all organizations. Accident prevention forms the heart of organizations' safety programs by ensuring all employees and property remains operational (Blair & Seo, 2012). Accident prevention also has an effect on reducing cost of operations for the organizations leading to more output and more profits. Studies done on reduction of occupational accidents recommended, installation of OSH programs and training of employees (Reese, 2015).

Niu (2010) conducted a study on International Labour Organization (ILO) perspective on the ergonomics and occupational safety and health with an objective of finding out the mandates that organizations have to protect employees against injuries, diseases and sicknesses that result from their exposure to hazards and injury-causing agents. The international standards developed by ILO aid in protecting the employees and directly helping the organizations in realizing profitability. The results of the study indicated that for an organization to reduce occupational accidents, it needed to fully implement recommendation No.128 and Convention No.127 of the Occupational Safety and Health Administration (OSHA) Act which guide on handling loads at workplace. The study also found out that training manuals and practical guides focused on work ergonomics and

related accidents. Their recommendation was that organizations needed to give priorities to having voluntary, action-oriented and participatory actions that improved working conditions at workplace (Miu, 2010).

Chi and Han's (2013) study on the analysis of the systems theory for construction and hazard prevention presented an analysis of OSH accidents in the construction industry for a period of time. These authors indicated that occupational accidents in construction industry had similar causes across the industry. The study integrated the systems theory into the Domino's theory in exploring interrelationship between risks and breaking the chain of accident causation. The study was conducted in United States covering 9358 accidents occurring in a period of ten years up to 2011. The studies found out that majority of accidents are repeat accidents since they occurred from the same operation, place or even to the same category of people. The study indicated that organizations needed to establish significant risk relationships between the causes and the type of injury, severity and the part of the body affected in order to initiate appropriate mechanisms to prevent further injuries (Brauer, 2016) The above studies can be linked to the first variable of this study where the author sought to establish the influence of Occupational Safety and Health training on occupational accidents on performance of cement manufacturing firms in Kenya.

2.4.2 OSH Training on Hazard Identification and Performance

Lees (2012) studied the relationship between hazard prevention and return on investment among processing industries. The author indicated that over the last four decades, processing industries had developed strong hazard identification procedures that allow organizations to weed out any possibilities of having unexpected rates of accidents. Loss prevention was advocated as among the procedures that made organizations experience less occupational incidents. Investing in prevention programs at the organizations had been hailed as the best practice in reducing occupational incidents (Lees, 2012). Management leadership was also related to ensuring that staff has effective hazard identification mechanisms that were up to date and practical. Legislations to allow

organizations to have hazard identification and control were required in cases where legislations were lacking. The study recommended frequent updates on the hazard identification and assessment to identify prone areas where accidents occur and how they could be prevented.

Wurzelbacher and Jin (2011) carried a study focusing on evaluating a framework on OSH Program effectiveness through the use of leading and trailing metrics where incidents could be identified. The study focused on 33 surveys that indicated that where there were higher levels of self-reporting Occupational Safety and Health Program elements, there were associated lower rates of lost time. The authors argued that many organizations rely on past injuries/incidents to rate their effectiveness of the embraced Occupational Safety and Health training programs. The study opined that trailing such data for incidents and formulating recommendations based on the previous incidents could not provide adequate information on what type of program needed to be implemented (Wurzelbacher and Jin, 2011). The management needed to adopt tracking of data within the organization to identify types, periods and the nature of the incidents common to the employees. Company self-assessment ratings were recommended for hazard identification and assessment. Trailing metrics like reviewing compensations, loss data, past employees and past incidents were also effective in identifying the cost of occupational accidents (Wurzelbacher and Jin, 2011).

Saud, Israni and Goddard (2014) studied the relationship between employee outfit and hazard susceptibility at work place. The study opined that hazard identification could be controlled through the use of bow-ties that help in pointing out the areas that were prone to accidents. The bow-tie diagrams were also used to help in identifying areas where occupational incidents could occur and how to handle them. They aid in depicting, maintaining real-time, up-to-date and working risk-management systems that employees could follow daily (Saud, Isran & Goddard, 2014). The tools had been used to help in identifying hazards and ensuring low manageable risks at the workplace. Pitblado (2011) also pointed out that having both upstream and downstream activities to

identify prone areas where accidents occur was recommendable and of high need especially in organizations where there were high cases of accidents.

2.4.3 OSH Training on Hazard Prevention and Performance

Burke *et al.*, (2011) studied the relationship between organizational management and implementation of hazard prevention programs with the objective of identifying the critical control measures to be put into place. Among the suggested approaches for hazard prevention was training of employees and identifying areas that needed strict control along the production process. Hazard exposure was handled best through training the staff and ensuring there was clear communication on what needed to be implemented to ensure less exposure to controllable incidents. Trainings were suggested to be highly engaging as opposed to low engaging trainings which could leave the aspect of not engaging the employees (Lees, 2012)

Sinclair and Cunningham (2014) conducted a study that examined predictors of safety activities among producing industry. The study found out that where owners of small businesses identified hazards there were higher chances of initiating hazard control measures that further reduced the cases of occupational incidences. The authors also argued that more workplace injuries were experienced in smaller firms as compared to larger firms. A limitation of the study is that the predictors of safety activities were infrequently studied. The study involved 722 respondents where they found that safety activities kept increasing in technology, new education and new methods. Among the predictors that were identified in identifying hazards in the study was having a previous inspection program for the safety of the organization. Abrahamsen, Asche, and Milazzo (2013) while studying on an evaluation of the effects of using safety standards in hazard industries argued that employees who were sampled, agreed that having general understanding about safety standards had capacity to improving safety. The study refutes the opinion that using safety standards was not as always as expected. The study also indicated that having safety standards designed and implemented had capacity of reducing investments in compensations and other adverse effects that further negatively

affect the organization.

The study concluded by urging stricter safety standards that could lead to overall safety improvement. According to Dessler (2013), the hazard prevention and control phase involved taking steps to eliminate or reduce the hazard so that it no longer ranks as dangerous. Actually, in today's business environment, companies need to obtain efficiency wherever they could and internet –based systems could help them manage their safety programmes much more efficiently, for example, Material Safety Data Sheets (MSDS) whereby any employee handling hazardous chemicals must be familiar with those chemicals. These are sheets which describe the precautions employees are to take when dealing with the chemicals and what to do if problems arose. A study by Yu *et al.*, (2017) on the effectiveness of participatory training in preventing accidental occupational injuries identified hazard identification as well as control of such hazards as key in reducing the number of incidents and accidents at an organization; an action which had a positive effect on the overall firm productivity. Keane (2015) also supported the assertion that training employees on safety practices had an impact on reducing losses at organizational level. The above studies by Sinclair & Cunningham (2014) and Abrahamsen, Asche & Milazzo (2013) can be linked to the third variable of this study where the author sought to establish the influence of training on Hazard prevention on performance of cement manufacturing firms in Kenya.

2.4.4 Employee Participation in OSH Training and Performance

A study by Dessler (2013) on the influence of employees training and hazard prevention had the objective of establishing the extent of employee involvement in designing the safety programs. The study indicated that participation of employee had a significant effect on the work injury rates in Pennsylvania. The Pennsylvania state provides 5% discount on employees' compensations for organizations that have certified joint labor management safety committee. The study by Armstrong and Taylor (2014) evaluated the effects of employee participation in reducing the number of injuries and increasing work output. The study compiled data from past insurance compensations, safety committee

audits and employees' compensation data in informing how employee participation influenced their work injury rates.

The study found out that firms that had higher injury rates and those operating in high risk sectors were more likely to join safety committee programs. The study indicated that those firms that allowed employees to join safety programs experienced lower cases of work injuries (Armstrong & Taylor, 2014). Armenti, Moure-Eraso, Slatin, & Geiser, (2011) carried a study on Primary prevention of employee safety and health cleaner production and toxics use reduction in Massachusetts, indicated that employee participation was critical in ensuring that occupational programs were fully implemented and adhered to. The authors suggested that adopting participatory approach of CPPP (Cleaner Production Pollution Prevention) programs was highly recommended in enhancing safety at workplace and several studies indicate that having participative employees is a precursor to reduced workplace injuries (Arment, Moure-Eraso, Slatin & Geiser, 2011).

Another study by Williams *et al.*, (2010) was of the opinion that peer-led participation in safety and health training programs was important as it aided in improving understanding of the operations of the industry and the consequent effects. The study focused on the Latino day laborers in construction industry who were prone to risks of both non-fatal and fatal injuries. They were targeted for training on safety operations and study the cases of workplace injuries. The study found that there was significant improvement in safety when training of employees was conducted. In addition, peer-facilitated safety and health awareness trainings and customized to the needs of Latino laborers was found to reduce the work injury rates (Williams *et al.*, 2010). The study also reported decreased self-reported injuries especially in post-training periods. The study confirmed that participatory and peer-led training methods were effective in reducing work-related injuries. The study by Armenti, Moure-Eraso, Slatin & Geiser, (2011) and a study by Williams, Ochsner, Marshall Kimmel & Martino (2010) can be linked to the fourth variable of this study where the author sought to establish the influence of

employee participation in training on performance of cement manufacturing firms in Kenya.

2.4.5 Management Support and Performance

Borck and Coglianese (2011) conducted a study on the effects of leadership and training on OSH and performance of manufacturing firms. According to Borch and Coglianese (2011, proper organizational management was characterized by making the employees' environment safer and the key organizational focus. The management needed to be committed to eliminating all forms of hazards, improving workplace safety and health as well as protecting employees (Borch & Coglianese, 2011). Management was also to ensure that there was strong communication between and among parties involved (Badri *et al*, 2012). The management was supposed to be able to visibly demonstrate as well as communicate the organization's safety and health programs as frequent as possible. Among the four items that Borch and Coglianese (2011) suggested in ensuring laudable management were, communicating the organizations' commitment to the available safety and health programs, defining program goals, allocating resources and expecting good performance from the involved employees which included identifying front-line persons to spearhead the organization's agenda.

Reynolds, Douphrate, Hagevoort, Brazile, and Root (2013) zeroed in on overseeing specialist security efficiency just as administrative issues where the creators contended that making mindfulness and regulating consistence to the set guidelines was key in guaranteeing legitimate execution. The overseers of security efficiency showed that associations expected to receive a powerful security explicit groundbreaking administration that could help in guaranteeing distinguished projects were actualized carefully. Legitimate administration and initiative of groups in understanding the significance of receiving OSH programs and actualizing them to the last (Reynolds, Douphrate, Hagevoort, Brazile and Root, 2013). Fitting administration supports would address the issues of laborers' security and wellbeing as they structure a portion of the basic resources an association could use to accomplish its objectives (Ruttenberg, 2013)

Visionary, creative, responsive and adaptable administration was suggested for guaranteeing great execution at the concrete assembling firms in Kenya.

2.4.6 Performance of Cement Manufacturing Firms

Akpan (2016) was of the opinion that good visionary management was coupled with increasing performance of an organization. The study focused on Africa with an intention of having improved productivity and safety of the employees. Good performance would be realized when employees are treated as valuable resources and parties to the organizations' drive towards achieving organizational goals and visions as opposed to viewing the employees as means to an end. Akpan (2016) further supported the assertion that increased performance was backed by strong focus on health of the employees and the initiation of training of the employees. On the other hand, through learning the management would be able to maintain a competitive edge by embracing better management supports, participative team and strict adherence to the organizational charters (Umeokafar, Isaac, Jones & Umeadi, 2014).

Another study by Hallowell (2011) on the safety-knowledge management in American construction organizations indicated that knowledge was critical in ensuring organizations improved their overall performance. The author further indicated that investing in employees through trainings and short-courses was important as it helps develop the human resources thus further improving productivity. When employees know that they are valued, they are motivated to deliver and improve performance of the organization (Hallowell, 2011). Occupational Safety and Health training is critical in equipping employees with skills that would help prevent workplace incidences and the associated costs (Tweedy, 2013). According to Bernardin (2010), one excellent study focuses on High Performance Work Systems (HPWS) and applies the commitment and high involvement principles of HPWS to improving work place safety. That safety should be considered as performance much like production, profits, sales, quality control or customer complaints. A strong support for the hypothesis that a High-Performance

Work System would improve work place safety by increasing employee trust in management and perceived safety climate (Bernardin, 2010).

According to Nairobi Stock Exchange records, the performance of cement manufacturing firms in Kenya may be highlighted as follows; The East Africa Portland Cement (EAPC) started initial production of 60,000 tonnes per annum and by 2015, the capacity had grown by approximately 1066.67% to producing 700,000 tonnes per annum (East African Portland Cement - EAPC, 2015). EAPC had a market capitalization of 10 billion (Nairobi Stock Exchange records, 2016). The cement firm enjoyed a market share of 15.1% by December 2016. The Bamburi Cement Limited at inception had an annual capacity of 140,000 tonnes of cement but at present it stands at over 2.1 million tonnes a year and a market capitalization of over 70 billion shilling (Bamburi Cement, 2015). According to December 2016 statistics, the company enjoyed a market share of 32.6% in the cement industry. Athi River Mining Limited-ARML was initially a mineral extraction and processing company and later in 1996, the cement division began operation.

The company had a market capitalization of 8.7 billion (Athi River Mining Limited, 2015). According to December 2016 statistics, the company enjoyed a market share of 13.5% in the cement industry. Mombasa Cement Company which forms the fourth largest controlling cement company with 15.8% as its controlling stake in the market started operations in 2013 besides being founded in 2007. The company is a subsidiary of Toronto Cement limited in Uganda. Though it is headquartered in Nairobi with operations in Athi River. The company has an annual production capacity of 2.0mT with an increasing price competitiveness expected to increase its market share to 20%. National Cement Company produces the Simba brand of cement. This company started operations in 2008 having been founded by the Devki Group of Companies. The company controls about 8% of the cement market in Kenya and has an annual production capacity of 1.0mT. Savannah Cement company was opened in 2012 and the main shareholders are Chinese Investors Wan Ho controlling 40%, the Savannah Heights controlling 40% with the other shareholder Acme Wanji controlling 20% of the

shares (Dyer & Blair, 2012). The company is exclusively focused on export markets to Tanzania, Uganda, Burundi, Rwanda, Somalia, DRC and South Sudan.

The company has an annual capacity of 1.5mT and according to December 2016 statistics; the company enjoys a market share of 15% in the cement industry. A study by Hallowell (2011) on the safety-knowledge management in American construction organizations indicated that knowledge was critical in ensuring organizations improved their overall performance, which can be linked to the dependent variable of this study which sought to examine the influence of OSH training that is imparting knowledge on performance of cement manufacturing firms in Kenya.

2.5 Critique of the Existing Literature

Gopal and Rajendra (2012) study focused on one segment of the economy with people performing work that did not involve heavy machinery. However, their research could be related to the manufacturing sector especially in terms of wearing of safety equipment such as gloves when applying chemicals, use of gas masks to protect themselves from fumes from the chemicals, equipment decontamination with emphasis on the use of correct procedure and potent decontaminant. Their study revealed that most of the employees did not wear gloves, gas masks, aprons and goggles to protect their eyes. However, their study did not focus much on the part of training. Charehzehi and Ahankoob (2012) concentrated on the occupational safety and health, instead of emphasizing on the part of training.

Lehmann, Haight and Michael, (2009) conducted a study on effects of safety training on risk tolerance with a focus on Surface Mining Industry and found that there was no significant relationship. The study was conducted among stone mining employees in Pennsylvania in a bid to establish any relationship between workplace safety training and employee's risk tolerance concentrated on the aspect of risk tolerance instead of risk protection and identification. This study was against the perception that having frequent safety training on employees does significantly lead to reduced Employee risk

tolerance. Although this study focused on risk-tolerance, it was not connected to safety training and the possibilities of reducing the exposures to occupational hazards.

On the other hand, Lehmann *et al.*, (2009) recommended that workplace safety training was not adequate to ensure employees' evaded occupational hazards and accidents instead risk-related decision making embraced by employees, depended on a myriad of aspects which included safety training, educational background of the employee and the amount of exposure to the occupational hazards. Machles (2014) critiqued the purpose of safety training in his work titled *Why Safety Training May not be the Answer* and stated that many times safety training was taken as a basic training and the consequences leading to occupational accidents were related to workload and exposure time. Machles (2014) stated that a careful look into how the organization performed and the cases of occupational hazards exposed to, the management could design programmes aimed at reducing the accidents and overlook the safety training part. That many manufacturing industries' scenarios include accidents happening at workplace that were connected to the capacity of the employees.

Machles (2014) stated that instead of performing safety training to improve work performance, gap analysis or needs assessment could be performed to identify solutions to reduce occupational safety and health incidences. He quotes the many cases where organizations rush to safety trainings to increase workforce efficiency and productivity before checking what problems the organization is facing. He equated the rush to embrace OSH training to receiving a patient and taking a syringe with medicine to inject the patient without performing diagnosis. Throwing safety training as the indication of an increasing accidents and illnesses at the workplace could be overlooking the underlying causes of the accidents like faulty machinery, poor work environment and untrained staff at the workplace. Machles (2014) advised that OSH training should be taken as the last consideration while not the first in handling OSH related incidents. He opined that getting into the root of the problems of Occupational Safety and Health incidents was essential. This was contrary to the main objective of this study.

