

**Perceptual Measures of Determinants of Implementation of
Occupational Safety and Health Programmes in the Manufacturing
Sector in Kenya**

Priscilla Wanjiku Ndegwa

**A Thesis Submitted in Partial Fulfillment for the Degree of Doctor
of Philosophy in Human Resource Management in the Jomo
Kenyatta University of Agriculture and Technology**

2015

DECLARATION

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

Sign.....

Date.....

Priscilla Wanjiku Ndegwa

This Thesis has been submitted for examination with our approval as the university supervisors.

Signature.....

Date.....

Dr. Wario Guyo

Jkuat, Kenya

Signature.....

Date.....

Dr. George Orwa

Jkuat, Kenya

DEDICATION

This Thesis is dedicated to my Mother, my Brother Mugo and my late Father for laying the foundation of my education .You are all heroes!!

ACKNOWLEDGEMENTS

First and foremost, I would wish to thank the almighty God who has seen me through this long journey. Indeed His grace has been sufficient for me. My sincere appreciation and gratitude goes to my supervisors Dr Wario Guyo and Dr George Orwa who have supported me through thick and thin to ensure that I achieved my academic pursuit. Your thoughtful and professional guidance went along way to making this document what it is now. In you I have found academic mentorship a valuable gift that I will always treasure.

I cannot fail to acknowledge my family, relatives and many friends who understandingly put up with my perennial unavailability. I just hoped you understood but this is the culmination of the long working days. The immeasurable prayers and other forms of support from family members cannot also go unnoticed. I thank you my friend and colleague Sheba for your support and for driving me to the industries to collect data. To you Dr Robert Ng'ang'a, thank you for giving me the motivation to continue; your consistent follow up and guidance gave me a mileage. My appreciation also goes to Dr Jonah Kangogo whose advice in the final stages of this document was very instrumental. I appreciate you my long time college comrade Esther Githinji and my nephew Charles for proof reading through the whole document.

I would also wish to thank you Dr Karanja, Dr Linda and Dr Wanjira of Kenyatta University for your constructive critique of the document. Thank you too Walter Oraro for walking me through data analysis, explaining the many statistical terms and making them easy to understand. I can't forget to thank my research assistants and all the respondents who participated in this study without whom the study would be incomplete. I also acknowledge JKUAT for giving me the opportunity to pursue this degree and also my employer Kenyatta University for pushing me to complete it. It suffices to say that many other people have walked with me through this academic journey that include my PHD lecturers and classmates; I may not mention all of you but I just wish to say a 'big' THANKYOU.

TABLE OF CONTENT

DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENTS	iv
TABLE OF CONTENT	v
LIST OF TABLES	ix
LIST OF FIGURES	xii
LIST OF APPENDICES	xiv
ABBREVIATIONS AND ACRONYMS	xv
OPERATIONAL DEFINITION OF TERMS	xvi
ABSTRACT	xx
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background of the Study	1
1.1.1 Occupational Health and Safety in Kenya.....	4
1.1.2 Kenya’s Directorate of Occupational Health and Safety	5
1.1.3 Manufacturing Industries in Kenya.....	7
1.2 Statement of the Problem	9
1.3 General Objectives of the Study.....	11
1.3.1 Specific Objectives of the Study	11
1.4 Research Questions.....	12
1.5 Justification of the Study.....	12
1.6 Scope of the Study	14
1.7 Limitation of the Study	14
CHAPTER TWO	16
LITERATURE REVIEW	16
2.1 Introduction	16
2.2 Theoretical Framework	16
2.2.1 Theories related to the Study	16
2.3 Conceptual Framework.....	22
2.3.1 Implementation of Occupational Health and Safety Programmes.....	26

2.3.2 Management Support and OSH Implementation	28
2.3.3 Training and OSH Implementation	32
2.3.4 Legal Framework and OSH Implementation	35
2.3.5 Employee Participation and OSH Implementation	37
2.3.6 Organizational Structure and OSH Implementation	40
2.4 Empirical Framework	41
2.5 Critique of the Review	49
2.6 Research Gap.....	50
CHAPTER THREE.....	52
RESEARCH METHODOLOGY.....	52
3.1 Introduction	52
3.1.1 Research Philosophy	52
3.2 Research Design	53
3.3 Population.....	54
3.4 Sample and Sampling Technique	54
3.5 Data Collection Method	56
3.6 Pilot Study	57
3.7 Data Analysis and Presentation	58
3.7.1 Measurement of Variables.....	61
CHAPTER FOUR	63
RESEARCH FINDINGS AND DISCUSSIONS.....	63
4.1 Introduction	63
4.2 Response Rate	63
4.3 Results of the pilot study.....	63
4.4 Background of the Respondents	64
4.4.1 Respondents' Gender.....	64
4.4.2 Respondents' Age	65
4.4.3 Respondents Education Background.....	65
4. 5 Descriptive Analysis of Constructs	66
4.5.1 Descriptive Analysis for Construct Management Support	66
4.5.2 Descriptive Analysis for Construct Employee Training	70

4.5.3 Descriptive Analysis for Construct Legal Framework.....	75
4.5.4 Descriptive Analysis for Construct Employee Participation.....	79
4.5.5 Descriptive Analysis for Moderating Variable.....	82
4.5.6 Descriptive Analysis for Construct Implementation of OSH.....	86
4.6 Requisite Tests.....	89
4.6.1 Sampling Adequacy Test.....	90
4.6.2 Bartlett's Test of Sphericity.....	91
4.6.3 Autocorrelation.....	91
4.6.4 Confirmatory Factor Analysis.....	92
4.6.5 Outliers Test.....	103
4.6.6 Normality Tests.....	105
4.7 Inferential Tests.....	106
4.7.1 Correlation and Regression Analysis for Management Support.....	107
4.7.2 Correlation and Regression Analysis for Employee Training.....	111
4.7.3 Correlation and Regression Analysis for Legal Framework.....	115
4.7.4 Correlation and Regression Analysis for Employee Participation.....	119
4.7.5 Regression Summary for All Variables without Moderating Variable.....	123
4.7.6 Moderating Effect Test.....	125
4.7.7 Overall Regression Model with Moderating Variable.....	132
4.7.8 Structural Equation Model (SEM).....	134
4.7.9 Model Fit Summary Parameters.....	137
4.7.10 Optimal Model.....	138
CHAPTER FIVE.....	139
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.....	139
5.1 Introduction.....	139
5.2 Summary of Major Findings.....	139
5.2.1 Effect of Management Support on Implementation of OSH.....	139
5.2.2 Effect of Employee Training on Implementation of OSH.....	140
5.2.3 Effect of Legal Framework on Implementation of OSH.....	140
5.2.4 Effect of Employee Participation on Implementation OSH.....	141
5.2.5 Moderating effect of Organizational Structure.....	142

5.3 Conclusion	143
5.4 Recommendations	144
5.4.1 Management Support and Implementation of OSH Programmes	144
5.4.2 Employee training and Implementation of OSH Programmes.	145
5.4.3 Legal framework and Implementation of OSH Programmes	146
5.4.4 Employee Participation and Implementation of OSH Programmes	147
5.4.5 Organization structure and Implementation of OSH Programmes	147
5.5 Areas for further research.....	148
REFERENCES.	149
APPENDICES	

LIST OF TABLES

Table 1.1	Distributions of Occupational Health and Safety Officers	6
Table 3.1	Data Analysis Tools Plan.....	62
Table 4.1	Reliability Test Statistics	64
Table 4.2	Gender of the Respondents	65
Table 4.3	Ages of the Respondents.....	65
Table 4.4	Educational Qualification	66
Table 4.5	Descriptive Statistics on Management Support	69
Table 4.6	Descriptive Statistics on Employee Training.....	72
Table 4.7	Frequency of OSH training.	73
Table 4.8	Areas of OSH Training	74
Table 4.9	Tools for OSH Information Dissemination.....	75
Table 4.10	Descriptive Statistics on Legal Framework	78
Table 4.11	Descriptive Statistics on Employee Participation	81
Table 4.12	Descriptive Statistics on Organization Structure.....	84
Table 4.13	Descriptive Statistics on implementation of OSH programmes.....	88
Table 4:14	Challenges of Implementation of OSH programmes	89
Table 4.15	KMO (Kaiser-Meyer-Olkin) Test.....	90
Table 4.16	Bartlett's Test of Sphericity	91
Table 4.17	Durbin-Watson – Measure of Autocorrelation	92
Table 4.18	Communalities.....	94
Table 4.19	Management support Total Variance Explained.....	97
Table 4.20	Employee Training Total Variance Explained.....	98
Table 4.21	Legal Framework Total Variance Explained	99
Table 4.22	Employee Participation Total Variance Explained	100
Table 4.23	Organization Structure Total Variance Explained	101
Table 4.24	OSH Implementation Total Variance Explained.....	102
Table 4.25	Results of Tests of Normality.....	105
Table 4.26	Skewness and Kurtosis Tests of Normality	106
Table 4.27	Correlation between Implementation of OSH Programmes / Management Support.....	108