2.6 Research Gaps

The previous researchers had concentrated on occupational safety and health as opposed to the part of training. From the literature review, most of the scholarly works had focused on the aspect of human resource practices while ignoring the part of Occupational Safety and Health training. This study therefore intended to fill the gap which clearly emphasized the importance of training the employees on the need to regularly use safety and health gadgets at the work place. The previous studies did not focus on manufacturing firms where employees are most vulnerable (Musyoka, 2014) hence the need for this study. From the majority of the studies done in Kenya, the focus was only on acquiring the safety equipment and installing them at the right places instead of frequently training them on how and the importance of using them. From the cases of the accidents quoted in industries in Babadogo, the majority of the employees had a brief introductory orientation on safety measures while others had bypassed the OSH training aspect thus subjecting the employees to occupational accidents (Otieno, 2012).

Jessie-Cook, de Glanville, Thomas, Kariuki, Clare, & Fèvre, (2017), writing about food production industries in Kenya, stated that in fact the working conditions were poor among many manufacturing industries in Kenya, for example' majority of employers at meat producing firms were not training their employees on occupational safety and health practices. This assertion could also be extended to the manufacturing firms in Kenya where the working culture is shared across the industry since the firms face relatively the same OSH regulations (Wambilianga & Waiganjo, 2015). In order to emphasize the aspect of OSH, a number of Kenyan scholars have tried to conduct studies on the related fields, for example, Katsuro *et al.*, (2010) and Abuga (2012) conducted a study at Pyrethrum Board of Kenya seeking to establish the impact of OSH programs on organization effectiveness.

Musyoka (2014) studied the relationship between safety and health programmes and performance of manufacturing firms in Mombasa County, Kenya. Jelimo (2013) did a

study on the impact of safety training on employees' productivity. As a result of increased industrial development in Kenya, it gave birth to the OSHA then known as Factories Act 1948 (Odhiambo, 2012). Its purpose was to regulate safety measures and how to practice them to the employees employed in the industries. Odhiambo (2012) further lamented that there was lack of adequate training on occupational safety and health among many organizational establishments in Kenya.

2.7 Summary of the literature Reviewed

Generalization: Ensuring a risk-aware culture in the organization is vitally important. A risk-aware culture will be achieved when all members of staff and management understand and accept the importance of adequate risk management. In addition, management and staff need to understand the role they will play in the successful management of risks and have a desire to fulfill that role enthusiastically (Hopkin, 2014). The selected theories to back the study included: Occupational Safety and Health Training model, the Entropy model of accident causation, Domino Safety Theory, Epidemiological Theory, Human Factor Theory, and The Expectancy Theory. These theories applied to the study as they focus on the factors that cause occupational accidents and offer solutions.

The literature reviews gave estimates and facts about occupational accidents happening across the world, then in Africa and finally on the Kenyan manufacturing industry specifically cement manufacturing firms. The study also introduced some Acts that have benefited the industry including the Occupational Safety and Health Administration Act (OSHA) reviewed in 2010, the OSHIBA and the WIBA Acts. According to Weinstock & Slatin (2012), training content, training experts, training frequencies and monitoring and evaluation of occupational safety programmes is an integral part in organizations strive for accident-free operations.

The issue of OSH training is also explained and pointed out in several local (Kenyan) studies and that the chapter covered several studies that highlighted the gap in OSHA

practices pointing to lack of adequate and efficient safety training in many industrial settings (Otieno, 2012). The entropy model addressed causes of accidents at work place while offering solutions. The model applied to this study in that it offered safety training and the behavior and personality of the employees as the key to minimizing the accidents. The domino theory (Heinrich & Lateiner, 1931) addressed five dominos that should be catered for to ensure safe working environment. The human factor theory focused on the staff work overload, inappropriate responses and activities as the main causes of occupational accidents. The chapter continues to explain the human factor theory (Peterson, 1984) that addressed the need for focusing on the human resources to ensure total compliance to safety practices and measures. There is also the conceptual framework that addressed the relationship between the independent and dependent variables in the study. The variables were then explained in detail on how they had possible influence on employee performance in terms of reducing occupational accidents. They included training on Occupational accidents, training on Hazard identification, training on Hazard prevention, and Employee participation, training resources, training programmes content, training expertise, monitoring and evaluation of the safety programmes. The chapter addressed the research gaps to be filled and concludes with a summary. Most of the researchers focused on the issue of occupational safety and human resource practices but did not focus on the part of occupational safety and health training.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodology that was used to go about the study. The chapter also describes various diagnostic tests carried out such as hypothesis tests, Multicollinearity, Normality and Heteroscedasticity tests. These tests were useful in ascertaining the integrity of the data collected. In addition, the chapter presents various data analysis methods to determine the nature and strength of the relationship between the study variables as well as presenting the data in form of tables for interpretation .It presents the research philosophy, research design, target population, sampling frame, sampling techniques and sample size, data collection instruments, data collection procedures, pilot testing, validity of data collection instruments, reliability of data collection instruments, data analysis and presentation, hypotheses testing, linear regression, multiple regression and multi-collinearity.

3.2 Research Philosophy

A research philosophy is a belief about the way in which data about a phenomenon should be collected, analysed and used (Aliyo, Bello, Kasim & Martin, 2014). There are three epistemological positions; realism, interpretivism and positivism (Saunders, Lewis & Thornhill 2012). In positivist approach the phenomena under investigation are relatively stable, exist objectively and represent a factual account of the case (Taylor, 2014). Galliers (1991) averred that there are two major research philosophies identified in the Western tradition of science, namely positivist (sometimes called scientific) and interpretivist also known as antipositivist. Bajpai (2011) explains that research philosophy deals with the source, nature and development of knowledge. This study adopted positivism approach which ensures that the role played by the academician in

the research is only limited to data collection and interpretation and that researcher needs to concentrate on facts.

Objective approach and research findings were usually observable and quantifiable (Dudovskiy, 2011). Factual information from the cement manufacturing firms in Kenya led to gaining of knowledge which is trustworthy. Positivism approach has a long and rich historical tradition and it is so embedded in our society that knowledge claims not grounded in positivist thought are simply dismissed as scientific and therefore invalid (Hirschheim, 1985).

Positivist research philosophy is flexible as it captures both the quantitative and qualitative research methods (Dudovskiy, 2011). Science is the underlying ground for positivism, since it is deterministic based on the assumption that X causes Y under certain circumstances. This study assumed that occupational accidents, hazard identification, hazard prevention, employee participation mediated by management supports had an influence on performance of cement manufacturing firms (Wang, 2012). The selection of positivism in this study as opposed to interpretivism and realism philosophies was therefore based on the examination of cause-and-effect relationships between objects of study, which was important in answering certain research questions or achieving the objectives of the study.

3.3 Research Design

According to Kothari and Garg (2014), a research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. It is the conceptual structure within which research is conducted; it constitutes the blueprint for the collection, measurement and analysis of data. This study adopted descriptive research design to establish the influence of Occupational Safety and Health training on Performance of cement manufacturing firms in Kenya since it is concerned with finding out the what, where, when and how of a phenomenon and how it relates with the research problem. Kothari

and Garg (2014) explained that descriptive research studies are those studies which are concerned with describing the characteristics of an individual or of a group. These are studies concerned with specific predictions, narration of facts and characteristics concerning individual, group or situations (Gravertter & Forzano, 2011).

Qualitative research was also deemed useful in analyzing information in a systematic way in order to come to some useful conclusions and recommendations on the social settings and the individuals who portray those characteristics. Dowling, Lloyd and Suchet-Pearson (2016) as quoted by Ng'ang'a (2017), indicated that qualitative research is a means of exploring and understanding the meaning individuals or groups attribute to a human or social problem. Qualitative research approach enabled the researcher to gather adequate and complementary information about the influence of OSH training on performance of cement manufacturing firms in Kenya.

On the other hand, (Mugenda & Mugenda 2013) opined that quantitative approach which is also known as the scientific method has traditionally been considered as the traditional mode of inquiry in both research and evaluation. This mode of inquiry follows several logical and distinct steps, from identifying and stating research problem to making appropriate conclusions and inferences to the population. The quantitative approach of the study was used to find out the level of satisfaction on how OSH trainings were conducted and to gauge the associated influence. The quantitative tools provided options for the researcher to analyze the extent of the study phenomenon that is OSH training in influencing productivity of employees. Babbie (2010) argued that quantitative research helps to determine the relationship between one independent variable and another dependent or outcome variable contained in a population. This study took the quantitative descriptive design where the respondents were visited once for information. The research problem which is performance of cement manufacturing firms was identified and distinct steps were followed to review literature related to the study and the appropriate methodology was adopted which assisted in coming up with conclusions on how occupational safety and health training influences performance of

cement manufacturing firms in Kenya. The quantitative descriptive study therefore established associations between the stated variables

3.4 Target Population

Cooper and Schindler (2014) define population as the total collection of elements about which one wishes to make inferences. It is a group of individuals that the intervention intends to conduct research in and draw conclusions from. Target population is also the total group of individuals from which the sample might be drawn. It is basically the entire group of individuals, events or objects having a common observable characteristic. Target population consists of items or people under consideration in any field or enquiry (Orodho, 2012). The target population for this study was six licensed cement manufacturing firms in Kenya (Republic of Kenya, Economic Survey, 2015). Out of the six cement manufacturing firms, one firm, that is:-Bamburi cement manufacturing firm was used for piloting purposes. The target population had heterogeneous characteristics because it consisted of the cement manufacturing firms that dealt with employees in human resource department, production department and marketing department. These were employees specialized in OSH implementation and handling machines, exposed and at risk of occupational hazards. These employees thus formed the units of analysis.

Mugenda and Mugenda (2013) assert that a researcher should narrow down the target population to an accessible population which is a representation of the whole population. In this case, the firms selected were Mombasa Cement manufacturing firm, Athi River mining, East Africa Portland Cement Company (EAPCC), Savannah Cement and National Cement.

3.5 Sampling Frame

In order to select a sample that is representative, one must have a sampling frame, which is a list of all the units in the population where a representative sample is drawn for

purpose of carrying out a study (Saunders, Lewis & Thornhill, 2012). Ngechu (2006) underscores the importance of selecting a representative sample through making a sampling frame. From the population frame the required number of subjects, respondents, elements or firms were selected in order to make a sample. The sampling frame for any probability sample is a complete list of all the cases in the population from which a sample is drawn (Saunders et al., 2012). The sampling frame in this study was all the licensed cement manufacturing firms in Kenya according to Dyer and Blair Investment Bank (2012).

Table 3.1: Sampling frame

Cement manufacturing firms	Population
Athi River Mining	700
East African Portland	500
National Cement	500
Mombasa Cement	600
Savannah Cement	200
Bamburi cement	1185
Total	3685

Source: Dyer and Blair Investment Bank, 2012

3.5.1 Sample and Sampling Technique

Sampling is the process of selecting a sub set of cases in order to draw conclusions about the entire lot (Orodho, 2012). According to Kothari and Garg (2014), a sample is an example of various things that are chosen from the universe. In research terms an example is a gathering of individuals, articles, or things that are taken from a bigger populace for estimation. Mugenda and Mugenda (2013) explain that sample size is a carefully selected sub-group or sub-set that is representative of the whole population under study. The main objective of sampling is to gain an understanding about some features or attributes of the whole population based on the characteristics of the sample. In this study the sample size was drawn from 2500 employees of the five cement manufacturing firms.

Sampling is a process used in statistical analysis in which a predetermined number of observations are taken from a larger population. The study adopted the simplified sample size formula by Yamane (1967) as quoted by Mumo (2017) which states that, the desired sample size is a function of the target population and the maximum acceptable margin of error and it is expressed mathematically as follows:

$$n = \frac{N}{1 + Ne^2}$$

Where:

n = Sample size

N=Target population

e=maximum acceptable margin of error (5%).

$$n = \frac{2500}{1 + 2500(0.05)^2}$$

n = 344 (sample size)

The total number of respondents was 344 as selected across the three departments within the five firms which was 14% of the total population of employees. In the second stage, stratified random sampling was used to take a stratified sample of 344 in various departments in the selected firms: those under human resource management, production department and marketing department. The sample size is indicated in Table 3.2. The sample size that was used was n=344 that was drawn from a population of size N=2500 which was divided into five strata of N₁=500, N₂ = 600, N₃=700, N₄=500, N₅=200. Adopting proportional allocation, the researcher got the sample size based on the different strata: (Kothari & Garg, 2014).

Table 3.2: Sample size determination

Cement manufacturing firms	Population	Sample Size
East African Portland	500	69
Mombasa Cement	600	83
Athi River Mining	700	96
National Cement	500	69
Savannah Cement	200	27
Total	2500	344

Source: Dyer and Blair Investment Bank, 2012

3.6 Data Collection Instruments

The primary data was collected thorough the administration of open and closed ended questionnaires to the identified respondents with the relevant information. Kothari and Garg (2014) state that primary data is data which is collected afresh and for the first time and thus happens to be original in character. Saunders et al (2012) defined a questionnaire as a general term including all data collection techniques in which each person is asked to answer the same set of questions in a predetermined order. The questionnaire that was used in this study was divided into sections. The first two sections of the questionnaire contained demographic information. The third section of the questionnaire contained Likert Scale type of questions where respondents were required to indicate their level of agreement with the statements. Questionnaire was deemed appropriate to collect information in the most precarious factors related to the safety and health of employees.

3.7 Data Collection Procedure

An introductory letter was obtained from college of human resource and entrepreneurship development (COHRED) of Jomo Kenyatta University of Agriculture and Technology (JKUAT) and a research permit from National Commission for Science Technology and Innovation (NACOSTI). Human Resource Managers of the units of analysis were visited with the aim of familiarization and with the institutions and give a

guarantee that the objective of the study was for academic purposes and the information will not be leaked to the public. The target participants included the Human Resource Managers, Production Managers and Marketing Managers as this processed relevant information relating to the subject of the study. A brief introduction on how the respondents were expected to fill in the questionnaires was also done. The data was collected through drop and pick method where the respondents were allowed to fill in the questionnaires at their pace and follow ups done through personal visits and phone calls before collecting the questionnaire.

3.8 Pilot Study

Pilot study involves trying out a questionnaire on a small group of individuals to get an idea on how they react to it before the final version is created (Kothari & Garg, 2014). The advantages of conducting the pilot test includes enhancing the training of field staff, review of the research instruments, prevention of wasteful expenditures on a full-blown survey whose results may not be applicable. The study carried out a pilot test to test the validity and reliability of the questionnaires in gathering the data required for the study. The pilot study was also aimed at establishing whether the research instrument could obtain the required results (Dawson, 2011).

Saunders et al (2012) recommends a pilot test of 10%; rule of the thumb; of the study sample. This study conducted pilot testing on twenty-five (25) employees that constituted Human Resource, Production and Marketing departments from Bamburi Cement, which accounted for over 5% of the overall sampled population of 344 respondents. The 25% employees from Bamburi cement were excluded from the study and only the remaining five cement manufacturing firms were included in the final study. It was conducted within two days after which the research assistants familiarized with the research instrument. This provided the researcher with an opportunity to seek clarification on items that proved difficult. The questionnaires were also validated by discussing the prompts with the supervisors whereby their views were evaluated and incorporated to enhance content validity of the data collection instrument.

3.8.1 Reliability of Data collection instruments

According to Creswell & Pitblado (2011), reliability is a test's first requirement and refers to its consistency. A reliable test is one that yields consistent scores when a person takes two alternate forms of the test or when he or she takes the same test on two or more different occasions. Kothari (2014) define reliability of an instrument as the degree of stability by comparing results of repeated measurements. Therefore, reliability measures the relevance of the questions included in the questionnaire and also ensures that there is consistency in the production of the results in the sense that another researcher or the same researcher can collect the same desired information as the original instrument intended to use in the same target population.

Cronbach alpha coefficient was used to test the reliability of data collection instrument. As a rule of the thumb, acceptable alpha should be at least 0.70 (Ngigi & Kipkebut, 2014). Reliability coefficient (alpha) ranges from 0 -1 where 0 represents an instrument full of errors and 1 represents total absence of error. Coefficient alpha reflects important information on the proportion of error variance contained in a scale. Owing to the multiplicity of the items measuring the factors, the Cronbach coefficient alpha is often considered to be the most suitable since it has the most utility of multi-item scales at the internal level of measurement (Creswell, 2018).

Table 3.3: Internal consistency – Cronbach's alpha

Cronbach's alpha	Internal consistency
$\alpha \geq 0.9$	Excellent
$0.7 \leq \alpha < 0.9$	Good
$0.6 \leq \alpha < 0.7$	Acceptable
$0.5 \leq \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptable

3.8.2 Validity of data collection instruments

According to Mugenda & Mugenda (2013), validity is the degree to which results obtained from the analysis of the data actually represent the phenomenon under study. Content validity pertains to the degree to which an instrument fully assesses or measures the content of interest (Sangoseni, Hellman and Hill,2013). To ascertain the content validity of the instrument, the study sought the assistance of the supervisors and other professionals in the field. According to (Creswell, 2014), validity tells the researcher whether the test or yardstick is measuring what it is supposed to be measuring. Development of a content valid instrument is typically achieved by a rational analysis of the instrument by experts familiar with the construct of interest or experts on the research subject (DeVon, Block, Moyle-Wright, Ernst, Hayden & Lazzara, 2007) and all items are reviewed for readability, clarity and comprehensiveness and a conclusion is made on which items should be included (Polit & Beck, 2006).

Tugulea (2014) stated that credibility is among the most critical factors that establish trustworthiness in research. Credibility addresses how congruent the findings are with the reality of the phenomenon under study. It can be referred to as the level at which the final conclusions in study deliver an understandable message. To achieve credibility, the selected research method was adhered to as well as adopting the correct operational measures for the concepts under study.

3.9 Data Analysis and Presentation

Data analysis is the process of bringing order, structure and meaning to the mass of information collected (Harshberger & Markowitz, 2013). The researcher edited the questionnaires after they were completed for purposes of ensuring consistency and completeness. Coding was then done so as to group the responses into different categories. According to Denscombe (2017), coding involved the attribution of a number to a piece of data or group of data with the precise aim of allowing such data to be analyzed in quantitative terms. Descriptive statistical technique was then used to analyze

data. Healey (2011) explains that descriptive statistics allow researchers to summarize large quantities of data using measures that are easily understood by the researcher. This consists of graphical and numerical techniques for summarizing data, thus reducing a large mass of data to simple, more understandable terms. The Statistical Package for Social Sciences (SPSS version 23) which is a computer software was used for the purpose of analyzing data. The data was presented in figures, graphs and tables.

3.9.1 Multiple Linear regression

Damodar (2010) reveals that in linear regression analysis, one of the assumptions is that, the independent variables are not correlated with each other, thus, there is no linear relationship among the explanatory variables. Linear regression will test the relationship between dependent and independent variables to explain variability explained by the study variables. The relationship between the variable Y which is performance of cement manufacturing firms in Kenya and the variable X which is employee training was measured. This was done by estimating the parameters β_0 and β_1 and determining the strength of the relationship between Y and X using the correlation coefficient. If r is 1 then there is a perfect positive correlation. If r lies between 0.5 and 1 then we have a strong positive correlation between the dependent variable Y and X. But if r lies between 0 and 0.5 then there is weak positive correlation. If r is 0 then this would show there is no correlation.

The relationship between independent variables and dependent variable was explained through Linear regression model. Multiple regression analysis was also used to establish the relationship between performance of cement manufacturing firms in Kenya and four independent variables of employee training: occupational accidents, hazard identification, hazard prevention and employee participation. Multiple regression is a statistical tool that was used because it is the procedure that uses two or more independent variables to predict a dependent variable.

Since there are four independent variables in this study, the multiple regression model is as follows: -

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$

where:

Y = represents the dependent variable, performance of cement manufacturing firms in Kenya

β_0 = the Constant

X_1 = Occupational accidents

X_2 = hazard identification

X_3 = hazard prevention

X_4 = employee participation

β_1, \dots, β_4 are the regression coefficients

e = error term

A moderator is a variable that affects the direction and the strength of the relationship between an independent variable and a dependent variable. This variable may reduce or enhance the direction of the relationship between a predictor variable and an independent variable or it may change the direction of the relationship between the two variables from positive to negative.

A moderator is supported if the interaction of predictor and moderator on the outcome of the dependent variable is significant (Berry, 2018). The study used multiple regression analysis to establish the moderating effect of management supports on the relationship between the four independent variables and the dependent variable.

$$Y = \beta_0 + \beta_1 X_1 * Z + \beta_2 X_2 * Z + \beta_3 X_3 * Z + \beta_4 X_4 * Z + e$$

Where:

Y = is the dependent variable, performance of cement manufacturing firms in Kenya

β_0 = the Constant

X_1 = Occupational accidents

X_2 = hazard identification

X_3 = hazard prevention

X_4 = employee participation

Z = the moderator (Management supports)

e = error term

$\beta_i Z$ is the coefficient of $X_i * Z$ the interaction term between management supports and each of independent variables for $i = 1, 2, 3, 4$

3.10 Diagnostic Tests

Diagnostic tests perform differently in different populations. It is therefore important to clearly define the population of interest. The ideal study sample for a test accuracy study is a consecutive or randomly selected series of respondents. Using the sampling method as an inclusion/exclusion criterion is likely to result in a substantial reduction in available data. It is likely to be more useful to consider the sampling method and/or its reporting as an aspect of study quality and to base the inclusion criteria relating to the population upon participant characteristics. The following diagnostic tests were applied in the study:

3.10.1 Normality Test

Normality can be defined as the shape of the data distribution for an individual metric variable and its correspondence to the normal distribution, the benchmark for statistical methods (Hair, Jarque, Bnjr & Bera, 2010). Normality is one of three assumptions for multivariate analysis. Regression assumes normality between the variables under analysis (Hair et al., 2010). Skewness and kurtosis measures of the distributions should be calculated (Tabachnick & Fidell, 2013). For the purpose of this study, Kolmogorov-Smirnov test was used to test normality. According to Ghasemi and Zahediasl (2012), Kolmogorov-Smirnov (K-S) test is the most popular and appropriate test for normality test. A Normally distributed data when using Kolmogorov-Smirnov should have a significant value of above the standard value of 0.05 to exemplify that the variable under consideration is not statistically significant to normal distribution.

3.10.2 Test for Multi-collinearity

Multicollinearity is unacceptable high level of intercorrelation among independent variables such that the effects of independents cannot be separated. If there is high degree of correlation between independent variables, we have a problem of multicollinearity. If there is a multicollinearity between any two predictor variables, then the correlation coefficient between these two variables were near to unity. In such a situation, only one set of the independent variable is used to make an estimate (Kothari, 2014). Under multicollinearity, estimates are unbiased but assessment of the relative strengths of the explanatory variables and their joint effects are unreliable (Habib et al, 2014). Large correlation coefficients in the correlation matrix of predictor variables indicate multicollinearity. High multicollinearity is signaled when high R-squared and significant F-test of the model occur in combination with non-significant t-tests of the co-efficient. None of t-ratios for the individual coefficients is statistically significant, yet the overall F statistic is. If the absolute value of Pearson correlation is greater than 0.8 or close to 0.8 (such as 0.7 ± 0.1), collinearity is likely to exist. In this case one of the collinear variables is removed.

3.10.3 Test for Heteroscedasticity

Heteroscedasticity is present when the size of the error term differs across values of an independent variable. The impact of violating the assumption of homoscedasticity was a matter of degree, increasing as heteroscedasticity increased (Habib et al, 2014). For ordinary least squares; it was assumed that the error terms of the model had constant variance and that they are mutually uncorrelated. To test for heteroscedasticity in this study, plots of the least squares residuals and their squares as well as scatters of these variables against explanatory variables or against the fitted values were made.

The study tested for the existence of heteroscedasticity, which refers to the assumption that the variability in scores for one continuous variable is roughly the same at all values for another continuous variable constitutes another assumption of multivariate analysis. In this study heteroscedasticity was tested using the Breuch-pagan test. For the Breusch-Pagan test, the null hypothesis is that the error variances are all equal while the alternative hypothesis is that the error variances are a multiplicative function of one or more variables. The level of significance for the study was $\alpha=5\%$. For $p \geq 0.05$ we fail to reject the null hypothesis implying that, heteroscedasticity is evident, while for $p < 0.05$ the null hypothesis is rejected and concluded that there is a difference between variances of the population (Creswell & Schindler, 2014).

3.10.4 Hypotheses Testing

Hypothesis is a mere assumption or some supposition to be proved or disapproved. It is a predictive statement capable of being tested by scientific methods, which relates an independent variable to some dependent variables (Kothari & Garg, 2014). For hypothesis test, F-test was performed for null hypothesis, in order to reject or accept the null hypothesis. If F-calculated is greater than F-critical, then the null hypothesis is rejected and alternate hypothesis is accepted. Hypothesis testing uses a test statistic that compares groups or examines association between variables. Hypothesis testing is deciding whether the results of a research study support a particular theory which applies

to a population. The lower the P-value, the more evidence there is in favor of rejecting the null hypothesis.

3.10.5 Pearson's Correlation

Measure of Linear Correlation between two sets of data. It is the relationship covariance of two variables and the product of their standard deviations thus it is essentially a normalized measurement of the covariance such that the results always have a value between -1 and +1. Covariance is a measure of the joint variability of two random variables. A correlation analysis was carried out to measure the extent to which the study variables were linearly correlated. Pearson correlation was used to test the association and strength of the variables at the significance 0.05 while the goodness of fit were tested using ANOVA on how variables were fitting. The regression coefficient was used to test the relationship between independent variables and the dependent variables at 0.05 level of significance. The joint significance of all the independent variables were tested based on overall effect on the dependent variables. The findings were presented using tables, since tables are user-friendly and show response frequencies as well as percentages of respondent's opinions on the influence of occupational safety and health training on performance of cement manufacturing firms in Kenya. The regression model for the moderator was as follows;

$$Y = \beta_0 + \beta_1 X_1 * M + \beta_2 X_2 * M + \beta_3 X_3 * M + \beta_4 X_4 * M + \epsilon$$

Where M is the moderator.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents the analysis of findings from the study as outlined in the previous chapter. The chapter first covers the findings on the pilot test followed by the return rate of the research questionnaires as well as the demographic information of the sampled respondents. The chapter also covers the descriptive analysis of the study variables, inferential statistics and finally the overall regression model. The main results are presented as per the main study objective which was to examine the influence of OSH training on the performance of cement manufacturing firms in Kenya.

4.2 Response Rate

The number of questionnaires that were filled and returned was 330 representing 96% response rate while 14 questionnaires were either not filled or not returned 4% out of the targeted 344. The response rate of 96% according to Kothari (2011) is appropriate for analysis. The high response rate also points to the possibility that all the information collected could be generalized to the cement manufacturing companies in Kenya and to the extent of other manufacturing firms. The response rate was shown by taking the data representing the firms and the employees who participated in the survey. The sampled respondents were based on the approximate number of employees working at the specific firms. Table 4.1 shows the response rates from the selected five firms and the sixth one (Bamburi Cement) on the pilot study.

Table 4.1: Response Rate

Sample Size		Response Rate		Non-Response Rate	
		Frequency	Percentage	Frequency	Percentage
344	100%	330	96%	14	4%

4.3 Results of the Pilot Study

Pilot study involves trying out a questionnaire on a small group of individuals to get an idea of how they react to it before the final version is created (Kothari & Garg, 2014) Saunders *et al.*, (2012) recommend a pilot test of 10% of the study sample. The study conducted pilot testing on twenty five (25) employees from Bamburi Cement, which accounted for 10% of the overall sampled population of 344 respondents. It was conducted within two days within which the research assistants familiarized with the tool. This provided the researcher with an opportunity to seek clarification on items that proved difficult. The questionnaires were also validated by discussing the prompts with the supervisors whereby their views were evaluated and incorporated to enhance content and validity of the questionnaires. The results were presented with possibilities of the main results deviating from the findings since there were adjustments made to the questionnaires, affecting some questions especially on the statements and answering options. This is because piloting represents the initial steps in conducting the actual study where it informs areas in the instrument and the methodology needing corrections. The results of the pilot study are as shown below based on the reliability and validity of the instruments that is table 4.2 and table 4.3:

4.3.1 Reliability results

According to Sasaka, Namusonge and Sakwa (2014), reliability is the ability of the research instrument to give the same answer in the same circumstances from time to time. If respondents answer a questionnaire the same way on repeated situations, then the questionnaire is said to be reliable. The research instrument was subjected to a reliability test using Cronbach's Alpha. The findings indicated that all constructs had Cronbach's Alpha values within the suggested value of between 0.7 and 0.9 thus the data collection instrument was reliable (Young, 2013; Nunnally & Bernstein, 1994; Creswell (2013); Creswell & Miller, 2000; Lincoln, Lynham & Guba, 2011). On the basis of this reliability test it was confirmed that the scales used in the study were reliable to capture the constructs. The findings of the reliability test are shown in Table

4.2 where threshold is equal or above ≥ 0.7

Table 4.2: Reliability Results

Construct	Cronbach's Value	AlphaNumber Items	ofComment
Occupational accidents	0.891	8	Reliable
Hazard identification	0.878	8	Reliable
Hazard prevention	0.838	8	Reliable
Employee participation	0.841	8	Reliable
Management support	0.874	8	Reliable
Performance	0.734	8	Reliable

4.3.2 Validity results

Validity requires that an instrument is able to measure the intended subject as per the researcher's intention. Expert judgement achieved through a peer review was applied to test for content validity of the research instruments. A peer review is the review of the data and research process by someone who is familiar with the research or the phenomenon being explored (Creswell & Miller, 2000). A peer reviewer provides support, plays devil's advocate, challenges the researchers' assumptions, pushes the researchers to the next step methodologically and asks hard questions about methods and interpretations (Lincoln & Guba, 1985). In this view, the judgement of the pilot study respondents on the items contained in the questionnaire on the study variables was sought and their proposed changes noted and incorporated in the final questionnaire used for the main study.

On the other hand, construct validity was assessed using Principal Component Analysis (PCA) method of factor extraction. The findings indicate that the average factor loadings were between 0.658 and 0.854 and the minimum loadings for the constructs were between 0.411 and 0.499. This implies that none of the items as initially compiled had a factor loading of below 0.350. According to Damodar (2010), an item will have construct validity if the factor loadings are above 0.350 hence the findings herein met the threshold for construct validity.

Table 4.3: Results for Construct Validity

Variable	Number of Factors	Average Factor loadings	Least Loadings	Factor
Occupational Accidents	8	0.854	0.499	
Hazard Identification	8	0.705	0.483	
Hazard Prevention	8	0.658	0.451	
Employee Participation	8	0.665	0.482	
Management Support	8	0.816	0.479	
Firm Performance	8	0.763	0.411	

4.4 Firm operation period

Length of service at an organization influences the employee in terms of adapting to the set organizational culture on safety practices. Employees with more time working on the premises are likely to have attended at least training on workplace safety or experienced the frequencies of incidents at the workplace. Figure 4.4 shows the summary of the results; from the study, it was found that majority of the employees had worked for between one and six years, making a total of 76% (46.4+29.8) of the sampled respondents.

Over experienced respondents, those with over ten years, accounted for 6% of the sampled respondents while those with less than a year were 4.8% of the sampled respondents. Rudestam and Newton (2015) suggest that the diversity in age of the respondents as portrayed in this study implicates the ability of the study to encompass on the views of the wide range of respondents which may differ based on their experience level and age bracket. This implies that the current study has achieved the diversity as far as age bracket is concerned hence the ability to give diverse findings (O’Leary, 2014).

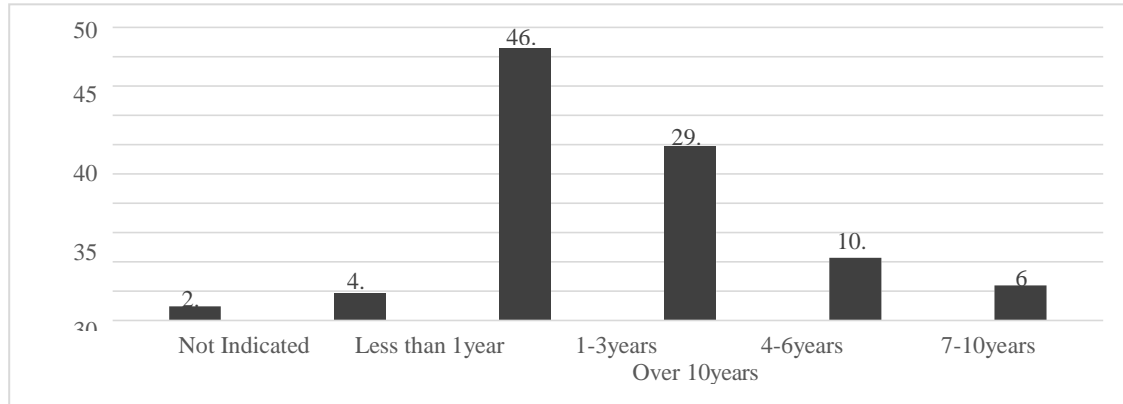


Figure 4.1: Length of Service at the selected firms

4.5 Diagnostic Tests

Diagnostic tests are tests conducted to determine the appropriateness of the data prior to conducting inferential analysis. These tests were necessary to establish whether the relationship between independent dependent variables satisfy the assumption of normality, heteroscedasticity, linearity and multi-collinearity. The researcher conducted various diagnostic tests to ensure that the assumptions of Classical Linear Regression Model (CLRM) were not violated. Estimating the regression models when the CLRM assumptions are violated would result in inefficient, inconsistent and biased parameter estimates (Franzese, Lewis & Stringer, 2009). This section presents the results of the following diagnostic tests: normality test, multicollinearity test, heteroscedasticity test and hypothesis test.