Table 4.28	Model Summary for Management support	109
Table 4.29	ANOVA Test for Management Support and Implementation of OSH Programmes	110
Table 4.30	Test of Beta Coefficient on Implementation of OSH Programmes and Management Support.....	110
Table 4.31	Correlation between Implementation of OSH Programmes / Employee Training.....	112
Table 4.32	Model Summary for Employee Training.....	114
Table 4.33	ANOVA Test for Employee training and OSH Programmes	114
Table 4.34	Test of Beta Coefficient on Implementation of OSH Programmes and Employee Training	115
Table 4.35	Correlation between Implementation of OSH Programmes / Legal Frame work	116
Table 4.36	Model Summary for Legal Framework	118
Table 4.37	ANOVA Test for Legal Framework and Implementation of OSH Programmes	119
Table 4.38	Test of Beta Coefficient on Implementation of OSH Programmes and Legal Framework	119
Table 4.39	Correlation between Implementation of OSH Programmes / Employee Participation	121
Table 4.40	Model summary for Employee Participation	122
Table 4.41	ANOVA Test for Employee Participation and OSH Programmes	122
Table 4.42	Beta Coefficients on Implementation of OSH Programmes/ Employee Participation.....	123
Table 4.43	Model Summary for all Variables without Moderating Variable	124
Table 4.44	ANOVA Test for all Variables without Moderating Variable.....	124
Table 4.45	Test of Beta Coefficient for all Variables without Moderating Variable	124
Table 4.46	Model Summary for Management Support with Moderating Variable.....	126
Table 4.47	ANOVA Test for Management Support with Moderating Variable	126
Table 4.48	Test of Beta Coefficient on Management Support with Moderating Variable.....	127

Table 4.49	Model Summary for Employee Training with Moderating Variable	128
Table 4.50	ANOVA Test for Employee Training with Moderating Variable	128
Table 4.51	Test of Beta Coefficient on Employee Training with Moderating Variable.....	128
Table 4.52	Model Summary for Legal Framework with Moderating Variable	129
Table 4.53	ANOVA Test for Legal Framework with Moderating Variable Employee Training	130
Table 4.54	Test of Beta Coefficient on Legal Framework with Moderating Variable.....	130
Table 4.55	Model Summary for Employee participation with Moderating Variable....	131
Table 4.56	ANOVA Test for Employee participation with Moderating Variable	132
Table 4.57	Test of Beta Coefficient on Employee participation with Moderating	132
Table 4.58	Model Summary for all Variables with Moderating Variable	132
Table 4.59	ANOVA Test for all Variables with Moderating Variable.....	132
Table 4.60	Test of Beta Coefficient for all Variables with Moderating Variable.....	133
Table 4.61	Model parameter table (without moderator)	135
Table 4.62	Model parameter table (with moderator)	136
Table 4.63	Model Fit Indices	138

LIST OF FIGURES

Figure 2.1	Heinrich’s Domino Theory.....	18
Figure 2.2	Human Factors Theory.....	20
Figure 2.3	Peterson Accident/Incident Theories.	21
Figure 2.4	Systems Theory Model.....	22
Figure 2.5	Conceptual Framework	25
Figure 2.6	OSH Management Cycle.....	31
Figure 4.1	Size of the Organization in Terms of Number of Employees	82
Figure 4.2	OSH Position	85
Figure 4.3	OSH Position Structural Level	86
Figure 4.4	Management Support Scree Plot.....	98
Figure 4.5	Employee Training Scree Plot.....	99
Figure 4.6	Legal frame work Scree Plot	100
Figure 4.7	Employee Participation Scree Plot.....	101
Figure 4.8	Organization Structure Scree Plot.....	102
Figure 4.9	OSH Implementation Scree Plot.....	103
Figure 4.10	Box plots before Removal of Outliers Plot	104
Figure 4.11	Box plots after Removal of Outliers Plot.	107
Figure 4.12	Scatter plot for Implementation of OSH Programmes /Management Support.....	107
Figure 4.13	Line of best fit between Implementation of OSH Programmes / Management support	109
Figure 4.14	Scatter Plot for Implementation of OSH Programmes /Employee Training.....	111
Figure 4.15	Line of Best Fit between Implementation of OSH Programmes and Employee Training	113
Figure 4.16	Scatter plot for Implementation of OSH Programmes /Legal frame Work	116
Figure 4.17	Line of Best Fit between Implementation of OSH Programmes / Legal Framework	117

Figure 4.18	Scatter plot for Implementation of OSH Programmes /Employee Participation	120
Figure 4.19	Line of best Fit between Implementation of OSH Programmes and Employee Participation.....	121
Figure 4.20	Structural Equation Model (SEM) without moderator.....	134
Figure 4.21	Structural equation model (SEM) with moderator.....	136

LIST OF APPENDICES

APPENDIX I	Introduction Letter to the Respondents
APPENDIX II	Questionnaire
APPENDIX III	List of Manufacturing Industries
APPENDIX IV	Letter to Director of Occupational Safety and Health Services
APPENDIX V	Letter of Introduction by the University

ABBREVIATIONS AND ACRONYM

AGOA	African Growth Opportunity Act
AMREF	African Medical Air Rescue Foundation
COMESA	Common Market for East and Southern Africa
DOSHS	Directorate of Occupational Safety and Health Services
DOHSS	Directorate of Health and Safety Services
EAC	East African Community
GDP	Gross Domestic Product
HRM	Human Resource Manager
HS	Health and Safety
SH	Safety and Health
ILO	International Labour Organization
KNPC	Kenya National Cleaner Production Centre
OHS	Occupational Health and Safety
OH&S	Occupational Health and Safety
OSH	Occupational Safety and Health
OSHA	Occupational Safety and Health Act
OHSA	Occupational Health and Safety Act
OSHM	Occupational Safety and Health Management
OSHMS	Occupational Safety and Health Management Systems
OHSP	Occupational Health and Safety Programmes
PHC	Public Health Care
PPE	Personal Protective Equipments
ROSPA	A Royal Society for Prevention of Accidents in UK
SEZs	Special Economic Zones
SSEs	Small-Scale Enterprises

OPERATIONAL DEFINITION OF TERMS

Employee Health

The absence of emotional and physical illness or disease resulting from the interaction of employee and the work environment (Hall & Goode, 1986; Mondy, 2008).

Hazards

Anything that can cause harm to someone such as working on roofs, lifting heavy objects, chemicals and so on (Foot & Hook, 2008).

Health

Means a state of complete physical, emotional, mental, wellbeing and social ability of an individual to cope with his environment, and not merely the absence of disease or infirmity (Lucas, 2001).

Health and safety audits:

Risks assessment to identify specific hazards and quantify the risks attached to them (Saunders, 1992).

Implementation

It is a course of action taken to put into use an idea, decision, procedure or program (Free online English dictionary)

Industrial Accident

Is an occurrence which interferes with the orderly progress of work in an industrial establishment (Canadian centre for occupational Health and safety, 2007).

Industrial or Employee Safety

Means absence of injuries due to the interaction of the employee and the work environment; Protection of workers from the danger of industrial accidents. (Lucas, 2001; Aswathappa, 2004).

Occupier

Means the person or persons in actual occupation of a workplace whether as the owner or not and includes the employer (Occupational health and safety Act, 2007).

Occupational Health and Safety (OSH)

The science of the anticipation, recognition, evaluation and control of hazards arising in or from the workplace that could impair the health and well-being of workers, taking into account the possible impact on the surrounding communities and the general environment (Alli , 2008).

Occupational Illness

Any abnormal condition or disorder other than one resulting from an occupational injury caused by exposure to environmental factors associated with employment e.g. chronic diseases caused by inhalation of toxic substances or harmful agents. (Bernardin & Russell, 1993).

Occupational Injury

Any injury such as cut, fracture, sprain or amputation, which results from a work related accident or from exposure involving a single incident in the environment. (Bernardin & Russell ,1993).

Occupational Safety and Health Management Systems

This is an integrated set of organizational elements involved in the continuous cycle of planning, implementation, evaluation, and continual improvement, directed toward the abatement of occupational hazards in the workplace (Robson, et al., 2005).

Occupational Safety and Health Implementation

It encompasses activities directed at either reducing or complete removal of hazardous conditions capable of causing bodily injuries and sicknesses (European Agency for Safety and Health at Work –EUOSHA, 2012).

Occupational Safety and Health Programs

It is an important health and safety tool with a definite plan of action, designed for each specific workplace to prevent accidents and occupational diseases (Muchiri, 2006).

Organizational Safety Policy

It specifies the company's safety goals and designates the responsibilities and authority for their achievement (Aswathappa, 2004).

Plant

Means, a building or place where any manufacturing process or assembling in connection with the manufacturing of any goods or products is carried on (Occupational health and safety Act, 2007).