4.5.1 Normality Test

Normality can be defined as the shape of the data distribution for an individual metric variable and its correspondence to the normal distribution, the benchmark for statistical methods (Hair, Sarsetedt, Hopkins, & Kupplwiere, 2014). Normality is one of three assumptions for multivariate analysis. Regression assumes normality between the variables under analysis (Hair et al., 2010). Skewness and kurtosis measures of the distributions should be calculated (Tabachnick & Fidell, 2007). According to Ghasemi

and Zahediasl (2012), Kolmogorov-Smirnov (K-S) test is the most popular and appropriate test for normality test. A Normally distributed data when using Kolmogorov-Smirnov should have a significant value of above the standard value of 0.05 to exemplify that the variable under consideration is not statistically significant to normal distribution. Table 4.4 shows all variables with reference to K-S test. The findings show that the variables have significance values higher than 0.05 thus implying that data was drawn from a normal population.

Table 4.4: Kolmogorov-Smirnov Test for Normality

Variables	Kolmogorov-Smirnov ^a		
	Statistic	Df	Sig.
Occupational Accidents	.160	330	.107
Hazard Identification	.096	330	.085
Hazard Prevention	.018	330	.125
Employee Participation	-.136	330	.061
Management support	.071	330	.093

4.5.2 Multicollinearity Test

Multicollinearity is unacceptable high level of intercorrelation among independent variables such that the effects of independents cannot be separated. If there is high degree of correlation between independent variables, we have a problem of multicollinearity. Under multicollinearity, estimates are unbiased but assessment of the relative strengths of the explanatory variables and their joint effects are unreliable (Habib *et al.*, 2014). Multicollinearity exists when the standard errors of estimated coefficients of two or more independent variables are inflated (Dormann, Elith & Bacher, 2013). To test for multicollinearity the study adopted Variance Inflation Factor (VIF) approach. This study adopted the rule of thumb for VIF value of 10 as the threshold (Porter & Gujarat, 2010). The VIF values of greater than 10 would indicate presence of multicollinearity. The results indicated in Table 4.5 revealed that the VIF values of the independent variables were within the threshold of less than 10 (ten). The tolerance value was greater than 0.1 ruling out the possibility of multicollinearity (Field, 2017).

The multicollinearity diagnosis indicated that there was no threat of multicollinearity problem and therefore, all the independent variables could be used for further analysis.

Table 4.5: Results for Multicollinearity Test

Variable	Tolerance	VIF
Occupational accidents	0.785	1.275
Hazard identification	0.785	1.274
Hazard prevention	0.642	1.513
Employee's participation	0.661	1.513
Mean Tolerance/VIF	0.718	1.394

4.5.3 Heteroscedasticity Test

Heteroscedasticity is the presence of unequal error terms across the values of independent variable (Vinod, 2008). For the purpose of testing heteroscedasticity in this study, Breusch Pagan Test was carried out to calculate group wise Heteroscedasticity in the residuals. Therefore, Heteroscedasticity test was run in order to test whether the error terms are correlated across observation in the panel data (Long & Ervin, 2000). As a rule of thumb, if the p value is less than 0.05, the data has the problem of heteroscedasticity. The results revealed that all the variables had a p value > 0.05. Thus, the data did not suffer from heteroscedasticity.

Table 4.6: Heteroscedasticity Test

Variables	B	Std. Error	T	Sig.
(Constant)	0.305	0.8344	0.234	0.683
Occupational Accidents	-0.123	0.0456	-1.457	0.089
Hazard Identification	0.345	0.0451	1.349	0.740
Hazard Prevention	0.152	0.0782	1.678	0.082
Employee Participation	0.053	0.0762	1.158	0.142
Management Support	-0.231	0.0831	-1.166	0.067

4.5.4 Hypotheses Testing

Hypothesis test was carried out to test the assumptions of the population parameter. The test was used to assess the plausibility of the statistical test by using sample data. This was done by comparing alternate hypothesis with the null hypothesis. The null hypothesis is rejected if its probability falls below a predetermined significance level which was set at 0.05. For the purpose of this study hypotheses testing was performed using F-test and acceptance/rejection criteria was that if the F-calculated was greater than the F-critical, then the null hypothesis was rejected indicating a significant relationship between the study variables at 0.05 level of significance.

Table 4.7: Hypotheses Test

Null Hypothesis	F- Calculated	F- critical	P value	Conclusion
H ₀₁ : There is no significant influence of Training on occupational accidents on Performance of cement manufacturing firms in Kenya.	14.872	2.19	0.000	The null hypothesis was rejected indicating a significant influence of Training on occupational accidents on Performance of cement manufacturing firms in Kenya. This was because the calculated F value was greater than the critical F value and the corresponding p value was less than 0.05.
H ₀₂ : There is no significant influence of Training on hazard identification on Performance of cement manufacturing firms in Kenya.	4.216	2.19	0.000	The null hypothesis was rejected, indicating a significant influence of Training on hazard identification on Performance of cement manufacturing firms in Kenya. This was because the calculated F value was greater than the critical F value and the corresponding p value was less than 0.05.
H ₀₃ : There is no significant influence of Training on hazard prevention on Performance of cement manufacturing firms in Kenya.	9.708	2.19	0.000	The null hypothesis was rejected, indicating a significant influence of Training on hazard prevention on Performance of cement manufacturing firms in Kenya. This was because the calculated F value was greater than the critical F value and the corresponding p value was less than 0.05.
H ₀₄ : There is no significant influence of Employee participation in training on Performance of cement manufacturing firms in Kenya	7.191	2.19	0.000	The null hypothesis was rejected, indicating a significant influence of Employee participation in training on Performance of cement manufacturing firms in Kenya. This was because the calculated F value was greater than the critical F value and the corresponding p value was less than 0.05.
H ₀₅ : There is no moderating effect of management supports on the relationship between Occupational Safety and Health training and performance of cement manufacturing firms in Kenya.	6.671	2.19	0.000	The hypothesis was rejected hence there is a moderating effect of management supports on the relationship between Occupational Safety and Health training and performance of cement manufacturing firms in Kenya. This was because the calculated F value was greater than the critical F value and the corresponding p value was less than 0.05.

4.6 Descriptive Analysis of the Study Variables

This sub-section presents the analysis of the research findings based on the findings for each of the independent variables of the study which were; occupational accidents, hazard identification, hazard prevention, employee participation, moderating variable management support and performance of cement manufacturing firms. The respondents

were asked to specifically give their views based on their highest level of understanding as per the variables.

4.6.1 OSH Training on Occupational Accidents and Firm Performance

The variable on OSHA training and occupational accidents had eight items that were identified to have some influence on the performance of the employees. The items included the number of accidents in a defined period, saving of organizational resources through reducing the number of accidents and employee believing in safe working environment. The other three items were making employees prepared for handling occupational accidents in case of their occurrences, changing the perspective of the staff through having positive attitude towards embracing workplace safety and acting on the gained skills from OSH training to help avoid occupational accidents.

Majority of the respondents agreed that OSH training has an influence on the number of occupational accidents at workplace as evidenced by a mean of 3.93 and a standard deviation of 0.91. OSH training was found to reduce the number of accidents through creating an informed workforce which is dedicated to occupational safety. The respondents agreed that OSH training had a great influence on reducing occupational accidents and incidents at workplace. On the statement that OSH training had increased the employee's belief of a safe working environment, majority of the respondents agreed with the statement as shown by a mean of 3.79 and a standard deviation of 0.94 while on the statement that OSH training made employees better prepared for occupational accidents, the respondents agreed as indicated by a mean of 3.93 and a standard deviation of 0.91. On the last statement that through safety training occupational accidents led to reduced and productivity increased, majority of the respondents agreed as evidenced by a mean of 3.80 and a standard deviation of 0.91. The findings imply that through OSH training, the number of occupational accidents were reduced an implication that the employees had confidence in performing their duties thus increasing productivity which is equivalent to enhanced organizational performance.

From the qualitative information, over half of the respondents indicated that after focusing on OSH activities and trainings, they have installed healthcare facilities in the companies to handle incidents arising from occupational injuries or sicknesses. One of the respondents pointed out that, since the training is carried out in the company, health trend is good and keeps improving since there are health facilities within the Company. All the respondents also indicated that there was reduction in the number of incidents and accidents in the company. This assertion was supported by a statement that, this (OSH training) has displayed a reduction in the number of incidents and accidents as noted in the company. Another key informant indicated that there were only minor injuries due to engaging OSH trainings as the major injuries were prevented. The respondent indicated that, if such cases are reported (accidents or incidents), then they are of minor injuries.

The findings concur with those by Haslinda *et al.*, (2016) who found that safety training; effective company policy and effective communication had an effect on the overall accident management at an organization. There is possibility of a firm increasing its production since OSH training is concerned with increasing knowledge from the employees and thus motivating them to embrace safety at the workplace (Idirimanna & Jayawardena, 2011). Occupational safety and health training among employees in heavy and manufacturing industries has been associated with changes in the numbers and trends of accidents.

Through training employees, it becomes easy for the employee to avoid occupational accidents, take care of their working environments and be able to establish areas that can negatively influence their working process (Ferrett, 2015). The Descriptive results revealed that the statements under Occupational Accidents had an overall mean of 3.86 an indication that majority of the respondents agreed with the statements. Table 4.8 shows the responses given by respondents when asked whether OSH training had an influence on reducing occupational accidents at the cement manufacturing firms in Kenya.

Table 4.8: Descriptive statistics on Training on Occupational Accidents and performance

Item	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)	Mean	Std. Dev.
Through OSH training, occupational incidents/accidents have drastically reduced	16.9	37.4	13.4	18.7	13.6	3.93	0.91
The OSH training has extensively saved the organization resources	27.6	25.1	10.5	15.9	20.9	3.91	0.84
OSH training has increased my belief of safe working environment	30.1	40.3	7.9	12.8	8.9	3.79	0.94
OSH trainings makes employees better prepared for occupational accidents	20.2	34.5	11.1	15.1	19.1	3.93	0.91
OSH training has helped increase positive attitude in embracing workplace safety	26.5	35.5	12.5	15.3	10.2	3.91	0.84
We are always prepared to act on the knowledge gained from OSH training to avoid occupational accidents	21.1	37.5	13.5	11.7	16.2	3.79	0.94
The OSH training reminds employees of the importance of adhering to safety regulations	25.2	38.1	9.7	14.8	12.2	3.81	0.90
Through safety training the organization has reduced occupational accidents and improved productivity	16.4	39.0	12.1	17.6	14.9	3.80	0.91
Average						3.86	0.90

4.6.2 OSH Training on Hazard Identification and Firm Performance

The variable on OSH training and hazard identification had nine items that was identified as indicated on Table 4.9. Training on safety and health has been associated with increase in safety and health knowledge and skills that help employees in identifying workplace hazards. Occupational safety and health training helps employees in gaining capacity to help identify and asses any form of accident or incident that can

compromise the workplace security (Hofmann, Burke & Zohar, 2017). It is also expected that OSH training changes employees' practices in relation to safety and health leading to identifying and preventing occupational hazards. Occupational safety and health training needs to help in acquiring special skills related to identifying hazards and assessing their impacts on employee and their delivery of the roles. Hazard identification as well as assessment should help in identifying areas needing improvement and working on them to ensure that staff is safe at workplace (Kumie *et al.*, 2016).

On the first statement that OSH training had assisted in hazard identification, majority of the respondents agreed with the statement as indicated by a mean of 2.87 and a standard deviation of 0.74. Moreover, majority of the respondents agreed that OSH training on hazard identification had saved on the organization's resources and this is as shown by a mean of 3.91 and a standard deviation of 0.84. As the findings portray, most of the respondents agreed that through proper means of hazard identification, organizational performance is enhanced and this is shown by a mean of 3.77 and a standard deviation of 1.03. The respondents further agreed that as a result of hazard identification procedures their respective firms were able to weed-out any possibilities of unexpected cases of accidents and this is shown by a mean of 3.61 and a standard deviation of 1.12. On the last statement that OSH training had helped to expose unseen hazards majority of the respondents agreed as shown by a mean of 4.01 and a standard deviation of 0.83. From the key informants, it was found that OSH training had a positive influence in identifying hazards and their likely influence to the performance of cement manufacturing firms. One of the respondents said, that OSH training had improved on the aspect of hazard identification as the possible hazards were identified and addressed on time while another employee supported that employees are proactive in ensuring their safety at the organization's premises. The findings are in line with those by Umeokafar *et al.* (2014) who contemplated that as a result of identification of risks and hazards in an organization, the firm stood a better chance to streamline its systems and operations early enough such that incase of any hazard that threatens their operations it is handled accordingly thus steering performance. Moreover, as pointed in the Domino Safety

Theory, identifying hazards is the beginning point of having safety within an organization hence promoting the conduciveness of the working environment (Reniers, 2010). The findings also compare with those by Kumie *et al.* (2016) who found that safety training among employees was associated with identifying risks and handling incidents when they arose and this had a direct link to the firm performance and competitiveness. The summary of responses is contained on Table 4.9.

Table 4.9: Descriptive statistics on Training on Hazard Identification and Performance

Statement	Strongly Agree	Agree	Neutral	Dis-Agree	Strongly Disagree	Mean	Std. Dev.
OSH training has assisted in hazard identification	21.2	36.1	3.6	18.6	20.5	2.87	0.74
OSH training on hazard identification has saved on the organization's resources	13.6	38.6	7.2	18.9	21.7	3.91	0.84
Hazard identification training has led to change in practices related to occupational safety	13.6	41.0	11.0	16.5	17.9	2.74	1.46
OSH training has led to positive attitudes on embracing timely hazard identification	18.8	48.8	5.5	14.4	12.5	3.42	1.22
Our organization has played a major role in promoting the identification of hazards in the operations of the firm	20.9	33.2	8.4	21.6	15.9	3.83	0.98
Through proper means of hazard identification, organizational performance is enhanced	20.0	38.0	9.1	18.1	14.8	3.77	1.03
Hazard identification procedures have allowed firms to weed out any possibilities of having unexpected cases of accidents.	11.2	46.3	6.3	18.9	17.3	3.61	1.12
OSH training has helped to expose unseen hazards and help in their prevention.	10.2	45.7	8.7	18.4	17.0	4.01	0.83
Average						3.52	1.08

4.6.3 OSH Training on Hazard Prevention and Firm Performance

Occupational safety and health training has been associated with hazard prevention. Overall, ten items were selected to be included in the factor analysis as indicated on Table 4.10. Occupational hazards can be reduced in the event that they are identified and

handled to avoid their likelihood of causing harm. Some identified items that have influence on hazard prevention included conducting frequent monitoring and evaluation of the OSH programs to update old information and practices, as well as equipping workplace with improved safety equipment (Chang, Wang, Liao, Cheng & Wang, 2016).

The findings revealed that majority of the respondents agreed on the first statement that monitoring and evaluation of OSH programs was necessary in hazard prevention as shown by a mean of 3.86 and a standard deviation of 0.73 while on the second statement that the organizations performed frequent checks on safety preparedness, most of the respondents agreed as shown by a mean of 3.91 and a standard deviation of 0.68. The respondents agreed that as a result of application of unique techniques in prevention of hazards, performance was enhanced as evidenced by a mean of 3.84 and a standard deviation of 0.75. The respondents further agreed that their respective organizations had embraced change of focus on OSH training so as to enhance effectiveness as shown by a mean of 4.01 and a standard deviation of 0.49.

From the findings, it was observed that majority of the respondents agreed that they were satisfied with the preparedness, implementation and monitoring of the OSH programs in their respective firms as a bid to prevent hazards. This is also seen in the statement that the organization had adequate safety materials and personal protective equipment with a mean of 2.86 and a standard deviation of 0.93 an indication that majority of the respondents agreed. The findings further reveal that majority of the respondents agreed with the statement that OSH training should come along with rewards and recommendations to ensure employees motivation and adherence as evidenced by a mean of 3.93 and a standard deviation of 0.91. On the last statement that OSH training of employees on hazard prevention had helped in averting work injuries in the organizations, majority of the respondents agreed as shown by a mean of 3.91 and a standard deviation of 0.84. The findings imply that through hazard prevention, the employees get more time to focus on the operations of the firm hence promote performance. The findings concur with those by Yu *et al.* (2017) who found that effective participatory training in preventing accidental occupational injuries led to increased

identification as well as control of such hazards as key in reducing the number of incidents and accidents at an organization, an action which had a positive effect on the overall firm productivity.

Keane (2015) also supported the assertion that training employee on safety practices had an impact on reducing losses at organizational level. Keane further asserted that there was need to change OSH paradigms and practices in a bid to influence reduction in occupational accidents. When organizations have adequate safety materials as well as personal protective equipment, then they are likely to reduce the number of accidents at workplace (Podgórski, 2015). It is expected that OSH training has an influence on hazard prevention that translates to changes in performance of Kenyan cement manufacturing companies. Through grasping solid checking and assessment of work related wellbeing and wellbeing programs, the administration is able to identify areas that were not done according to the set procedures and set expectations. Effectiveness of any OSH program depends on how the management implements it and allows the employee to view their opinions on the success or failure of previous programs (Podgórski, 2015). Under this variable, the descriptive statistics revealed that the statements under training on hazard prevention had an overall mean of 3.77, an indication that majority of the respondents agreed with the statements. The implication is that the majority of the respondents felt that training on Hazard Prevention is key in enhancing or uplifting Performance. The summary of responses is contained on Table 4.10.

Table 4.10: Descriptive Statistics on Training on Hazard Prevention and Performance

Item (in %)	Strongly Agree	Agree	Neutral	Dis-Agree	Strongly Dis-Agree	Mean	Std. Dev.
The organization should conduct monitoring and evaluation of OSH programs	31.5	32.9	10	23.2	2.4	3.86	0.73
The organization performs frequent checks on safety preparedness(like twice or thrice a year)	24.8	38.6	15	16.6	5.0	3.91	0.68
Different and unique techniques are applied by the organization to ensure hazard prevention	28.4	32	17.4	19.7	2.5	3.84	0.75
The organization has embraced change of focus on OSH training to enhance its effectiveness	25.9	27.2	12.3	24.7	9.9	4.01	0.49
The organization has adequate safety materials and personal protective equipment for trained staff	21.0	33.2	16.0	27.4	2.4	2.86	0.93
In order to ensure that employees do not resist the regulations, varying methods of training are adopted.	21	27.4	14.4	26.2	11	3.86	0.73
Frequent training and evaluation of procedures for hazard prevention should be done to ensure safety.	21.3	43.6	13.6	16.7	4.8	3.93	0.91
Employees need appropriate training at an appropriate time as far as hazard prevention is concerned.	26.2	39.0	13.6	15.2	6.0	3.91	0.84
Average						3.77	0.78

4.6.4 Employee Participation in Training and Firm Performance

The variable on OSH training and employee participation had eight items. The fourth objective of the study was to establish the influence of employee participation in OSH training on the performance of cement manufacturing firms in Kenya. Employee participation has been associated with creating a motivated team, which values teamwork thus affecting the organizational culture (Lee *et al.*, 2010).

Employee participation was composed of necessity of employee participating in OSH training, seeking permission from the employer to participate in OSH training and engaging employers to create positive attitude among the employees (Granerud & Rocha, 2011). Employee participation has also been associated with leading to quality decisions and harmony. Employee participation in safety practices and training can enhance implementation of security at workplace through adhering to the laid down procedures. Respondents were asked to rate the responses to the degree to which they agreed or disagreed that it was necessary for them to participate in OSH training.

The findings revealed that on the first statement that it was necessary to have employee participate in OSH training majority of the respondents agreed as shown by a mean of 4.06 and a standard deviation of 0.79. Moreover, most of the respondents agreed that employee involvement in OSH training was effective when sought at the appropriate time and this is as shown by a mean of 3.90 and a standard deviation of 0.94. On the statement that timely involvement of employees on OSH trainings had more merits, most of the respondents agreed as shown by a mean of 3.87 and a standard deviation of 0.96. The respondents further agreed that the employee participation in OSH training created a positive attitude towards work thus contributing to firm productivity as shown by a mean of 3.95 and a standard deviation of 0.83. The respondents further agreed with the statement that when employees are engaged in OSH training they get more committed to the organizational operations and duties as shown by a mean of 3.83 and a standard deviation of 1.06. On the statement that when assessing risks in a given work the concerned employees should be involved, most of the respondents agreed as evidenced by a mean of 3.96 and a standard deviation of 0.79 while on the statement that engaging employees in OSH training resulted to changes in the way they perceive their work, most of the respondents agreed as shown by a mean of 3.82 and a standard deviation of 0.81. The average mean for the statements in the variable was 3.89 and a standard deviation of 0.97 an indication that many respondents agreed with the statements in the variable implying that employee participation in OSH training had an influence in Performance.

From the qualitative information by the key informants, it was also felt that engaging all employees and in frequent periods like twice or thrice a year was necessary for the organization to reduce occupational accidents. This frequency was supported by three of the respondents (n=3) who indicated, they conduct the OSH training on our employees on a quarterly basis. Through engaging employees, it was possible that employees would adhere to the expected security procedures and structures (Lee, Lee & Wu, 2010; Podgórski, 2015). One of the respondents pointed out, that employees are the key stakeholders in an organization without whom the organization might not perform as expected and thus they should be included in occupational safety and health training.

The findings compare with those by Armstrong and Taylor (2014) who found that for any strategy to succeed in an organization, it has to be embraced by the employees and for them (employees) to embrace such a strategy, they ought to have been involved right from the formulation to the implementation of the strategy. This means that for OSH training to bear fruits, the employee ought to accept and embrace it and this on the other hand can be achieved through participation and involvement of the employee in the latter (Dessler, 2013). Participation of employees in organizational processes enables them to own their actions and learn the procedures and processes associated with production processes Lee *et al.*, (2010). A summary of the findings is contained on table 4.11 as shown.

Table 4.11: Descriptive Statistics on Employee Participation in Training and Performance

Item in %	Strongly Agree	Agree	Neutral	disagree	Strongly disagree	Mean	Std. Dev.
It is necessary to have employees participate in OSH training	20.3	34.1	17.7	19.8	8.1	4.06	0.79
Employee involvement/input in OSH training should be sought at an appropriate time	29.4	36.4	10.5	18.6	5.1	3.90	0.94
Timely involvement of employees in OSH training has its own merits/advantages	21.7	41.9	12.3	17.8	6.3	3.87	0.96
OSH training has had a positive attitude and increased morale on the employees	24.5	36.6	14.3	18.3	6.3	3.95	0.83
Employee participation on OSH training has generally led to quality decisions and harmony	30.4	38.8	12.2	16.4	2.2	3.79	0.91
Through employee involvement in OSH training the employees are more committed to the organizational duties	31.7	39.4	11.2	13.3	4.4	3.83	1.06
Employees should be involved in risk assessment process related to their work.	25.4	35.9	10.3	19.4	9.0	3.96	0.79
Engaging employees in OSH training would result to changes in the way they perceive their work.	24.5	39.4	14.6	16.4	5.1	3.82	0.81
Average						3.89	0.97

4.6.5 Management Support and Firm Performance

The variable on OSHA training and management supports had eight items that was identified as indicated on Table 4.12. The management support has been associated with enabling the adoption of workplace measures to control occupational incidents and accidents (Boustras *et al.*, 2015). This is in aspects like communication, engagement of employees, having well-coordinated structures, frequent OSH trainings on all staff and rewarding employees (Kagan, Thornton, & Cunningham, 2017). When employees are properly rewarded, they are then likely to participate in safety training practices thus improving performance of the firms.

Communication is a strong function of management that affects relationship between the

management and the stakeholders (Ben, 2016). Stakeholders in an organization, whether employees or suppliers need to have effective communication to ensure commands, suggestions and directions are followed. Relationship between the management and the employees is likely to influence how safety precautions and measures are followed. When vertical communication is embraced with options of the lower cadre of staff giving suggestions, then they are likely to influence how management makes decisions on critical occupational safety issues (Haslinda *et al.*, 2016). From the responses, it was observed that majority of the respondents agreed that communication between senior management and the junior staff had an effect on the number of incidents and accidents as evidenced by a mean of 4.13 and a standard deviation of 0.76. On the statement that the management sought the opinion of the employees on any aspects regarding OSH training, majority of the respondents agreed as shown by a mean of 3.79 and a standard deviation of 0.94 while on the statement that there was need for management to focus on frequent OSH training, majority of the respondents agreed as shown by a mean of 2.09 and a standard deviation of 1.33. The respondents agreed that the management trained new staff members on their roles in safety before commencing their work and this is evidenced by a mean of 3.86 and a standard deviation of 0.96.

The respondents further agreed that the management rewarded staff, groups and departments that showed high degree of OSH preparedness and practices and this is shown by a mean of 3.71 and a standard deviation of 0.99. On the statement that the staff had conducive working environment as facilitated by the management, majority of the respondents agreed as shown by a mean of 3.94 and a standard deviation of 0.98. On the last statement that the management had ensured the employees felt valued through OSH training, majority of the respondents agreed as shown by a mean of 2.68 and a standard deviation of 1.33. From the qualitative information gathered, almost all the respondents agreed that there is strong influence on embracing safety preparedness and precautions when there is clear communication and good relationship between the management and employees on the aspects of number of incidents and accidents in a firm. Wilkins (2011) supports the assertion that having strong communication channels

between management team and the other employees is essential. The findings compare with those by Athey (2015) who established that the management supports used by the organizational management to integrate the OSH aspects in the organizational mainstream explained the level at which the aspect was embraced. Through proper communication and seeking opinion of the employees as some of the best management supports, the entire organizational community aligns into embracing the OSH training thus making the implementation of the entire process and its contribution to firm performance viable (Reynolds *et al.*, 2013). Descriptive results revealed that the statements under management supports had an overall mean of 3.46, an indication that majority of the respondents agreed with the statements, The findings are in concurrence with the reviewed literature where the management supports was found to significantly influence Performance because it had an overall mean of over 3.3. Table 4.12 shows a summary of the responses on whether management supports has an influence on the relationship between occupational safety and health training and Performance.

Table 4.12: Descriptive statistics on Management Support and Performance

Item	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Mean	Std. Dev.
Communication between senior management and other employees impact on the number of incidents and accidents	30.0	56	5.7	4.8	3.5	4.13	0.76
The management involves staff/employee in planning on OSH training, selection of safety and health topics to be covered	27.0	49.4	6.7	13.3	3.6	3.79	0.94
In case of incidents and accidents, the management has well-coordinated structures that help in reducing the magnitude of damage	30.1	50.6	8.5	9.6	1.2	3.48	1.05
The management focuses on frequent OSH training on all staff	31.6	48.2	8.2	10.8	1.2	2.09	1.33
The management trains new staff on their roles and safety practices before starting working	31.0	46.0	9.1	11.6	2.3	3.86	0.96
The management rewards staff, groups and departments that show high degree of OSH preparedness and OSH practices	20	46.3	8.1	23.2	2.4	3.71	0.99
The staff have conducive working environment as facilitated by the management	25.1	53.6	7.0	10.7	3.6	3.94	0.98
Management of your firm through OSH training has ensured that employees feel valued	21.0	46.6	8.0	19.2	5.2	2.68	1.33
Average						3.46	1.04

4.6.6 Performance of Cement Manufacturing Firms

The variable on OSHA training and performance of cement manufacturing firms had eleven items that were identified as indicated on Table 4.13. Performance of cement manufacturing firms in Kenya, being the dependent variable, was measured by eight items that were closely associated with organizations output and the ability to generate positive changes after implementing OSH training programs (Gopang, Nebhwani, Khatri

& Marri, 2017). In the study, Performance of cement manufacturing firms in Kenya was the dependent variable while the other four were independent variables including occupational accidents, hazard identification, and hazard prevention and employee participation. The mediating variable was management support. Performance of cement manufacturing firms in Kenya is a function of many items and activities by a firm, including motivating employees, creating a conducive working environment and ensuring production processes are efficient.

It is expected that having OSH training at the workplace can influence some changes, especially in relation to the attitude of employees, moral, productivity and organizational resources that are dedicated to the human resources (Gopang *et al.*, 2017). In focusing on OSH trainings, the management expects to derive some changes that can help the organization in streamlining its performance. From the findings, it was found that majority of the respondents agreed that there was increase in production as a result of OSH training which saw more employees get committed to their work as shown by a mean of 3.86 and a standard deviation of 0.73. The respondents further agreed that through OSH training there were reduced incidents and absenteeism which influenced productivity and this is evidenced by a mean of 3.84 and a standard deviation of 0.75. The respondents further agreed that OSH training led to better preparedness of any hazards thus translating to fewer incidents and accidents which saved on medical costs thus maximizing profits.

The findings further revealed that majority of the respondents agreed that OSH training increased employee participation thus enabling them to effectively participate in production processes as evidenced by a mean of 3.96 and a standard deviation of 0.91. On the last statement that OSH training opened up opportunities for employees to master new operations and give the firm an advantage in improving operational efficiency, most of the respondents agreed with this as shown by a mean of 3.86 and a standard deviation of 0.73. The average mean for the statements on performance of cement manufacturing firms was 3.87 and the standard deviation was 0.84. This implies that majority of the respondents agreed with most of the statements given thus implying that

indeed OSH training influenced the performance of cement manufacturing firms.

The findings concur with the arguments by Petersen (1984) in the human factor theory that employees turn to be more productive when they are free from accidents related to their daily duties which is ensured by training and creating awareness on how to avoid such accidents. Moreover, Menger *et al.*, (2016) contend that through occupational health training, the confidence among the employee is enhanced and this contributes to the increased productivity thus promoting firm performance. The findings also compare with those by Granerud and Rocha (2011) who found that for a manufacturing sector to achieve the best out of the employees, occupational health and safety training was necessary such that they (employees) are aware of the dangers they might encounter while working and how they could avoid or prevent such occurrences. The study expected the respondents to give their rating on the changes expected after having OSH training and the summary of their responses is captured on Table 4.13 as shown;

Table 4.13: Descriptive Statistics on Performance of Cement Manufacturing Firms

Item	Strongly Agree	Agree	Neutral	Dis agree	Strongly Dis agree	Mean	Std. Dev.
There is increase in production after OSH training associated with motivated staff	26.7	56	1.1	15.0	1.2	3.86	0.73
OSH training has led to reduced incidents and absenteeism thus influencing firm productivity	25.7	42.9	10	20.2	1.2	3.84	0.75
OSH training has increased employees' participation enabling efficient production processes	33.5	36.4	10	15.5	4.6	3.96	0.91
Management support on OSH training and staff handling is associated with changes in production and ultimately performance	20.1	42.9	12	18.8	6.2	3.75	1.01
Overall, OSH training at this organization can be associated with changes in performance	31.7	32.9	10	14.3	10.1	3.91	0.68
OSH training has potential impact on performance of a firm since training builds strong, proficient and qualified personnel.	36.5	38.7	10	13.6	1.2	3.91	0.78
Training staff frequently on the occupational safety and health has ensured that the bulging cases of occupational accidents are minimized and in some cases eliminated.	33.3	32.4	16	11	7.3	3.86	0.73
OSH training has opened up opportunities for employees to master new operations and give the firm an advantage in improving operational efficiency.	31	27.4	4.8	26.2	10.6	3.86	0.73
Average						3.87	0.84

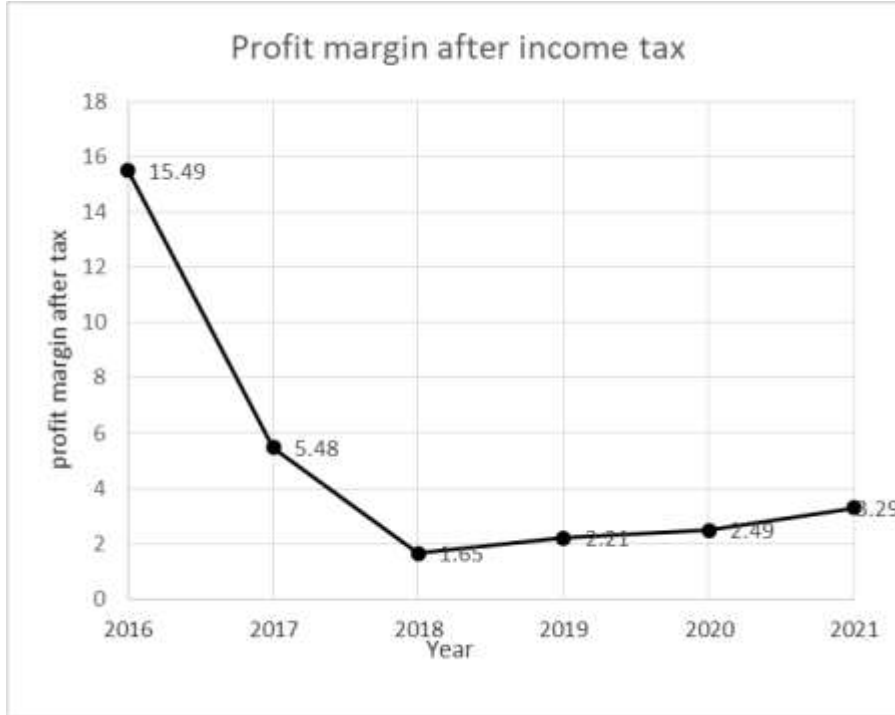


Figure 4.2: Trend Analysis of Performance of Cement Manufacturing Companies in Kenya

The profit margin after income tax for the 2016 was 15.49%, which declined in 2017 by a 10.01% margin to 5.48% in 2017. This further went on the decline for all cement factories to 1.65% in 2018. In 2019 the margins increased by 0.56% to 2.21%, which was followed by a further increase on the same to 2.49% for the year 2020. In 2021 a tremendous increase on the same was also witnessed in 2021 as the margins stood at 3.29%. The trajectory increase in the margins was attributed to the companies’ abilities to price their products at premium coupled with a diversified portfolio and strong market leadership (Dyer & Blair Investment report, 2019: 2020).