Programme

It is a planned course of action (Free online English dictionary)

Risk

Means the probability or chances of occurrence of an adverse effect (hazard) actually resulting in harm being done to someone well being (Foot & Hook, 2008).

Safety

Freedom from the occurrence of risk of injury or loss (Aswathappa, 2004).

Safety and Health Advisor

Means any person who holds a minimum qualification of a certificate in occupational safety and healthy from a recognized institution and has at least five years practical experience in that field. (Occupational health and safety Act , 2007).

Unsafe Acts

Behavior tendencies and undesirable attitudes that cause accidents (Dessler, 2000).

Unsafe conditions

The mechanical and physical conditions that cause accidents (Dessler, 2000).

Workplace

Workplace is a place where people work such as office and factory that has an establishment or facility at a particular location containing one or more work areas. Includes, any land, premises, location, vessel or thing, at, in, upon, or near which, a worker is, in the course of employment (Occupational health and safety Act, 2007).

ABSTRACT

The growth in manufacturing sector in Kenya has resulted in increase in work related hazards which have a long term economic implication to the firms and economy. The formulation and implementation of OSH programmes have therefore become a priority for industries. This study endeavored to find out the perceptions of determinants of implementation of OSH programmes in the manufacturing sector in Kenya. It started with a background of OSH as indicated by various scholars, ILO and OSH law. The independent variables of the study were management support, employee training, legal framework and employee participation while the dependent variable was implementation of OSH programmes. A moderating factor, namely organization structure, was embedded into the study. The study adopted cross-sectional survey design but however gathered both qualitative and quantitative data. The sample size consisted of 259 industries randomly selected from the list of 735 manufacturing industries registered by Kenya association of manufacturers (2013). A self administered semi structured questionnaire was used to collect data. SSPS window version 21 was used to generate both descriptive and inferential statistics. The results indicated that the respondents were in agreement that all the factors determined implementation of OSH programmes. The qualitative data indicated that the industries faced challenges in implementing OSH programmes that included lack of cooperation from employees, difficulties in interpreting OSH statutory requirements, lack of management commitment, compromise of inspection standards by government officers and so on. Coefficient correlation for management support was 0.42, employee training 0.64, legal framework 0.64 and employee participation 0.35. The regression model showed that management support explained 17.7% implementation of OSH programmes, employee training 42.2%, legal framework 42.2% and employee participation 12.25%. The overall multiple regressions showed that all the factors combined explained 61.8% of implementation of OSH programmes. Organization structure was found to have a moderating influence on the relationship between independent variables and dependent variable. The study concluded that improved management support, employee training, legal framework and employee participation resulted in better implementation of OSH programmes.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Occupational health and safety (OSH) is a cross-cutting disciplinary area concerned with protecting the safety, health and welfare of people engaged in work or employment (Oak, 2009; Lowe, 2003; International Labour Organization, 2009). According to Mamoria and Ganker (2008) life of industrial workers is full of risks and hazards; every year lots of employees are injured in factories, offices, mines, ports, construction sites, docks and shopping areas leading to acute ailments or permanent handicaps. The injuries may be as a result of any unsafe activity or act or just by mere chance occurrences (like walking past a plate-glass window) or as a result of some unsafe work conditions and defective plant or shop layout. Employees' health is also affected by work-related diseases such as common ailments, chronic diseases like cancer, heart trouble, ulcers, stress, and strain (Mamoria & Ganker, 2008).

The Universal Declaration of Human Rights, the International Covenant on Economic, Social and Cultural rights advocates some of the rights of human beings, and organizational health and safety is part and parcel of human security and a basic human right (Annah, 2004). For occupational safety and health to attain the status of a basic human right for all workers there is a need to ensure that the working environment protects and promotes occupational safety and health. Dessler (2003) notes that there have been a growing interest in occupational health and safety in places of work as a result of the staggering number of work-related accidents, injuries and illnesses. According to Armstrong (2006) hundreds of people are killed at work every year and several hundred thousand more are injured or suffer ill-health.

ILO (2006) estimates that 120 million occupational accidents occur annually at workplaces worldwide of which 210,000 are fatal accidents; every day, more than 500 men or women do not go back to their homes because they were killed by

accidents at work. Further, 160 million people suffer from occupational diseases and 2 million people die every year as a result of occupational accidents and work-related diseases and injuries. These are dramatic numbers which draw fairly little public attention considering the fact that accidents take a considerable economic toll from nations, companies and individual. ILO further estimates that nearly 5% of world GDP is lost due to occupational diseases and accidents. The annual cost of workplace accidents and diseases has been estimated as US\$5 billion. Still the figures are quite underestimated as nearly 50% of workplace injuries are never reported, especially in developing countries.

Mundy (2008) observes that the management of safety and healthy issues has evolved over time from a reactive approach to regulatory/policing approach through proactive approach to the present approach of taking business advantage of sound safety and health systems of good performance. There are key factors which are now affecting companies positioning on safety and health. They include investment and insurance companies' new approach to business valuation, taking into account the potential liabilities associated with poor safety and health performance, huge expenses of procuring and developing workforce and the losses incurred when this workforce is interrupted as a result of health and safety problems ROSPA -Royal Society for Prevention of accidents (2005).

As indicated by Kariuki (2011), all occupational health and safety programs are geared towards fostering a safe working environment. According to ILO (2005) organizational health and safety focuses on the development of specific measures and Programmes, aimed at protecting employees in the course of performing their duties to maximize productivity and improve the overall organizational performance. The safety programmes deal with the prevention of accidents and with minimizing the resulting loss and damage to persons and property while the occupational healthy programmes deal with the prevention of ill-health arising from working conditions; employees' health both physical and mental could be affected by diseases such as cancer, heart problems, ulcers, job stress, and strain as well as accidents (Armstrong,

2006). A good safety programme is an essential part of efficient management, designed to ensure that the whole of a company's assets remain continuously available for profit making (ROSPA, 2005).

The enactment of OSH Act sets out specific standards on government's policies regarding practices in all work places and determines the extent of punishments meted out against offenders. Employers have a responsibility under the occupational safety and health Act to furnish a work place free from recognized hazards that are causing or are likely to cause death or serious physical harm. Moreover the emergence of stakeholder's awareness of their rights has led to demands for work places and practices which are safe and healthy. The human resource managers are therefore today faced with crucial issues of occupational health and safety than before. The reason is that the workers just like any other resources require maintenance and care in order to maximize their productivity (Wayne, 1995). Armstrong (2006) recommends that managers should handle health and safety in the workplace not only as a moral and legal responsibility but in view of the sufferings and losses ill health and injuries bring to individuals and their dependants. More attention need to be given to the way health and safety issues are handled by management as well as avail sufficient information which will enable effective handling of employee safety and health problems.

According to Pike (2000) health and safety should not be viewed as a separate function or responsibility, but as a broader initiative that aims at improving productivity, profitability and competitiveness of a firm. In 2008, Mondy suggested the need for either a full or part time health officer to discharge the safety program while observing that in exactly the same way managers need help from production controllers, purchasing officers, industrial relations officers, so too a knowledgeable safety expert. However, as indicated by Derek and Laura (1998), the manager still remains with the responsibility for the safety of the work place a responsibility which cannot be delegated to some other people.

1.1.1 Occupational Health and Safety in Kenya

The enactment of the Factories Act Cap 514 in 1951 saw the emergence of occupational health and safety programmes in Kenya. The crafting of this legislation was prompted by the enactment of the Workers' Compensation Act Cap 236 in 1948. However, it was not until 1974 that the then Minister for Labour requested the International Labour Organization during the 62nd International Labour Conference for assistance to strengthen factory inspection and in the establishment of specialized inspections. This was the first time that coherent occupational health services (OHS) were offered in Kenya (Kariuki, 2011).

OSH has dramatically developed a lot of interest in Kenya following the enactment of the Occupational Health and Safety Act (OSHA) No. 15 which came into force on 26th October 2007, and saw many workplaces which had hitherto operated without institutional and individual capacity for health and safety management having to develop the requisite mechanisms in order to improve the safety of the working environment and escape liabilities (Nyakang'o, 2005). The Act applies to all work places where any person is at work whether permanently or temporarily. The purpose of the Act is to secure the safety, health and welfare of persons at work, protect persons other than persons at work against risks to safety and health arising out of or in connection with the activities of persons at work (OSHA, 2007).

The act has also stipulated clearly the duties of occupiers in ensuring the safety, health and welfare at work of all persons working in his workplace. Such duties include provision and maintenance of plant and systems and procedures of work that are safe and without risks to health, provision of information, instruction and training on OSH, conducting supervisions to ensure a safe and healthy work environment and ensuring that every person employed participates in the application and review of safety and health measures (OSHA, 2007). The Work Injury Benefits Act 2007 is another Act that covers compensation for all employees, for injuries sustained at the workplaces. It is an improvement of the earlier Workman's Compensation Act which only covered selected group of workers; those earning sh. 400,000 per

annum; however employers are resisting implementation claiming it will increase labour costs (Nyakang'o, 2005).

In 2004, a subsidiary legislation (legal Notice No.30) was enacted to provide for the formation of safety committees by the occupier of every factory or other work places. The Committee is responsible for all health and safety issues of enterprises including undertaking safety audits. Despite existence of the OSH laws, working places are injury prone even though matters of safety are treated casually by both the employers and employees. This is evidenced by a report by ILO (2013), which indicates that the total number of accidents in industries in Kenya between 2006 and 2011 were as follows; 2006–2007 (355 accidents); 2007–2008 (218 accidents); 2008–2009 (3099 accidents); 2009–2010 (4812 accidents); 2010–2011 (6023 accidents).

1.1.2 Kenya's Directorate of Occupational Health and Safety Services

Kenya's Directorate of Occupational Health and Safety Services (DOHSS) which is under the Ministry of Labour and Human Resource Development is mandated with the responsibility for ensuring employers provide prevention measures for accidents and diseases; it undertakes systematic inspections and audits of work-places with the view to identify the hazards and make recommendations for improvement; creating awareness to citizens and other people on matters of occupational health and safety , approving architectural plans of buildings intended for use in workplaces and processing compensation claims for employees who have been injured or contracted diseases in the course of employment in line with the work injury benefits Act 2007.

Since DOHSS cannot manage to do training by itself it has created a system where it has approved training institutions to carry out the training. So far, it has about 75 institutions conducting the training on its behalf. The institutions are required to report to DOHSS which in turn supervises them (GOK, 2011). In 2005, DOSHS established the Occupational Safety and Health Information Centre (CIS) to collect, maintain, analyze and disseminate OSH information in Kenya. It is the only CIS centre in the country. The Centre collaborates with the International Occupational

Safety and Health Information Centre, an organ of the ILO. It receives and disseminates information country-wide. It also acts as a reference point for all academic institutions teaching OSH courses (ILO, 2013).

DOHSS currently has an authorized establishment of 239 occupational health and safety officers; however as shown in Table 1.1, only about 25% of the posts are filled and this poses a big challenge in the provision of occupational safety and health services.

Table 1.1 Distributions of Occupational Health and Safety Officers

Specialization	In-post	Authorized establishment
Occupational health and safety engineers & Hygienists	58	168
Occupation healthy physician	10	21
Occupational health nurses	7	50

Source: DOHSS (2011)

The total number of workplaces that are liable for inspection by the Directorate is estimated at about 140,000 but only about 7,500 workplaces are registered under OSHA 2007. The DOSHS, faced with a shortage of professional OSH officers, therefore is not capable of inspecting the estimated 140,000 workplaces effectively, and this leaves most workers exposed to OSH hazards without intervention.

According to a report by Kenya federation of employers, in the year 2007/2008, OSH officers visited, inspected and examined 2,694 workplaces. A further report by ILO (2013) the workplaces inspected between 2006 and 2011 were as follows; 2006–2007 (1985 workplaces); 2007–2008 (2002 workplaces); 2008–2009 (4117 workplaces); 2009–2010 (3818 work places); 2010–2011 (4340 workplaces). This indicates that only about 4,000 workplaces are inspected annually which is far below the number of workplaces expected to be inspected. If management of occupational

safety and health is to be realized, the ratio of OSH worker to employees should be attained.

Other challenges include high exposure to occupational hazards for illiterate workers in the rural areas, poor coverage especially of the small enterprises and the informal sector that employ the majority of the workforce, difficulties in recognition of occupational diseases, including traditional ones, and recognition of OHS as primary business concern. In addition, workers have not done enough to supplement and promote activities for enhancing OHS. With the growing informal sector and the introduction of new technologies in vast growing agriculture sector, new strategies are required in the provision of services if OHS have to make the desired impact (WHO, 2011)

1.1.3 Manufacturing industries in Kenya

The Manufacturing sector comprises establishments engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products. Establishments in the Manufacturing sector are often described as plants, factories, or mills and characteristically use power-driven machines and materials-handling equipment. However, establishments that transform materials or substances into new products by hand or in the worker's home and those engaged in selling to the general public products made on the same premises from which they are sold, such as bakeries, candy stores, and custom tailors, may also be included in this sector. Manufacturing establishments may process materials or may contract with other establishments to process their materials for them. Both types of establishments are included in manufacturing (U.S. department of Labor <http://www.bls.gov/iag/tgs/iag06.htm>).

Reports by Kenya Investment Authority (2013); Price Water House Coopers (2013) indicates that Kenya has a large manufacturing sector serving both the local and export markets to the East African region. This sector is mainly agro based and plays an important role in adding value to agricultural output by providing forward and

backward linkages with agricultural sector. However, there is a shift to export oriented manufacturing as the main thrust of Kenya's industrial policy since the country aims to raise the share of products in the regional market from 7% to 15 % and develop niche products for existing and new markets. In addition to high demand for locally manufactured goods, regional markets are accessible for Kenya's manufactured goods owing to its membership to two key regional economic blocs the East African Community (EAC) and Common Market for East and Southern Africa (COMESA). Furthermore, Kenya is one of the first Sub Saharan countries eligible to export its textile products to the USA under the provisions of the African Growth Opportunity Act (AGOA).

As indicated by Kenya investment authority (2013), investment opportunities exist for direct and joint-venture investments in iron and steel industries, manufacture of fertilizer, agro-processing, machine tools and machinery, motor vehicle assembly and manufacture of spare parts, manufacture of garments, assembly of automotive components and electronics, manufacture of plastics, paper, chemicals, pharmaceuticals, metal and engineering products for both domestic and export markets. On the consumer goods side, products manufactured locally include stationery and grooming products. Kenya is also promoting development of Special Economic Zones (SEZs), industrial parks, industrial clusters, promotion of small and medium scale manufacturing firms, development of niche products, and commercialization of research and development results.

Embassy of the Republic of Kenya in Japan (2013) further indicates that Kenyan manufacturing sector had increased in production between 2003 and 2005 particularly in cement production which has always been a good indicator of economic activity. Price water house Coopers also reported manufacturing sector as a major sector of growth, with its share in GDP (Gross Domestic Product) having risen from 13 percent in 2002 to 14.2 percent in 2003 and 15.7 percent in 2007. Kenya therefore as the most politically stable country in East Africa, has attracted a large number of investors who now thrive in many sectors of manufacturing. The manufacturing sector comprises of more than 700 established enterprises and

employs over 218,000 people. Kenya exports mainly to East Africa and COMESA markets. According to the Economic Recovery Strategy for Employment and Wealth Creation Report, the manufacturing sector is a major source of growth, with still high potential of growth and investment.

Despite the potential of manufacturing industry to contribute to economic growth it is faced with the challenge of combating losses resulting from occupational safety and health hazards. In the year 2003 data indicates that machine operators and assemblers accounts for 28 % of accidents in Kenya (Maina, 2006). Directorate of Occupational Health and Safety Services (DOHSS) annual Report (2008) also indicates that the cumulative number of accidents reported for years 2001-2007 for Nairobi province alone was 1,035. These accidents accounted for 12,941 man hours lost. According to the report this high number of accidents and the attendant losses can be attributed to failure by management at workplaces to comply with the legal and regulatory framework regarding occupational safety and health.

1.2 Statement of the Problem

Over the last decade, the manufacturing sector in Kenya has grown tremendously. The sector is actually a significant contributor to economic growth and provides an impetus towards achievement of Millennium Development Goals (MDGs). A report by Osano, Iuluku, Njuguna and Taruka (2008) indicates that 87% of manufacturing firms are Kenyan owned and the sector contributes 10% of GDP, 12.5% of exports and currently employs 254000 people which represent 13% of total employment. Further data by GOK (2013) indicates that manufacturing sector contributed 13% 12.9%, 12.8%, 12.6%, 12.6% to GDP between 2009-2013. However according to Machida (2009), Occupational safety and health issues are a major setback to the growth of the sector.

Although OSH in industries in Kenya is governed by occupational safety and health Act (2007), the status of OSH condition in manufacturing sector in Kenya is still an issue of growing concern. Maina (2006) in her study found that (65%) of industries violated the mandatory legal requirement on the establishment of health and safety

committees and failed to implement the Act claiming that it was expensive. In addition Kenei (1995); Mberia (2001); Sindiswa (2003); Makori, Nandi, Thuo and Wanyonyi (2012) in their studies found that work environments were still unsafe and matters of safety were treated casually by both the employer and employees. The ministry of labour also estimates that reported occupational fatalities and injuries for the years 2000 to 2004 were 1528, 1923, 1332, 1599, and 1387 respectively. Further records by ILO (2013) indicates that accidents for the years 2006 and 2011 were; 2006–2007 (355 accidents); 2007–2008 (218 accidents); 2008–2009 (3099 accidents); 2009–2010 (4812 accidents); 2010–2011 (6023 accidents). The ministry of labour in its annual report (2011) underscores that in the year 2011 alone 249 of all reported accidents were fatal and yet more than half of the industrial accidents and injuries in Kenya go unreported; the reported accidents are those seeking compensation under the workers' injury benefit Act.