In addition employee participation in safety programmes and influence contributed in the companies’ positive performance. The companies’ effort to comply with Occupational Safety and Health Act of 2007 of the laws of Kenya influenced hazard identification and prevention of occupational accidents coupled with effective communication, risk assessment and surveillance culminated into improved performance

of all cement manufacturing companies in Kenya (Kumie, *et.al.*, 2016; Business & Legal Reports, 2014b; Dai, *et al.*, 2012).

4.7 Inferential Analysis of the Study Variables

The researcher carried out correlational analysis and regression analysis so as draw inferences about the relationship between independent and dependent variable. In order to test the strength of the relationship, correlation analysis was performed while regression analysis was carried out to establish the influence of each of the individual independent variable on the dependent variable. The strength and reliability of regression model was determined using the coefficient of determination (R^2) and F-test. The R^2 value of 0% indicates that the model explains none of the variability of response data around its mean while 100% indicates that the model explains all the variability of the response data around its mean. The findings were presented systematically based on the study objectives.

4.7.1 Correlation analysis between independent variables and dependent variable

Correlation is a statistical measure that expresses the extent to which two variables are linearly related. A correlation analysis is a measure of Linear correlation between two sets of data representing how closely two variables co-vary ranging from -1 termed as perfect negative correlation through 0 or no correlation to +1 termed as perfect positive correlation (Jan *et al.*, 2011). A correlation of -1 indicates a perfect negative correlation and a correlation of 1 indicates a perfect positive correlation. Pearson Correlation was used to estimate the relationship covariance of variables and the product of their standard deviations. Thus, it is essentially a normalized measurement of the covariance such that the results always have a value between -1 and +1 (Barnham, 2015). Importance is that it aids in locating the critically important variables on which others depend. It helps in determining the degree of relationship between variables, which helps in making decision for the future course of action. Correlation was carried out to measure the extent to which the study variables were linearly correlated. The researcher

performed correlation analysis between management support and performance of cement manufacturing firms in Kenya and the results shown in Table 4.14. Training on occupational accidents and performance of cement manufacturing firms have a relationship which is positive and significant ($r=0.245$, $p=0.000$). Further, training on hazard identification and performance of cement manufacturing firms have a significant and positive relationship ($r=0.258$, $p=0.093$). In addition, hazard prevention and performance of cement manufacturing firms was positively but significantly correlated ($r=0.163$, $p=0.000$). Further, employee participation and performance of cement manufacturing firms are positively but significantly correlated ($r=0.215$, $p=0.000$).

To understand the relationship between the independent variables, occupational accidents, hazard identification, hazard prevention, employees' participation and performance of cement manufacturing firms, regression analysis was performed. The objective of the regression analysis is to determine the extent of the relationship and examine whether the identified independent variables can be used to explain performance of cement manufacturing firms in Kenya. Simple regression analysis which involved running the least square regression method and interpreting the R^2 values, F values and coefficients was carried out.

Table 4.14: Correlation matrix

Variables		Perfor mance	Managemen t support	Training on OA	Training on HI	Training on HP	Employee participation
Performance of cement manufacturing firms	Pearson Correlation	1					
Management support	Pearson Correlation	.245**	1				
	Sig. (2-tailed)	.000					
Training on OA	Pearson Correlation	.258**	.262**	1			
	Sig. (2-tailed)	.093	.000				
Training on HI	Pearson Correlation	.163**	.206**	.172**	1		
	Sig. (2-tailed)	.000	.001	.005			
Training on HP	Pearson Correlation	.212**	0.079	.163**	.129*	1	
	Sig. (2-tailed)	.000	.196	.008	.035		
Employee participation	Pearson Correlation	.215**	-0.004	-0.011	.615**	.203**	1
	Sig. (2-tailed)	.000	.948	.856	.000	.001	

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

* Correlation is significant at the 0.05 level (2-tailed).

4.7.2 Regression Analysis for OSH Training on Occupational Accidents

The study sought to find out the relationship between occupational accidents and performance of cement manufacturing firms in Kenya. The statistical relationship between the two variables was sought through regression model whereby the output was generated in terms of model summary, ANOVA and regression coefficients. The findings on the model summary as shown in Table 4.15a revealed that the R^2 for the model was 0.627, an indication that the variation of performance was explained by up to 62.7% by occupational accidents. The ANOVA results on Table 4:15b revealed that at F-values of 14.872, the model was significant at a significant level of $0.000 < 0.05$. This implies that the performance of the cement manufacturing firms could be explained by occupational accidents and that the model was significant to give a direction on whether to accept or fails to accept the null hypothesis.

The regression coefficients shown on Table 4:15c on the other hand revealed that at a beta (β) coefficient of 0.726, occupational accidents significantly and positively influenced the performance of cement manufacturing firms at a significance level of 0.000. This implies that a unit change in occupational accidents leads to 72.6% increase in performance of cement manufacturing firms. This therefore gives a go-ahead to reject the null hypothesis of the study which states that occupational accidents have no significant influence on the performance of cement manufacturing companies in Kenya. Seixas, Neitzel, Crollard, Dominguez and Stover (2012) also supported the correlation between occupational accidents and performance of cement manufacturing firms. The study findings were also supported by McKinnon (2012) who opined that there was a strong relationship between embracing occupational accidents and performance of cement manufacturing firms.

Table 4.15: Regression Analysis

Variable	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.792 ^a	.627	.543	.121

a. Predictor: Occupational Accidents

Table 4.15: ANOVA

Measure	Sum of Squares	Df	Mean Square	F	Sig.
Regression	2.641	1	2.641	14.872	.000 ^b
Residual	14.561	329	.178		
Total	17.202	330			

a. Dependent Variable: Performance

b. Predictor: Occupational Accidents

Table 4.15: Coefficients

Variable		Unstandardized Coefficients		Standardized t	Sig.
		B	Std. Error	Beta	
1	(Constant)	2.886	.223	12.966	.000
	Occupational Accidents	.726	.159	.792	.000

$$Y=2.886+0.726X_1 + e$$

4.7.3 Regression Analysis for OSH Training on Hazard Identification

The study sought to find out the relationship between the variable hazard identification and performance of cement manufacturing firms. The model summary results on Table 4.16a reveal a correlation coefficient R value of 0.748 and a coefficient of determination R² value of 0.559 an indication that a unit change in hazard identification could explain up to 55.9% increase in firm performance. The ANOVA results on Table 4.16b revealed that the F calculated was 4.216 and the P- value was 0.000, an indication that hazard identification had a significant influence on the performance of cement manufacturing firms in Kenya. The findings from the regression coefficients Table 4.16c revealed that at the coefficient of determination, 58.1% of the performance could be explained by a

unit change in hazard identification as evidenced by the Beta coefficient of 0.581. With these results, we therefore fail to reject the null hypothesis that hazard identification has no significant influence on the performance of cement manufacturing companies in Kenya. The findings also reveal that the P- value for hazard identification is 0.000 which is less than the standard p-value of 0.05 thus implying that hazard identification positively and significantly influences performance of cement manufacturing firms in Kenya. The findings compare with those by Wurzelbacher and Jin (2011) who found that hazard identification had a significant influence on organization performance through which the employees get more committed to organizational operations thus enhancing productivity.

Table 4.16: Regression Analysis

Variable	R	R Square	Adjusted R Square	Error of the Estimate
1	.748 ^a	.559	.410	.455

Model Summary

a. Predictor: Hazard Identification

Table 4.16: ANOVA

Measure	Sum of Squares	Df	Mean Square	F	Sig.
Regression	.346	1	.346	4.216	.000 ^b
Residual	16.805	329	.207		
Total	17.151	330			

a. Dependent Variable: Performance of Cement manufacturing firms

b. Predictor: Hazard Identification

Table 4.16: Coefficients

Variable	Unstandardized Coefficients		Standardized T	Sig.
	B	Std. Error	Beta	
1 (Constant)	1.227	.239	5.134	.000
Hazard Identification	.581	.163	.748	.000

a. Dependent Variable: Performance of cement manufacturing firms in Kenya

$$Y = 1.227 + 0.581X_2 + e.$$

4.7.4 Regression Analysis for OSH Training on Hazard Prevention

On the third study variable, model summary, ANOVA and regression coefficients were used to test for the hypothesis and exemplify the statistical relationship between hazard prevention and performance of cement manufacturing firms in Kenya. The model summary findings as shown in Table 4.17a revealed that the R^2 for the model was 0.681 which implies that hazard prevention explained up to 68.1% of the variation of performance of cement manufacturing firms in Kenya. On the other hand, the ANOVA results on Table 4.17b indicated that the model had an F- statistic of 9.708 at a significance level of $0.003 < 0.05$. This implies that the model is statistically significant and that hazard prevention can explain the performance of cement manufacturing companies in Kenya. The regression coefficients on Table 4.17c revealed that hazard prevention had a significant and positive influence on the performance of cement manufacturing companies in Kenya ($\beta = 0.711$ & $P\text{-value} = 0.000 < 0.05$). The findings imply that a unit change in hazard prevention can explain up to 71.1% of performance of cement manufacturing companies in Kenya. This therefore justifies the decision to reject the null hypothesis that states that hazard prevention has no significant influence on the performance of cement manufacturing companies in Kenya. According to Yu *et al.* (2017), hazard prevention implies that the organization is ready to counter the occupational accidents and this gives the employees courage and commitment to perform their duties effectively thus promoting performance.

Table 4.17: Regression Analysis

Variable	R	R Square	Adjusted R Square	Error of the Estimate
1	.825 ^a	.681	.513	.133

*Predictor: Hazard Prevention

Table 4.17: ANOVA

Measure	Sum of Squares	Df	Mean Square	F	Sig.
Regression	1.821	1	1.821	9.708	.000 ^b
Residual	15.381	329	.188		
Total	17.202	330			

a. Dependent Variable: Performance of cement manufacturing firms

b. Predictor: Hazard Prevention

Table 4.17: Coefficients

Variable		Unstandardized Coefficients		Standardized T	Sig.
		B	Std. Error	Beta	
1	(Constant)	2.916	.264	11.039	.000
	Hazard Prevention	.711	.065	.825	.000

a. Dependent Variable: Performance of cement manufacturing firms in Kenya

$$Y=2.916+0.711X_1+ e.$$

4.7.5 Regression Analysis for Employee Participation in Training

The fourth study variable was to assess the influence of employee participation on performance of cement manufacturing firms in Kenya. The study sought to find out the statistical relationship between employee participation and the performance of cement manufacturing firms. This was done using model summary, ANOVA and regression coefficients. The model summary on Table 4.18a revealed that the R value for the model was 0.642 and the R² was 0.408 an indication that a variability of 40.8% of the employees' participation could be explained by the model thus making it appropriate to

explain the relationship between employees' participation and the performance of cement firms in Kenya. The ANOVA results on Table 4.18b revealed that at the F-statistic value of 7.191 and the mean of 0.640 which indicates the model was significant at a p-value of lower than the standard p-value of 0.05. This implies that the model and the variable employees' participation were significant.

The regression coefficient results on Table 4.18c revealed that the β for the employee participation was 0.633. This implies that a unit change in employee participation could lead to up to 63.3% change in the performance of cement manufacturing firms in Kenya. The P-value for the variable was $0.000 < 0.05$, an indication that employee participation positively and significantly influenced performance of cement manufacturing firms in Kenya. This leads to the decision to reject the null hypothesis of the study which states that employee participation has no significant influence on the performance of cement manufacturing companies in Kenya. The findings concur with those by Nguyen and Hens (2015) who found that through employee involvement, the OSH training achieved better results thus playing a key role in promoting firm performance.

Table 4.18: Regression Analysis

Variable	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.642 ^a	.412	.408	.157

a. Predictor: Employee Participation

Table 4.18: ANOVA

Measure	Sum Squares	ofdf	Mean Square	F	Sig.
Regression	.640	1	.640	7.191	.000 ^b
Residual	17.162	329	.209		
Total	17.902	330			

a. Dependent Variable: Performance of cement manufacturing firms in Kenya

b. Predictors: (Constant), Employee participation

Table 4.18: Coefficients

Variable	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	3.669	.140		26.127	.000
Employee participation	.633	.076	.642	8.328	.000

a. Dependent Variable: Performance of Cement Manufacturing Firms

$$Y = 3.669 + 0.633X_1 + e.$$

4.8 Overall Regression Model

4.8.1 Unmoderated Model

The study conducted an analysis of the overall regression model in a bid to establish the combined influence of the independent variables; Occupational Accidents, Employee participation, Hazard Prevention, Hazard identification on the dependent variable; performance of cement manufacturing firms in Kenya.

The model equation was of the form:

$$Y_s = \beta_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + e$$

Where,

Y_s = Performance of cement manufacturing firms β_0 = constant (coefficient of intercept)

X_1 = Occupational Accidents X_2 = Hazard identification X_3 = Hazard prevention

X_4 = Employee Participation

$B_1 \dots B_4$ = regression coefficient of the four variables.

e = error term

The results of the model summary as shown on Table 4.19a indicated that $R^2 = 0.623$ and $R = 0.789$ which is an indication that there is a relationship between independent variables; Occupational Accidents, Employee Participation, Hazard Prevention, Hazard Identification and the dependent variable; Performance of cement manufacturing firms in Kenya. The R^2 value indicates the degree of variability explained by the adopted model. The results therefore show that 62.3% of the variation in performance of cement manufacturing firms is explained by the combined influence of Occupational Accidents, Employee Participation, Hazard Prevention and Hazard Identification.

ANOVA was also carried out in the overall unmoderated model. From the ANOVA results as shown on Table 4.19b, it is evident that the regression model had less than 0.01 likelihood of giving erroneous predictions with an F-statistic value of 4.852. This therefore goes to demonstrate that the model has a confidence level of over 95% and it's therefore appropriate for making a concrete conclusion on the population parameters as the value of significance (p-value) is way lesser than 5%. The F-value for the model was 4.852 at a significance level of 0.001, indicating that Occupational Accidents, Employee participation, Hazard Prevention, Hazard identification on the dependent variable significantly influence the performance of cement manufacturing firms in Kenya. The regression coefficients from the overall unmoderated model as shown on Table 4.19c indicated that all the variables had P-values less than the standard p-value of 0.05. The results revealed that the coefficient β for the model was 0.131 (constant) and 0.637, 0.411, 0.718 and 0.301 (variables) for Occupational Accidents, Employee participation, Hazard Prevention, Hazard identification on the dependent variable respectively, thus making the overall model equation to be;

Table 4.19: Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.789 ^a	.623	.385	.21154

a. Predictors: Occupational Accidents, Hazard Identification, Hazard Prevention, Employee Participation

b. Dependent Variable: Performance of Cement Manufacturing Firms in Kenya

Table 4.19: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	4.109	4	.822	4.852	.001 ^b
	Residual	13.041	326	.169		
	Total	17.151	330			

a. Dependent Variable: Performance of Cement Manufacturing Firms in Kenya

b. Predictors: Occupational Accidents, Hazard Identification, Hazard Prevention, Employee participation

Table 4.19: Coefficients

Model 1	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
Variables	B	Std. Error	Beta		
Constant	0.131	0.094		54.947	0
Occupational Accidents	0.637	0.071	0.41	4.528	0.000
Hazard Identification	0.411	0.072	0.205	2.321	0.000
Hazard Prevention	0.718	0.068	0.267	3.610	0.000
Employee Participation	0.301	0.073	0.027	1.820	0.001

a Dependent Variable: Performance of Cement Manufacturing Companies

$$Y = 0.131 + 0.718x_1 + 0.637x_2 + 0.411x_3 + 0.301x_4 + e$$

4.8.2 Moderated Model

The study sought to find out the moderating influence of management support on the relationship between occupational safety and health training and performance of cement manufacturing firms in Kenya. The results as shown in Table 4.20 a, b and c revealed that management support has a significant moderating effect on the relationship between occupational safety and health training and performance of cement manufacturing firms in Kenya. This is evidenced by the P-value of 0.003 which is way below the standard p-value of 0.05. The F value for the model was 7.242 at a significant level of 0.000 indicating

that occupational accidents, employee participation, hazard prevention, hazard identification on the dependent variable significantly influence the performance of cement manufacturing firms in Kenya. The regression coefficients, from the overall moderated variable are shown on table 4.20c indicating that all the variables had p-values less than the standard value of 0.05. The results revealed that, the co-efficient Beta for the model was 3.072 (constant) and 0.734, 0.513, 0.816, and 0.437 for occupational accidents, hazard prevention, hazard identification and employee participation. After moderation the R² improved to 74.6% which means that management support moderates the relationship between occupational safety and training and performance of cement manufacturing firms in Kenya. At the same time, it means that with supportive management the occupational accidents, hazard identification, hazard prevention and employee participation explains 74.6% of variability and 25.4 is explained by other factors. The findings agree with those of Boustras *et al.*, (2015) who affirmed that management support enables effective adoption and execution of workplace measures that control occupational incidents and accidents.

Table 4.20: Model Summary for the Moderated Model

Model	R	R Square	Adjusted R Square	Error of the Estimate
1	.669 ^a	.746	.590	.19165

a. Predictors: Occupational Accidents_Moderator, Hazard

Identification_Moderator, Hazard Prevention_Moderator, Employee Participation_Moderator

Table 4.20: ANOVA

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	18.154	4	4.538	7.242	.000 ^b
Residual	166.705	326	2.165		
Total	184.858	330			

a. Dependent Variable: Performance of cement manufacturing firms

b. Predictors: Occupational Accidents, Hazard Identification, Hazard Prevention, Employee Participation

Table 4.20: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.702	.057		93.940	.000
	Occupational Accidents X ₁ *M	.734	.089	.050	8.971	.000
	Hazard Identification X ₂ *M	.816	.084	.274	5.708	.003
	Hazard Prevention X ₃ *M	.513	.059	.339	1.559	.002
	Employee Participation X ₄ *M	.437	.050	.134	4.123	.004

a. Dependent Variable: Performance of cement manufacturing firms

$$Y = 3.702 + 0.816x_1 + 0.734x_2 + 0.513x_3 + 0.437x_4 + e$$

4.9. Optimal Model

An optimal model was developed based on the regression coefficients of the overall model of the study. R² before moderation was 0.623 and after moderation it was 0.746. According to the results of the overall model, all the variables had a significant and positive effect on performance of cement manufacturing companies except the employee participation. The optimal model therefore shows the best way the model should appear as opposed to what was proposed in the study. From the overall model it is clear that Hazard Identification had more influence than Occupational Accidents, Hazard Prevention and Employee Participation whereby;

$$Y = \beta_0 + (\beta_1X_1 + \beta_2X_2 + \beta_3X_3)*Z + e$$

Whereby X₁ is hazard identification, X₂ is occupational accidents, and X₃ is hazard prevention while Z is management support (moderating variable). However, according to Keraro (2014), Brooks (2011) and Gujarat (2011) it would be interesting and necessary to find out the hierarchical significance of the independent variables to the dependent Variable. The conceptual framework presented in the literature review section is meant to hypothesize the relationship between independent variables and the dependent variable (Young, 2010).

The model now becomes;

$$Y = 3.702 + 0.816x_1.M + 0.734x_2.M + 0.513x_3.M + 0.437x_4.M + e$$

Where;

Y = Performance

X₁ = Hazard Identification

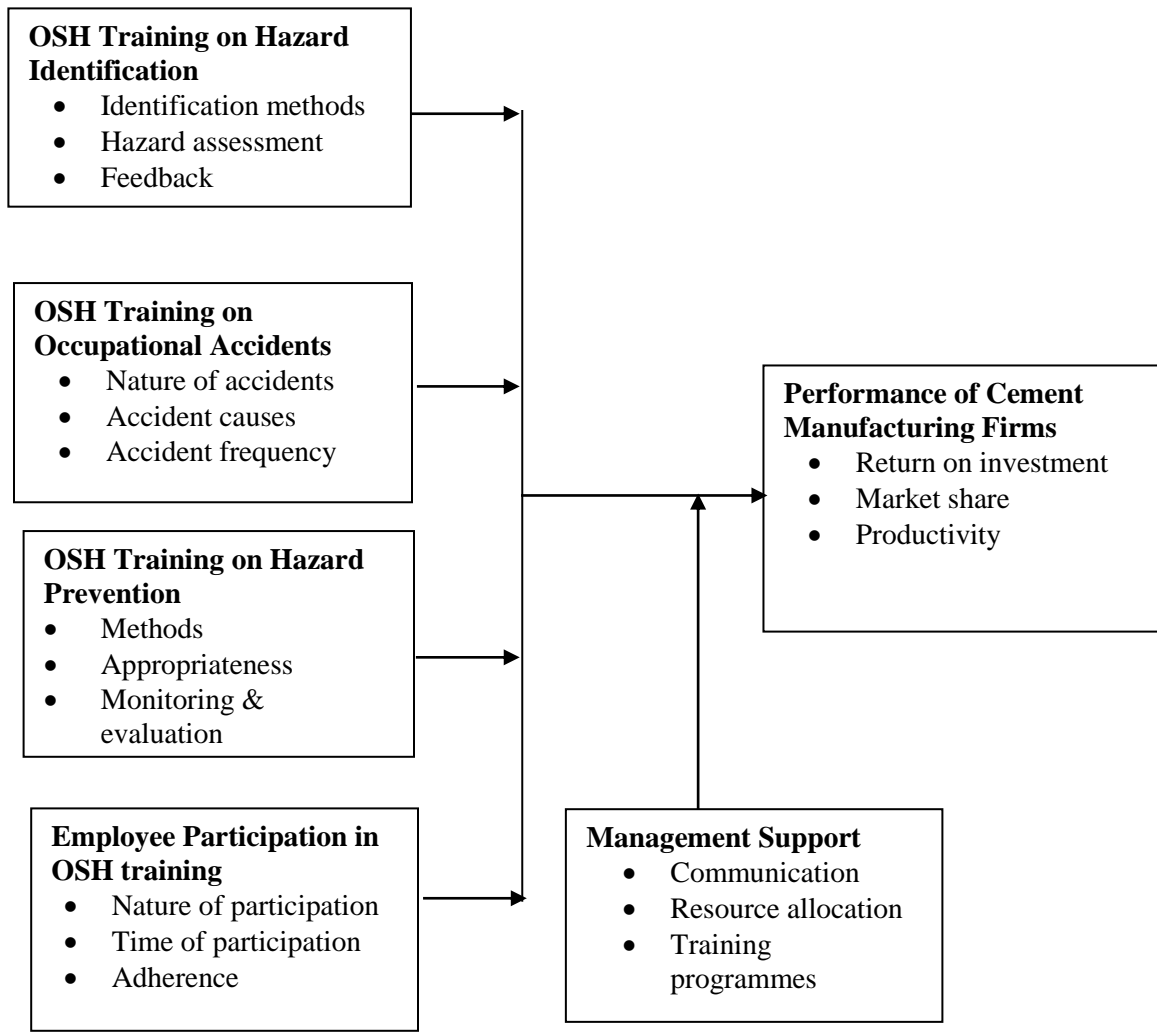
X₂ = Occupational Accidents

X₃ = Hazard Prevention

X₄ = Employee Participation

M = Management Support

e = Error term



Independent Variables

Moderating Variable

Dependent variable

Figure 4.3: Revised Conceptual Framework

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the findings, the conclusion of the study and recommendations based on the findings. In the summary of findings, the study focused on summarizing the findings in relation to each study objective and independent variables. The conclusion answers the overall research objective of the study on whether cement manufacturing firms engaging in occupational safety and health training of employees is associated with any significant change in performance of cement manufacturing firms in Kenya. Recommendations are based on the study findings of each variable and the suggestions made by the respondents and the key informants. The area of future study focuses on what could be done on OSH training to an employee in the manufacturing industry and other areas.

5.2 Summary of Major Findings

The study found significant relationship between the dependent variable: Performance of cement manufacturing firms in Kenya and the independent variables: occupational accidents, hazard identification, hazard prevention and employee participation. The data was satisfactory and reliable in terms of the internal consistency, thus using the data to make inferences. The response rate was also satisfactory covering six cement manufacturing firms, with all the sampled respondents being located at Mavoko Municipality. The study sought to establish the influence of Occupational Safety and Health training on Performance of Cement Manufacturing firms in Kenya guided by different theoretical framework that supports the conceptualized variables. The study employed a descriptive research design whereby where random sampling technique was utilized by enumerating all the study subjects to collect quantitative and qualitative data using a questionnaire. The results are based on the evidence of data analysis based on Model fitness R^2 , ANOVA Model F-statistics and significance levels to help reject or

accept Null hypothesis, regression coefficients too, for each and every statement of independent variable as well as overall moderated regression model. The following were the findings of the study based on the revised conceptual framework and in order of significance.

5.2.1 OSH Training on Hazard Identification

The second objective was to establish whether OSH training on hazard identification has an influence on performance of cement manufacturing firms. All the eight items had a mean score of above three, indicating that majority of the respondents agreed with the statement under training on hazard identification. This agrees with literature review that investing in prevention programmes at the organizations has been hailed as the best practice in reducing occupational incidents. From the findings, it was observed that having OSH training improved how employees were able to identify and assess occupational hazards. Majority of the respondents agreed that there was likelihood of changing employee's practices towards embracing workplace safety. This agrees with literature reviewed that hazard identification could be controlled through the use of bow-ties that help in pointing out the areas that were prone to accidents.

One of the key determinants for performance of cement manufacturing firms is resources, where the study found that through having OSH training, it was saving resources that would then be used in other production functions. It is through changing attitude and having timely identification of hazards that organizations are able to save on the resources, prevent workplace injuries and accidents that would otherwise control the expenses on the aftermath of occupational accidents. Majority of the respondents agreed with the statements. The implication is that respondents felt that training on hazard identification is key in enhancing performance among cement manufacturing firms in Kenya which agrees with the literature reviewed that recognizing and developing precautions for hazards had become especially important since September 2011 incident in America and the anthrax mail scares of 2001-2002. The findings are in concurrence

with the reviewed literature where training on hazard identification was found to significantly influence performance

5.2.2 OSH Training on Occupational Accidents

The first objective of the study was to determine whether training on occupational accidents has an influence on performance of cement manufacturing firms in Kenya. This was found to be a variable affecting performance of cement manufacturing firms. From the eight items representing the influence of Occupational Safety and Health (OSH) training on occupational accidents, it was found that majority of the respondents agreed that when organizations embrace occupational safety and health training, they are likely to experience reduced occupational accidents. When an organization reduces the incidents of accidents and injuries, it is likely to experience saving on costs that would be directed towards handling the accident victims. Extreme accidents are also associated with organizational losses that need to be avoided to streamline the resources to the core activities of the firm which is related to the empirical that the number of accidents in an organization highlight the preparedness of handling emergencies as well as having right mechanisms for prevention. The eight items had an average score of above three, pointing to the fact that majority of the respondents agreed with the eight items representing OSH training and occupational accidents that in turn related to performance of cement manufacturing firms. The implication is that the respondents felt that training on occupational accidents is key in enhancing performance.

On the aspect of OSH training and occupational accidents, majority of the respondents agreed that OSH training had a significant effect on reducing the number of occupational accidents. A large majority also agreed that OSH training would lead to substantial saving of organizational resources that translated to channeling the resources to other productive functions at the organizations. This agrees with literature review that accident prevention has an effect on reducing cost of operations for the organizations leading to more output and more profits. There were also agreements on the fact that having OSH trainings had an influence on increasing the belief of having safe working environment

that would further encourage employees to be more productive at their work place. Another aspect identified as a key function of reducing accidents magnitude was having employees being prepared to handle any emergency, accident or any incidents that occurred in the course of performing their duties. Literature reviewed also supports the view that studies done on reduction of occupational accidents recommended installation of OSH programmes and training of employees. The findings are in concurrence with the reviewed literature where training on occupational accidents was found to significantly influence performance.

5.2.3 OSH Training on Hazard Prevention

The third objective was to establish whether training on Hazard prevention has influence on the performance of cement manufacturing firms in Kenya. It was found that all the eight items had mean of above three, with majority of them having over four, pointing to the aspect that majority of the respondents agreed that the items presented had an influence on hazard prevention. This agrees with literature reviewed that hazard prevention and control phase involved taking steps to eliminate or reduce the hazard so that it no longer ranks as dangerous. Frequent checks on how the employee and the management are prepared to handle accidents and incidents needed to be instilled on the management. Reviewed literature also asserted that training workers on safety practices had an impact on reducing losses at organizational level.

The effectiveness of participatory training in preventing accidental occupational injuries identified hazard identification as well as control of such hazards is key in reducing the number of incidents and accidents at an organization which agrees with reviewed literature. There was a general agreement that embracing hazard prevention training was associated with a positive impact on the number of accidents and incidents. Majority of the respondents were also satisfied with how their employers are prepared to implement OSH procedures. One key aspect of hazard prevention is having safety materials and personal protective equipment. Safety training had an impact on improving employees' productivity, thus translating to overall performance of cement manufacturing firms.

Under this variable, descriptive statistics revealed that the statement under hazard prevention had an overall mean of more than three, an indication that majority of the respondents agreed with the statements.

5.2.4 Employee Participation in OSH Training

Employee participation means that employees are involved in establishing, operating, evaluating and improving the safety and health programs. The fourth objective was to establish the influence of employee participation in training on performance of cement manufacturing firms in Kenya. From the eight items there was agreement that when employees were involved in organizational safety training, they were likely to engage in decision-making and in identifying hazards that are likely to affect their productivity. It was also observed that majority of the respondents agreed that employees needed to participate in OSH training to improve the performance of cement manufacturing firms. Another aspect identified as key determinant of occupational safety performance was timely involvement of employees which agrees with reviewed literature where participation of employees had a significant effect on the work injury rates in Pennsylvania. When employees were engaged early in advance before making key decisions on safety practices, they were likely to contribute to the decisions and support them during implementation.

Employee participation and their attitude contribute to their morale on work, which translates to performance of cement manufacturing firms which agrees with the reviewed literature that peer-led participation in safety and health training programs was important as it aided in improving understanding of the operations of the industry and the consequent effects. Research has found that employees who are involved in the safety programs display greater job satisfaction and work performance than those who are not. This is supported by literature reviewed that the effects of employee participation in reducing the number of injuries and increasing work output and the study compiled data from past insurance compensations, safety committee audits and employee compensation data in informing how employee participation influenced their

work injury rates. The study indicated that those firms that allowed employees to join safety programs experienced lower cases of work injuries. Employee participation in training had an overall mean of more than three, an indication that majority of the respondents agreed with the statements. The findings are in concurrence with the reviewed literature where involving employees in training was found to significantly influence performance.

5.2.5 Moderating influence of Management Support on the relationship between OSH training and Performance of Cement Manufacturing firms in Kenya

The fifth objective was to examine the moderating effect of management supports on the relationship between OSH training and performance of cement manufacturing firms in Kenya. From the eight items, the management support of the cement manufacturing firms is likely to influence how employees are trained on safety measures and what is likely to happen due to management's laxity. This agrees with literature review that proper organizational management was characterized by making the employees' environment safer and the key organizational focus. The management needed to be committed to eliminating all forms of hazards, improving work place safety and health as well as protecting employees. Management of the organizations should also have well-coordinated structures to ensure employees participate on matters of occupational safety as indicated in the literature review that for an organization to reduce occupational accidents, it needed to fully implement recommendations No. 128 and Convention No. 127 ILO regulations.

One of the major aspects the management should focus on is communication since there will be understanding among the parties to embrace occupational safety training. Planning for OSH programs and selecting of the training participants is also a key aspect in ensuring employees participate and contribute to the performance of cement manufacturing firms. Management has not been keen in compliance to OSHA Act of 2007 of the Laws of Kenya. Management has not been keen with organizing training programmes in terms of availing resources and reviewing the programmes. Well-

coordinated structures to handle accidents and incidents are also critical when organizing OSH training to employees. Stakeholders have not been keen with employing executives that are keen with healthy and safety of employees. Management training new staff on safety practices before starting work is associated with increased performance of cement manufacturing firms and in such cases there are also reduced incidents and accidents. Statements under management support had an overall mean of above three, an indication that majority of the respondents agreed with the statements.

5.3 Conclusion of the Study

This study aimed at establishing the influence of Occupational Safety and Health training on Performance of Cement Manufacturing Firms in Kenya. From the literature review and the study findings, it was concluded that the factors associated with effective OSH training indeed influenced the success of cement manufacturing firms. The study makes the following conclusions after the findings and results of the study. These are based on the derived hypothesized relationships of the statements on the overall variables on how they influence performance of cement manufacturing firms in Kenya. The conclusions therefore summarize each variable in order of significance in influencing performance of cement manufacturing firms in Kenya.

Training on hazard identification had a positive significant influence on performance of cement manufacturing firms. Through change of attitude and having timely identification organisations were able to save on resources, prevent work place injuries and accidents. All aspects of hazard identification training had positive influence on performance of cement manufacturing firms. The null hypothesis was rejected.