According to Folman (1988) and Kitumbo (2009), Occupational Safety and Health (OSH) is therefore a central issue for countries all over the world especially due to the economic implications associated with it. Occupational accidents and sicknesses can cause human pain and misery; reap off the country productive workforce, lead to loss of production and valuable man hour, increase hospital bills, compensation and legal costs and insurance premiums (Sagimo, 2002); Dessler, 2003); Armstrong, 2006); Mamoria & Gankar, 2008). Eventually the significant financial costs are often passed on to the consumer in form of higher prices. All these consequently affect firms' productivity and contribution to GDP posing a big challenge to the country's aspiration of having an industrialized status by the year 2030.

To counter the destructive economic effects of OSH the human resource management must prioritize the formulation and implementation of OSH programmes in the manufacturing industries. This study therefore sought to establish the perceptions of OSH officers towards the determinants of implementation of OSH programmes in the manufacturing sector. The determinants were perceived as

management support, training, legal framework and employee participation. It also sought to find out if organization structure had a moderating effect on the implementation of OSH programmes. Previous Studies have shown that small medium enterprises and large companies respond differently to the implementation of OSH Programmes (Cook, 2007). This implies that the size of the company plays a big part in the effectiveness of OSH implementation.

1.3 General Objective of the Study

To establish the perceived determinants of implementation of occupational safety and health programmes in the manufacturing sector in Kenya.

1.3.1 Specific Objectives of the Study

1. To establish the perceived effect of management support on the implementation of occupational safety and health programmes in the manufacturing sector in Kenya.
2. To determine the perceived effect of training on the implementation of occupational safety and health programmes in the manufacturing sector in Kenya.
3. To establish the perceived effect of legal framework on the implementation of occupational safety and health programmes in the manufacturing sector in Kenya.
4. To determine the perceived effect of employee participation on the implementation of occupational safety and health programmes in the manufacturing sector in Kenya.
5. To establish the moderating effect of organization structure on the relationship between independent variables (management support, training, legal framework, employee participation) and implementation of OSH programmes.

1.4 Research Questions

1. How does management support affect implementation of occupational safety and health programmes in manufacturing sector in Kenya?
2. How does training affect implementation of occupational safety and health programmes in manufacturing sector in Kenya?
3. How does legal framework affect implementation of occupational safety and health programmes in manufacturing sector in Kenya?
4. How does employees' participation affect implementation of occupational safety and health programmes in manufacturing sector in Kenya?
5. What is the moderating effect of organization's structure on the relationship between independent variables (management support, training, legal framework, employee participation) and implementation of OSH programmes?

1.5 Justification of the Study.

Safety and health problems according to Mondy (2008) can seriously affect workers' productivity and quality of work life thus lowering a firm's effectiveness and employee morale. Millions of working days a year are lost and hundreds of people are killed at work every year because of work-related illness, accidents and injuries; other millions of people say they suffer from an illness they believe was caused by their work (Armstrong, 2006; Dessler, 2003). Such big numbers show that high priority must be given to creating and maintaining programmes for the improvement of occupational safety and health. If safety problems and health risks in the work environment is reduced, it would result in increased productivity and well-being for our enterprises and the country's economic competitiveness will eventually improve (Veltri, Pagell, Behm & Das 2007; Jaselskis, Anderson & Jeffrey 1996).

This study thus endeavored to find out the perceptions of determinants of implementation of occupational safety and health programmes in the manufacturing sector in Kenya. The information gathered was intended to be of use to policy makers, employers, employees and scholars. The government would be awakened to develop a proper infrastructural status for occupational health and safety, strengthen

national policies for health at work, update legislation and standards and emphasize on the primary responsibility of the employer for health and safety at work. The enforcement of legislative measures and their active implementation in Kenya is very poor. Government policy, legal actions and enforcement are needed to ensure minimum levels of health and safety in the manufacturing sector. The government would also be encouraged to work towards establishment of mechanisms for tripartite collaboration between government, employers and employees for implementation of national occupational health.

This study would also prompt the management of organizations to see the need to allocate the necessary financial, personnel and organizational resources for the implementation of OSH programmes. The management would see the need to provide intensive training and information to workers on OSH and also take action to ensure collaboration between employers and workers at workplace. Instead of investigating accidents after they have occurred, taking a high toll on human life and organization's profits, preventing the occurrence of industrial disasters and occupational diseases would be a much better idea.

This study would also draw the attention of the employee to the need of being part and parcel of creating a safe environment by playing an active and accountable role without prejudicing the primary responsibility of the employer for health and safety at work. To ensure a self-enforcing environment, where assurance of occupational health and safety is the norm rather than an afterthought, positive and strong employee participation has to be developed. This necessitates a reorientation not only in the minds of the employers and the government, but also in the attitudes of the employees.

Finally the study would provide an impetus for educators and authors to fill the gaps between the theory and real practice of OSH. It also provided recommendation for further studies which would be used as a basis for such studies by various researchers. This work would also be available to university students who can cite it as they do related or other studies. Research is critical to the development of

occupational health and safety administration and practice and because of the many occupational health and safety problems experienced, research in occupational health and safety should be encouraged.

1.6 Scope of the Study

The scope of occupational health and safety is very broad encompassing disciplines such as occupational medicine, occupational nursing, occupational hygiene, ergonomics, engineering, toxicology, environmental hygiene, occupational psychology and personnel or Human Resource management. However this study focused on occupational safety and health within the scope of the discipline of human resource management. In addition though there are many other factors that determine implementation of OSH this study limited itself to management support, training, legal framework and employee participation. This is because they touch on human factors which are core in ensuring successful implementation of OSH programmes.

1.7 Limitation of the Study

It is always useful to conduct surveys that provide a complete picture of the subject matter that would finally yield correct and reliable data. However there are always challenges that harbor successful research procedures. The forthcoming paragraphs discuss the limitations encountered in this study and the interventions that were put in place to counter them.

Though this study focused on all manufacturing industries in Kenya it limited itself to the sampled industries. To ensure generalisability of the study results, a sufficient sample was randomly drawn. Findings were presented within a descriptive and contextual analysis to allow the reader decides whether the results could be transferable to their own situation.

The researcher could not be present to administer the questionnaires because the industries were far and wide distributed. A pilot study was conducted prior to conducting the real survey in order to ensure that the questionnaires were correctly

understood. Research assistants were also trained before they were released for data collection.

Difficulties were also experienced in getting the expected information due to suspicion by management about the use into which the information would be put. To overcome this problem official permit was sought from the DOHSS offices under the ministry of labour and an accompanying introductory letter from the university was attached to dispel such fears. The respondents were also not required to indicate the name of the industry and the management was convinced that the information would only be used for academic purposes.

The use of questionnaires also made it difficult for the researcher to examine complex issues and opinions. Even where open-ended questions were used, the depth of answers that the respondent could provide tended to be limited. This made it difficult for the researcher to gather information that was rich in depth and detail. However the problem was countered by coupling the questionnaire with unstructured face to face interviews.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter starts with a description of the conceptual framework that shows the relationship between dependent and independent variables. It continues with theoretical framework in which theoretical review of both independent and dependent variables is made as well as exploration of some of the theories related to the study. The chapter ends with a review and critique of empirical studies followed by gaps to be filled by the study.

2.2 Theoretical Frame Work

This section provides theoretical review of the study. It starts with a review of the theories underpinning the study followed by a conceptual framework that forms the basis of literature review of the dependent and independent variables of the study.

2.2.1 Theories Related to the Study

There are many theories related to OSH management but this study however concentrated on accident causation theories in which researchers have attempted to explain why accidents occur. The belief that accidents are caused and can be prevented makes it imperative for us to study those factors which are likely to favour the occurrence of accidents. By studying such factors, the root causes of accidents can be isolated and necessary steps can be taken to prevent the recurrence of the accidents (Molenaar, Brown, Caile & Smith, 2002; Mohamed, 2002). The different accident models are based on different perception of the accident process and form the basis for investigating and analyzing accidents, preventing future ones, and determining whether systems are suitable for use, that is, risk assessment (Levitt & Samelson, 2005).

Heinrich's Domino Theory

A well-known early study in safety management was undertaken by American engineer H. W. Heinrich in 1931 and is usually referred to as Heinrich's Domino

Theory. Heinrich's theories and techniques on safety management were supported by research he conducted while employed as an engineer for an insurance company. His major research study concerned the causes of accidents and comprised a subjective assessment of the accident causes in 75,000 accident insurance cases. He concluded that 88 per cent of accidents resulted from 'unsafe acts' and 10 per cent from 'unsafe conditions', making a total of 98 per cent judged to be preventable, with the remaining 2 per cent judged as unpreventable (Heinrich, 1980). Heinrich advocated a multi-disciplinary approach to safety, focusing upon engineering, psychology, management and 'salesmanship'. The emphasis on psychology supported his theory that accidents were caused primarily by the 'unsafe acts' of employees Wayne (2006). The minimization of technical fault supported the concept of the culpability of the injured person in accident compensation cases (Hale & Glendon, 1987).

Heinrich therefore had a formative influence on health and safety practice and his safety program elements have endured to the present day as the foundation of management techniques in health and safety. According to Heinrich an understanding of the reasons why people commit unsafe acts can serve as helpful guides in selecting corrective actions. Techniques for safety management that he proposed include :close supervision; safety rules; employee education through training, posters and films; hazard identification through analysis of past experience, survey and inspection; accident investigation; job analysis methods: safety analysis; production of accident analysis sheets; approval processes for new construction, installation of new equipment, changes in work procedures or processes; establishment of safety committees and arrangements for emergency and first aid. Figure 2.1 is a reflection of Heinrich's Domino Theory

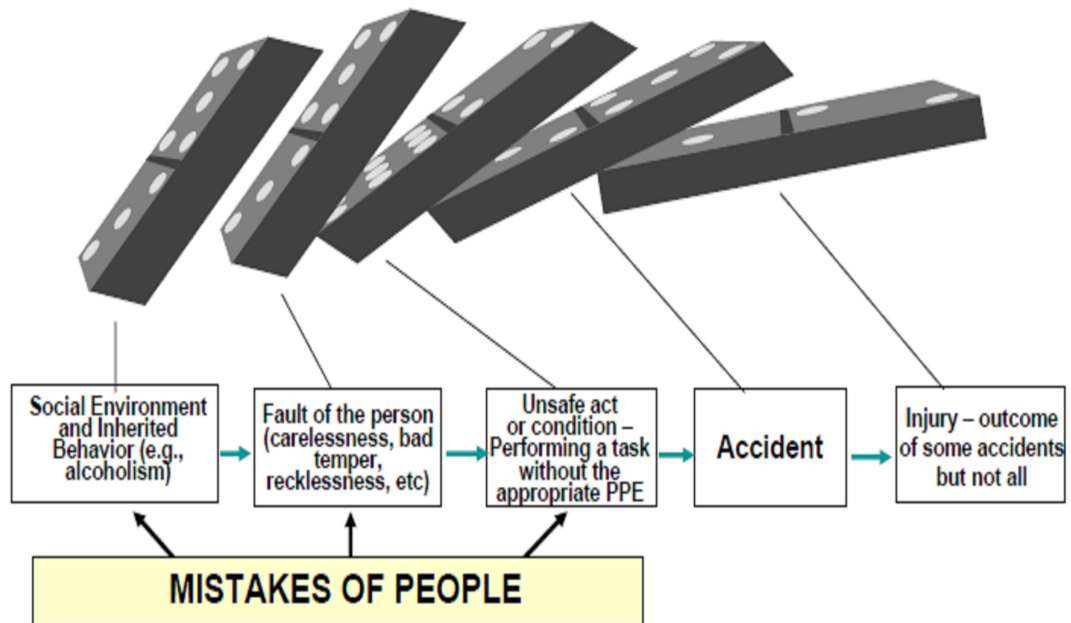


Fig 2.1 Heinrich's Domino Theory

Source: Rasmussen and Reason (1997)

Multiple Causation Theory

Multiple causation theory is an outgrowth of the domino theory, but it postulates that for a single accident there may be many contributory factors, causes and sub-causes, and that certain combinations of these give rise to accidents (Benner, 1995). According to this theory, the contributory factors can be grouped into behavioral and environmental categories. Behavioral category includes factors pertaining to the worker such as improper attitude, lack of knowledge, lack of skills and inadequate physical and mental condition (Bandura, 1986). Environmental category includes improper guarding of other hazardous work elements and degradation of equipment through use of and unsafe procedures (Rasmussen, 1997). The major contribution of this theory is to bring out the fact that rarely, if ever, is an accident the result of a single cause or act (Rasmussen & Reason 1990).

Human Factors Theory of Accident Causation

According to Sarter and Woods (1995), human factors theory attributes accidents to a chain of events ultimately caused by human error. An error as a set of human actions that exceeds some level of acceptability or a deviation from a normative procedure (Rigby, 1990). Human factors theory consists of three broad factors that lead to human error: overload, inappropriate response, and inappropriate activities:

Overload amounts to an imbalance between a person's capacity at any given time and the load that person is carrying in a given state. A person's capacity is the product of such factors as his or her natural ability, training, and state of mind, fatigue, stress, and physical condition (Fujita, 1991; Vicente, 1995; Woods, 1984). The load that a person is carrying consists of tasks for which he or she is responsible and added burdens resulting from environmental factors (noise, distractions, and so on), internal factors (personal problems, emotional stress, and worry), and situational factors (level of risk, unclear instructions, and so on) (Sarter, Woods & Billings, 1997). The state in which a person is acting is the product of his or her motivational and arousal levels.

Inappropriate response and incompatibility is about how a person responds in a given situation can cause or prevent an accident. If a person detects a hazardous condition but does nothing to correct it, he or she has responded inappropriately. If a person removes a safeguard from a machine in an effort to increase output, he or she has responded inappropriately. If a person disregards an established safety procedure, he or she has responded inappropriately. Such responses can lead to accidents. In addition to inappropriate responses, this component includes workstation incompatibility. The incompatibility of a person's workstation with regard to size, force, reach, feel, and similar factors can lead to accidents and injuries.

As argued by Rasmussen (1990, 1997) ; Vicente (1999), devising more effective accident models will require shifting the emphasis in explaining the role of humans in accidents from error (deviations from normative procedures) to focus on the

mechanisms and factors that shape human behavior, that is, the performance-shaping mechanisms and context in which human actions take place and decisions are made. Effective approaches to understanding the role of humans in safety must look at the goals and motives behind human behavior. Human error can also be the result of inappropriate activities. An example of an inappropriate activity is a person who undertakes a task that he or she doesn't know how to do or a person who misjudges the degree of risk involved in a given task and proceeds based on that misjudgment. Such inappropriate activities can lead to accidents and injuries and error is seen as a deviation from the rational and normally used effective procedure (Rasmussen and Reason, 1990). Figure 2.2 shows the human factor theory.

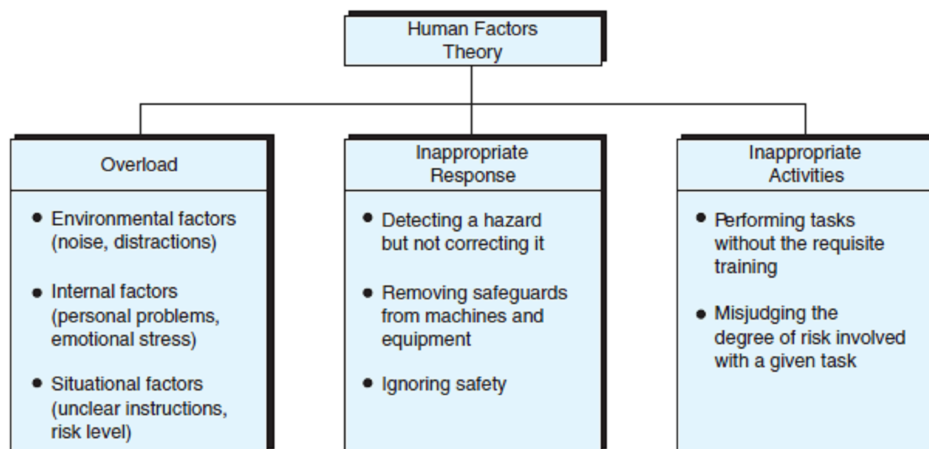


Figure 2.2: Human Factors Theory

Source: Rasmussen and Reason (1997)

Accident /Incident Theory of Accident Causation

The accident/incident theory is an extension of the human factors theory. It was developed by Dan Petersen and is sometimes referred to as the Petersen accident/incident theory. Petersen introduced such new elements as ergonomic traps, the decision to err, and systems failures, while retaining much of the human factors theory. The theory attributes accidents to a chain of events ultimately caused by human error (Ladd, 1987; Perrow, 1994; Levit & Samelson, 2005; McClay's, 1989). According to this theory there are three broad factors that lead to human error:

overload, inappropriate response, and inappropriate activities (Rigby, 1990). The system failure is an important contribution of Petersen's theory where employees do not receive proper orientation and are not given sufficient safety training. A model based on Peterson accident/incident theory is shown in Figure 2.3