Occupational accident training had a positive significant effect on the performance of cement manufacturing firms. Through continued OSH training, there was drastic decline in the number of accidents at the workplace which was associated with straining of resources and low productivity. Occupational accidents contributed to absenteeism and

time loss due to seeking healthcare services and compensation. The null hypothesis was rejected.

OSH training on Hazard prevention had a positive significant influence on the performance of cement manufacturing firms. Embracing hazard prevention training was associated with a positive impact on the number of accidents. Hazard prevention training had an impact on improving employee productivity thus translating to overall enhanced performance. All aspects of hazard prevention training had a positive influence on performance. The null hypothesis was rejected.

It was observed that timely involvement of employees in OSH training facilitated making quality decisions. Employee Participation in OSH training was associated with a positive influence on the number of accidents. Employee Participation in OSH training had an influence in uplifting employee morale and loyalty translating to overall enhanced performance. All aspects of Employee Participation in OSH training had a positive influence on Performance. The null hypothesis was rejected.

The correlation and regression results revealed that management supports moderated the relationship between OSH training and performance of cement manufacturing firms in Kenya. The Null hypothesis was rejected implying the existence of moderating influence of management support between dependent and the independent variables. Planning for OSH programs and selecting of the training is key aspect of management's duties.

5.4 Recommendations of the Study

This section presents recommendations from the study and from the literature review on occupational safety and health training. In view of the stated findings and conclusion, the study makes some recommendations in order to improve the current performance of cement manufacturing firms in Kenya. The recommendations are based on the independent variables occupational accidents, hazard identification, hazard prevention and employee participation. In view of the study findings, the study recommends the

following to the government and policymakers, stakeholders and cement manufacturing firms.

The study recommends that the management of the manufacturing firms ought to ensure effective and frequent training of the staff on hazard identification in order to reduce the occupational accidents. Based on the study findings and the literature reviewed, the study recommends the following: the government should organize for safety videos and audios to manufacturing firms which can also be done as a cooperate social responsibility. The government should conduct frequent surveys to identify health hazards within organizations. The stakeholders can improve employee awareness through recognition and rewarding compliance. The manufacturing firms should frequently conduct hazard surveys in order to keep up with the safety requirements. Manufacturing firms should carry out research on best equipment with the quest to avoid occupational accidents in their organizations.

The study recommends that the management of cement manufacturing firms in Kenya ought to embrace measures to prevent occupational accidents through which they reap from an effectively productive workforce thus promoting organizational performance. Based on the study findings and the literature reviewed, the study recommends the following: manufacturing firms should implement control measures which include safety videos, audios, regular OSH training and pamphlets on safety, amongst others. The stakeholders should ensure regular inspection of safety control measures. The government should ensure timely review of safety policies by organizations and compliance to OSHA Act 2007 Laws of Kenya.

As far as hazard prevention is concerned, the study recommends that, hazard prevention training should be one of the key strategies that the management ought to uphold in order to reduce occupational accidents. Based on the study findings and the literature reviewed, the study recommends the following: the policy makers ought to come up with policies guiding on how firms should embrace training on hazard prevention in order to reduce occupational accidents. The cement manufacturing firms should

emphasize OSH training on hazard prevention as essential in boosting employees' productivity which in turn enhances performance. The government should ensure proactive health and safety measures in order to prevent health hazards.

The study recommends that employee participation in OSH training should be one of the key strategies that the management ought to uphold in order to reduce occupational accidents. Based on the study findings and the literature reviewed, the study recommends the following: the policy makers ought to come up with policies guiding on how firms should embrace the idea of engaging employees in safety measures. The manufacturing firms should give employees the necessary time and resources to participate in the program. Manufacturing firms should organize for activities, role plays and simulations on safety and security issues; adopt open door policy on matters safety. The government should ensure timely involvement of employees in safety issues and their rights to safety while working in organizations and encourage employees to report safety and health concerns.

On management support, the study recommends that manufacturing firms should have the core duty to ensure safety of the employees. Based on the study findings and the literature reviewed, the study recommends the following: stakeholders should ensure that they have executives that lead and support health and safety management. That means both lower level management and upper level management have a role to support the activities of the organization for example to finance the safety training programs. The stakeholders should ensure proper structures to implement the OSH policy are put in place. The government should ensure manufacturing firms comply with OSHA Act of 2007 revised 2010 of the Laws of Kenya. The management should make sure they come up with appropriate training programmes which can reach every level of staff like lower level personnel. The management should make safety a line management responsibility and accountability by availing resources. Cement manufacturing firms with the support of the management should incorporate safety into the business process as an operational strategy.

As for the future Researchers and Academicians, the study recommends that since this study was only focused on cement manufacturing firms, they should carry out more studies to establish what is happening in other manufacturing sector as far as compliance to OSHA Act is concerned. This may include Agriculture, Horticulture, Metal and Steel industries and oil drilling industries. On the side of the general public, the study recommends that employees should be made aware of their right to safety as they perform their duties in different organizations. This will make them appreciate, embrace and adhere to Occupational Safety and Health regulations. Future researchers and academicians should carry out a research on the same topic with different intervening variables like Organization Culture and Human Resource Policies.

To Policy Makers, the study recommends that the Ministry of Labour should ensure that all employees in all sectors are safe as they perform their duties. This should be done particularly in the manufacturing sector where a number of employees are exposed to health hazards as they perform their duties. The government can do this by frequently visiting different organizations to check on safety and healthy adherence (OSHA Act). The government can frequently give free pamphlets on safety and health to different organizations. The government can also organize for seminars and workshops to educate the public on their rights to safety as they perform duties in different sectors of our economy.

5.5 Contribution of the study to the existing knowledge

This study has confirmed that occupational accidents, hazard identification and hazard prevention can effectively explain that Occupational Safety and Health (OSH) training has a significant impact on performance of cement manufacturing firms in Kenya. At the same time, the study has confirmed that management support as a moderating variable has a moderating influence on the relationship between OSH training and performance of cement manufacturing firms in Kenya. The study found that the independent variables have a flow based on their levels of significance which is an indication that if one wanted to choose any of the variables; he/she could start with the one that is most

significant. The study also contributes to the human factor theory which holds on to the fact that inappropriate activities like performing tasks without requisite and adequate training and misjudging the degree of risk that is associated with a given task may result into loss of firm's resources. The findings of this study also confirmed that focusing on training of employees has capacity to increase safety and minimize occupational accidents and that OSH training has a direct influence on performance of cement manufacturing firms which may as a result lead to under Performance of the cement manufacturing firms.

5.6 Areas for Further Research

This study was mainly focused on Occupational Safety and Health (OSH) training and whether it has any influence on Performance of Cement Manufacturing Firms in Kenya. A similar study should be done to assess the influence of Occupational Safety and health (OSH) training on Performance of other industries like Food Production industry, Building and construction Industry and Horticultural industry etc. This study was limited to four major aspects of OSH training that is, Occupational Accidents, Hazard Identification, Hazard Prevention and Employee Participation. A similar study should be carried out to identify other aspects of OSH training and how they affect performance of the firms.

Apart from the moderator, Management Support, other moderators can be used to determine their effect on the relationship between OSH training and performance of the firms. Mitigating safety and health of employees should be one of the goals of every organization because organizations should appreciate that in order for a firm to succeed it has to take care of its human resource. However, there are other prospects that organizations seek to achieve such as employee retention, firm growth, competitive edge and sustainability which could be forming the major focus of their long term and short term goals or their vision and mission. A study should therefore be carried out to establish the relationship between OSH training and the other goals and objectives. The study found that there was some aspect of laxity and ignorance on how occupational

safety and health training was conducted to avoid a number of occupational accidents, specifically to the employees involved in heavy work at the manufacturing firms. The area of safety training, employee motivation and performance can be studied in a comparative study with employees who have attended some safety trainings and those who have not had any occupational safety training. Through the comparative study, any significant differences would be identified and their influence on performance of cement manufacturing firms also established.

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APPENDICES

Appendix I: Letter of Introduction

P.O. Box 136-90100,

MACHAKOS.

Dear Sir/ Madam,

LETTER OF INTRODUCTION

My name is Selerina Samba Mwaruta, undertaking a PhD Programme in Human Resource Management at Jomo Kenyatta University of Agriculture and Technology (JKUAT). As part of my work, I would like to carry out a research on Influence of Occupational Safety and Health Training (OSH) on Performance of Cement Manufacturing Firms in Kenya.

I would like to assure you that the information collected will be treated as confidential and will be used for exam purposes only.

I will really appreciate your co-operation in this exercise.

Yours faithfully,

Selerina Samba Mwaruta

Reg. No. HD412/C004/4409/2014

Jomo Kenyatta University of Agriculture and Technology

College of Human Resource Development

Appendix II: Questionnaire

SECTION A: BACKGROUND INFORMATION

A. Personal Details

1. Name of the firm (optional) _____
2. Gender (Tick as appropriate): Male _____ Female _____
3. Age bracket (Tick as appropriate)

No.	Age bracket	Tick as appropriate
(i)	46 years and above	
(ii)	36 – 45 years	
(iii)	26 – 35 years	
(iv)	18 - 25 years	

B. Firm Information

4. Number of years the firm has been in operation (Tick as appropriate)
 - (a) 1- 5 years
 - (b) 6 – 10 years
 - (c) 11 – 15 years
 - (d) 16 years and above

C. Size of the Firm (Tick appropriately)

- (a) Less than 200 employees
- (b) 201 – 500 employees
- (b) 501 – 1000 employees
- (d) 1001 employees and above

SECTION B: TRAINING ON OCCUPATIONAL ACCIDENTS

1. Please indicate with a tick the extent to which your firm considers the following factors as safety issues. The factors are rated using a Likert scale of 1 - 5. Where 5 = Strongly agree 4 = Agree; 3 = Neutral; 2 =Disagree; 1 = Strongly disagree

Occupational Accidents	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Through OSH training, occupational accidents have drastically reduced					
The OSH training has extensively saved the organization resources					
OSH training has increased my belief of safe working environment					
OSH trainings makes employees better prepared for occupational accidents					
OSH training has helped increase positive attitude in embracing workplace safety					
There is need to be always prepared to act on the knowledge gained from OSH training to avoid occupational accidents					
The OSH training reminds employees of the importance of adhering to safety regulations and the OSHA Act of 2007					
Through OSH training the organization has reduced occupational accidents and improved productivity.					

SECTION C: TRAINING ON HAZARD IDENTIFICATION

1. Please indicate with a tick the extent to which your firm considers the following factors as health hazards. The factors are rated using a Likert scale of 1 - 5. Where 5 = Strongly Agree ; 4 = Agree; 3 = Neutral; 2 =Disagree; 1 = Strongly disagree

	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
Hazard Identification and Firm Performance					
OSH training has assisted in hazard identification					
OSH training has led to changes in employee practices in relation to safety and health					
OSH training on hazard identification has saved on the organization's resources					
Hazard identification training has led to change in practices related to occupational safety					
OSH training has led to positive attitudes on embracing timely hazard identification					
Our organization has played a major role in promoting the identification of hazard in the operations of the firm through training.					
Through proper means of training on hazard identification, organizational performance is enhanced					
Training on Hazard identification procedures has allowed firms to weed out any possibilities of having unexpected cases of accidents.					

SECTION D: TRAINING ON HAZARD PREVENTION

Please indicate with a tick the extent to which the following statements apply to your organization pertaining to Performance. The factors are rated using a Likert scale of 1 - 5. Where 5 = Strongly agree; 4 = Agree; 3 = Neutral; 2 = Disagree; 1 = Strongly disagree

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Hazard Prevention and Performance					
There is need for organizations to conduct training, monitoring and evaluation of OSH programs					
The organization should perform frequent trainings on safety preparedness(like twice or thrice a year)					
There is need for an organization to adopt different and unique techniques to train on hazard prevention					
The organization has embraced change of focus on OSH training to enhance its effectiveness					
The organization has adequate safety materials and personnel protective equipment for trained staff.					
In order to ensure that employees do not resist the regulations varying methods of training are adopted.					
There is need for evaluation of procedures to be done regularly to ensure safety.					
Employees need appropriate training at an appropriate time as far as hazard prevention is concerned.					

SECTION E: EMPLOYEE PARTICIPATION IN TRAINING

Please indicate with a tick the extent to which the following statements apply to your organization pertaining to Performance. The factors are rated using a Likert scale of 1 - 5. Where 5 = Strongly agree; 4 = Agree; 3 = Neutral; 2 =Disagree; 1 = Strongly disagree

Employee Participation and Performance	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
There is need to have employee participate in OSH training					
There is need to have Information on OSH programmes readily accessible to employees.					
There is need to involve employees in OSH training at the appropriate time.					
Employee involvement in training in good time will help create a positive attitude towards the OSH programs.					
Employee participation on OSH training will lead to quality decisions and harmony while timely involvement of employees in OSH training has its own merits					
Through OSH training employee participation has generally led to quality decisions and harmony					
Through employee involvement in OSH training the employees are more committed to organization's duties					
There is need to address the views of employees during training of OSH programmes.					

SECTION F: MANAGEMENT SUPPORT

Please indicate with a tick the extent to which the following statements apply to your organization pertaining to Performance. The factors are rated using a Likert scale of 1 - 5. Where 5 = Strongly agree; 4 = Agree; 3 = Neutral; 2 = Disagree; 1 = Strongly Disagree

Management Supports and Performance	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
There is communication between senior management and other employees on the number of accidents					
The management involves staff/employees in planning for OSH training, selection of safety and health topics to be covered					
The management has well-coordinated structures that help in reducing the magnitude of damage					
There is frequent focus by management on OSH training to all staff together with frequent reminder on importance of adhering to OSHA Act.					
The management trains new staff on their roles and safety practices before starting working					
The management rewards staff, groups and departments that show high degree of OSH preparedness and OSH practices					
There is a conducive working environment facilitated by the management					
The management of your firm through OSH training has ensured that employees feel valued					

Appendix III: Interview Guide for the Human Resource Managers

I am a PhD student in Jomo Kenyatta University of Agriculture and Technology currently doing my research to complete my Studies. My thesis is on *the influence of Occupational Safety and Health training on Performance of Cement Manufacturing Firms in Kenya*. You have been randomly selected to participate in this study. Kindly complete the questionnaires with assurance that the information received from you will be treated as confidential and will be used for exam purposes only.

Background Information

- (i) Name of the firm.....
- (ii) For how long has your firm operated?
- (iii) How many employees does your firm have?
- (iv) For how long have you worked in this firm?

OSH on knowledge acquisition and workplace safety

- i. How has OSH training influenced acquisition of safety and health knowledge at the organization? Explain the content taught on OSH and your preparedness to ensuring safe working place.
- ii. Comment on the frequency and the selection of safety and health training programmes at this firm.

OSH training changes of attitude and beliefs

- i. Comment on the changes in beliefs and attitudes in relation to OSH training. Are there any changes?
- ii. Are employees more prepared to address occupational hazards after OSH training? What is the tradition here or attitude towards embracing safe working procedures?

- iii. What is the motivation of employees to enroll or attend any OSH training at the organization?

OSH training on practices and behaviours

- i. Explain on employee changes in practices and behaviours towards training and comment on changes in behaviours and practices acquired after OSH training.
- ii. Have there been changes in exposure to illnesses and injuries due to OSH training? Provide trends in the changes.
- iii. Does the organization prepare its OSH training content and programmes? If yes, how?

OSH training in relation to changing health trends

- i. Comment on the changes in health trends in relation to OSH training.
- ii. Comment on annual incidences related to physical injuries and occupational illnesses reported by employees. Any influence from OSH training?

**Appendix III: Performance of Cement Manufacturing Companies in Kenya Data
Collection Template**

No.	Statements	2016	2017	2018	2019	2020	2021
1.							
2.							
3.							
4.							

Appendix IV: List of Cement Manufacturing Firms in Kenya and their Market Share

Cement Manufacturing firm	Market share
Bamburi Cement Limited	32.6%
Mombasa Cement	15.8%
East African Portland Cement Company	15.1%
Savannah Cement	15.0%
Athi River Mining	13.5%
National Cement	08.0%

SoftKenya.com (December 2016). Nairobi: Retrieved March 3,2018 from Softkenya.com.

Appendix V: Research Permit from NACOSTI

**THIS IS TO CERTIFY THAT:
MS. SELERINA SAMBA MWARUTA
of JOMO KENYATTA COLLEGE OF
AGRICULTURE AND TECHNOLOGY
(JKUAT), 0-90100 Machakos, has been
permitted to conduct research in
Machakos County**

**on the topic: EFFECT OF
OCCUPATIONAL HEALTH AND SAFETY
TRAINING ON PERFORMANCE OF
CEMENT MANUFACTURING FIRMS IN
MACHAKOS COUNTY, KENYA**

**for the period ending:
9th April,2019**


.....
**Applicant's
Signature**

**Permit No : NACOSTI/P/18/49515/22091
Date Of Issue : 10th April,2018
Fee Recieved :Ksh 2000**




.....
**Director General
National Commission for Science,
Technology & Innovation**