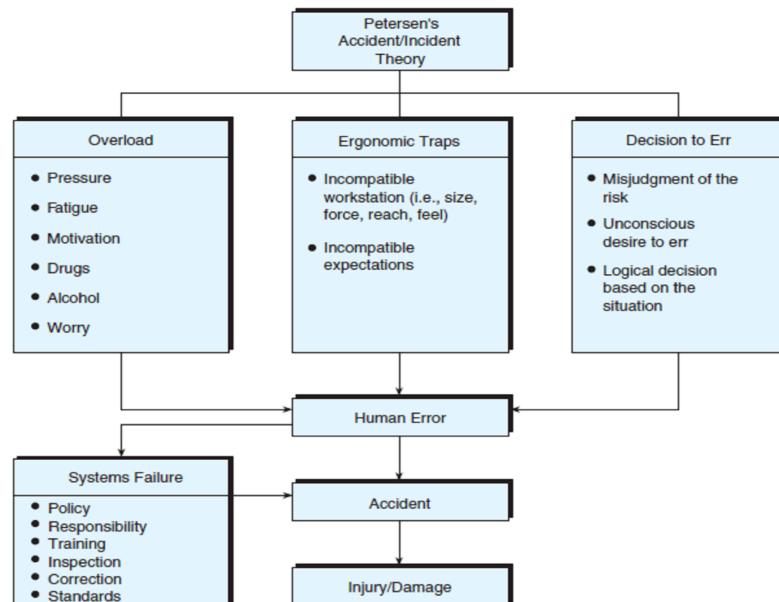


Figure 2.3: Accident /Incident Theory
Source: Rasmussen and Reason (1997)

System Theory of Accident Causation

A system is a group of regularly interacting and interrelated components that together form a unified whole. This definition is the basis for the systems theory of accident causation. This theory views a situation in which an accident may occur as a system comprised of the following components: person (host), machine (agency), and environment (Ladd, 1987; Perrow, 1994). The likelihood of an accident occurring is determined by how these components interact. Changes in the patterns of interaction can increase or reduce the probability of an accident. For example, an experienced employee who operates a numerically controlled five axis machining center in a shop environment may take a two-week vacation. Her temporary replacement may be less experienced. This change in one component of the system (person/host) increases the probability of an accident (Hinze, 2006).

The primary components of the systems model are the person/machine/environment, information, decisions, risks, and the task to be performed. Each of the components has a bearing on the probability that an accident will occur. Some other ways in which systems fail according to Petersen is because management does not establish clearly and define a comprehensive safety policy and responsibility and authority with regard to safety (Everett, 2009); safety procedures such as measurement, inspection, correction and investigation are ignored or given insufficient attention (Bernhold, Lorenc & Davis, 2001).The systems model is illustrated in Figure 2.4

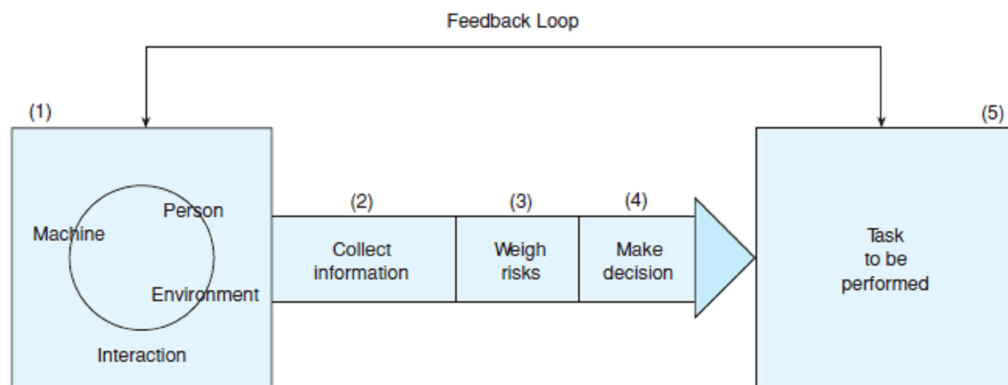


Figure 2.4: Systems Theory Model

Source: Rasmussen and Reason (1997)

2.3 Conceptual Framework

This a summary description of the whole concept of perceptions of determinants of implementation of occupational health and safety programmes and how they are integrated to OSH programmes implementation. The conceptual framework of the study was based on the integration of several accident causation theories which have been reviewed earlier in this chapter. Accident causation models attempt to understand the factors and processes involved in accidents in order to develop strategies for accident prevention; models based on these theories are used to predict and prevent accidents. The theories identify a system of management deficiencies, training, workers' attitude and the environment as the general root causes. These causes, that is, management support, employee participation, training and legal frame

work (environmental factor) were integrated to constitute the independent variables of this study.

According to the national safety council (1995); Alan Price (2007); Rao (2008) success in safety and health depends on the dedication of top management. This is equally asserted by Gilkey et al. (2003) who found that management support is important in the implementation of OSH. Management commitment is manifested through various ways such as having and participating in safety training, facility inspections and incident investigations, empowerment of employees to make decisions, giving rewards and penalizing employees who do not follow safety measures such as the use of personal protective equipments (Akpan, 2011; Holmes, 1999; Shill, Carruthers & Krisjanous, 2006). Wayne (2006) and cliff (2012) also sees management role as including developing loss control programmes, safety committees, employee selection procedures, employee and supervisor training feedback and incentives, positive workers' attitudes, improved engineering practices and enforcement of these practices and empowerment of workers.

Safety training and legislation are also essential elements of any accident prevention scheme. According to Pratt and Bernett (1985); Rao (2005) safety training should commence immediately a member of staff is employed. As part of normal induction training, employees should be made aware of their responsibility for H&S, general health hazards, the use of safety clothing and equipment, the availability of medical services, safety rules, material handling, first aid fire prevention and procedures for reporting accidents. After induction further safety training may be necessary in connection with an individual's particular job. On the other hand effective enforcement of legislation as indicated by (Heinrich, 1999; Heinrich, Peterson & Roos, 1980) influences observance of rules and regulations.

Employee involvement will also determine OSH implementation. Participation is a fundamental workers' right, and it is also a duty. A duty is placed on employees while they are at work to take reasonable care for the safety of themselves and

others, as well as their health (Derek & Laura, 1998). The employee is legally bound to comply with the safety rules and instructions that the employer promulgates (Dessler, 2003). Cooperation between management and workers or their representatives within an enterprise is an essential element of prevention of accidents and diseases at the workplace (Alli, 2008; Dessler, 2003; Cole, 2004; Sagimo, 2002; Mondy, 2008). In addition organizational structure plays a big role in implementation of OSH programmes; for example Holmes (1999); Lingard and Rowlinson (1994) ; Lilis (2012); Lindoe and Olsen(2004) found that smaller businesses are not effective in implementing OSH because the managements put the responsibility on employees to look after their own safety in the workplace; bigger firms with more resources and experience tend to implement OSH more effectively.

The whole concept of determinants of implementation of occupational health and safety programmes is explained in Figure 2.5 showing the relationship between the independent variables, moderating and dependent variable.

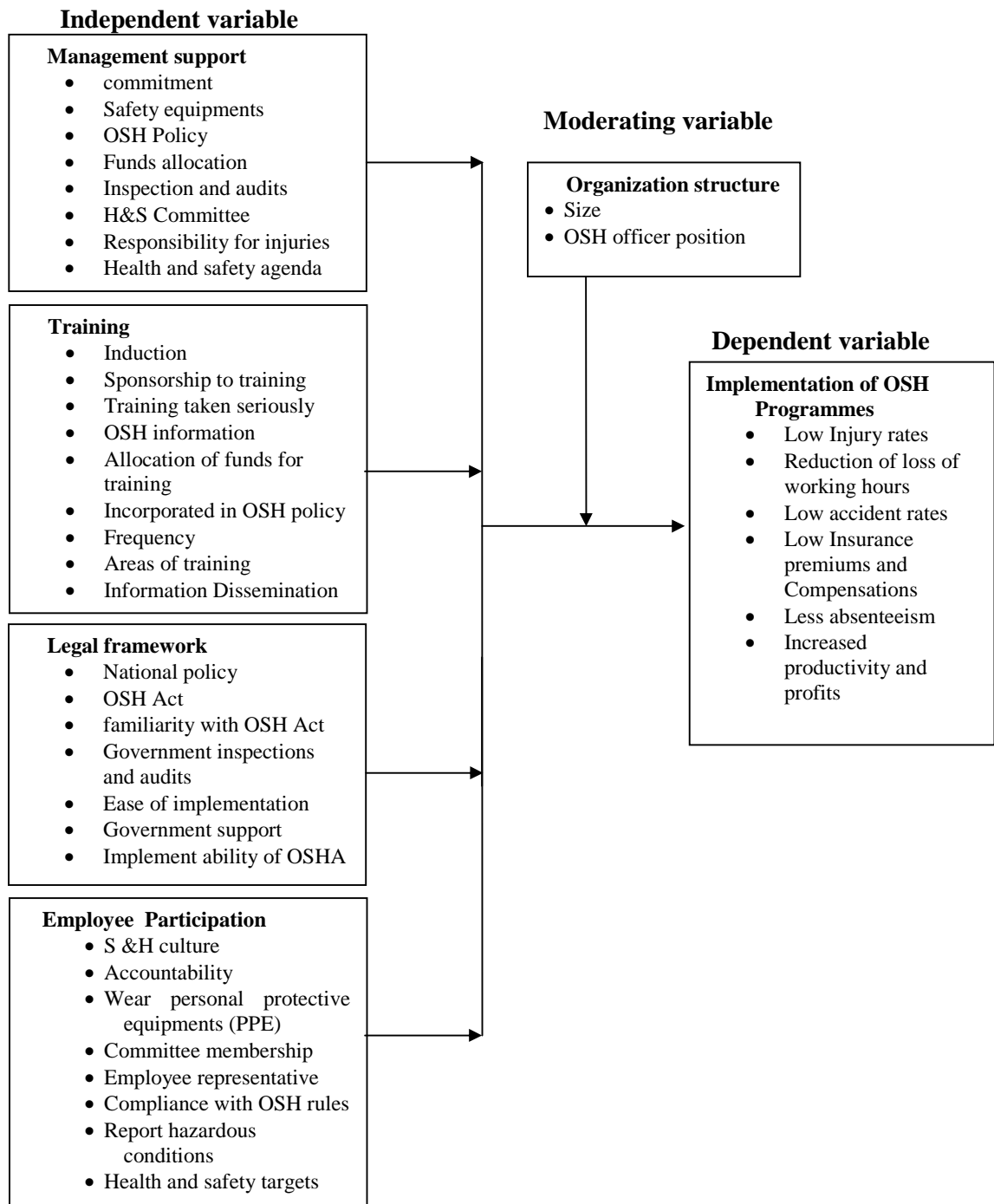


Figure 2.5 Conceptual Framework

2.3.1 Implementation of Occupational Health and Safety Programmes

According to ILO (2013), the main focus in occupational health is the maintenance and promotion of workers' health and working capacity; the improvement of working environment and work to become conducive to safety and health and development of work organizations and working cultures in a direction which supports health and safety at work and in doing so also promotes a positive social climate and smooth operation that may enhance productivity of the undertakings ; a working culture is reflected in practice in the managerial systems, personnel policy, principles for participation, training policies and quality management of the undertaking.

From the early 1900s to the present time, employers and safety practitioners adopted the philosophy of the three E's (engineering, education, and enforcement) to guide their safety-related interventions (Heinrich, Petersen & Roos, 1980). To make a difference in the health and safety of employees, the three Es of safety focus on; developing engineering strategies that decrease the probability of an employee engaging in risk behaviors; educating and training employees regarding equipment, environmental hazards, policies and procedures; and enforcing the policies and procedures related to operating equipment, wearing proper personal protective equipment, and handling specific hazardous substances. The three E's act as a guide to management's efforts in implementing OSH programmes.

Saksvik and Quinlan (2003) suggested a systematic approach of implementation of OSH programmes that includes the cooperation between the government and employers as important to OSH issues. Considering the fact that companies lack financial resources to implement OSH, subsidy given by the government would be helpful. The successful implementation of this system requires management commitment and show of leadership to the system, effective allocation of resources, developing health and safety policy and a high level of employee participation. Management at all levels should demonstrate their support of the health and safety program (Akpan, 2011; Aswathappa, 2004).

According to ILO (1991), the competent authority for occupational health is the Ministry of labour. Governments are responsible for drawing up occupational safety and health policies and making sure that they are implemented (Alli, 2008; Mukherjee, Overman, Leviton, & Hilyer, 2000). However McQuiston (2000); Vojtecky and Schmitz (2006) note that policies are more likely to be supported and implemented if employers and workers, through their respective organizations, have had a hand in drawing them up. Without a functional national policy and programme on occupational safety and health services that is fully supported by all stakeholders with adequate resources and facilities, the provision of effective OHS to all will continue to be constrained (Shafai-Sahrai, 2001; Cohen & Cleveland, 2003). The competent authority should supervise and advise on the implementation of a workers' health surveillance system, which should be linked with programmes to prevent accident and disease and to protect and promote workers' health at both enterprise and national levels (Robson et al., 2007).

Effective organizational health and safety management can derive multiple benefits. It can help to boost workers' morale; improve employees' work-behavior and trust in the management (ROSPA, 2005); foster better employment relations; increase job satisfaction; reduce labor-management conflict (Kreitner,2007); motivate employees in line with motivational value of safety /security as identified in Abraham Maslow needs hierarchy theory (Robbins & Judges,2007); more so it can reduce safety hazards and costs associated with them such as absence rates, business interruption, labor-turnover, reduced productivity ,hospital bills and salaries for the hospitalized workers, or compensation to families of employees involved in work place accident or health hazards. It is important to note that incurring much of such bills and expenses can subject an organization to negative economic and profitability condition, hence decreasing its competitive advantage position in the market place and destroy its corporate image, capable of attracting potential investors and customers (Mondy, 2008).

European Agency for Safety and Health at Work- EU-OSHA (2012), in the review of mandatory OSHMS interventions also suggests positive effects of increased implementation of the OSHMS. Such outcomes include OSH awareness in enterprises resulting in formation of good safety behavior, more healthy and safe workplaces manifested in reduction in working hours lost as a result of lower injury rates and rise in workplace productivity.

2.3.2 Management Support and Implementation of Occupational Safety and Health Programmes.

According to Cooper (2006) management commitment and support is the management's involvement and engagement in actions towards achieving a goal. Akpan (2011) indicates that formal organizations are consciously directed toward attainment of set goals; goal accomplishment is a function of the coordinated and interactive effort of organizational resources (Human, material, financial, informational, etc). The realization of human resource as the most important of all the assets, in contemporary management, may be based on its inevitable role in the manipulation of all other organizational assets or resources for productivity. Management perception of human importance in the organizational setting has been exhibited through deliberate strategic decisions directed at the attraction of desired labor, to the verge of exit. One of such strategic decisions can be epitomized by effort to provide safe work environment to the workforce. This workforce should be available to work uninterrupted if organizational objectives are to be achieved efficiently and effectively. Organizations incur high costs due to poor safety and health programmes and efforts (EU-OSHA, 2009).

As stated by Cole(2002) ; Cole (2004) ; Wayne (1995) ;Alli (2008) employer has a common law duty to provide a safe place of work for his or her employees and is liable at common law for accidents encountered by his or her employees in the course of their employment. The management must be committed to invest money into OSH activities in order to effectively implement OSH. National safety council (1995); Alan (2007); Rao (2008); Pratt and Bernett (1985) emphasize that

management is required whether it wishes or not to give more attention to such H&S matters since from the government to trade unions, insurance companies and the public there is increasing demand that employers provide a safe and health work environment. According to Alan (2007); Rao (2008); Williams, Rodin, Ryan and Grolnick, (1998, p. 251) success in safety and health depends on the dedication of all cadres of Management.

Management therefore has to accept that it has social responsibilities and that it exists in a world that is increasingly social aware. EU-OSHA (2009) asserts that safety and health must be viewed as an essential and achievable part of any business, and one that needs to be monitored. Employers have responsibilities for meeting their duty to provide a workplace free from recognized hazards, for being familiar with mandatory occupational healthy and safety Act (OSHA) standards and for examining workplace conditions to make sure they conform to applicable standards (Armstrong, 2006; Dessler, 2003)

As indicated by Cohen (1997); Shannon, Mayr and Haines (1997) one of the factors associated with high safety performance is strong management commitment. This was also emphasized by Shafai-Sahrai (2001); Cohen and Cleveland (2003) stating that factors prevalent in low injury rate companies were senior management involvement in safety; prioritization of safety in meetings, and in decisions concerning work. Management can also reflect its commitment to OSH by making safety inspections a regular part of a company's operating procedures (national safety council, 1995; Wayne, 1995).

The new strategy towards OSH management encourages employers and workers to take an active and comprehensive responsibility for OSH quality, through a systematic managerial process to tackle workplace injuries and work-related ill health (Frick, Jensen, Quinlan & Wilthagen 2000; Frick & Wren, 2000; Saksvik & Quinlan, 2003; Walters, 2002). Such a process is important in the new strategy towards the promotion of OSHM since it highlights the necessity of having a better

integrated and incorporated OSH policy in the management. A written health and safety policy is required to demonstrate that top management is concerned about the protection of the organization's employees from hazards at work and to indicate how this protection will be provided (Armstrong, 2003, 2006). Armstrong actually sees the importance of health and safety policies and practices as, sadly, often underestimated by those concerned with managing businesses and by individual managers within those businesses.

A health and safety management system involves the introduction of processes designed to decrease the incidence of injury and illness in the employer's operation. As indicated by Alberta (2006); Lewchuk et al. (1996); ILO (2001) an effective occupational health and management system would assist an organization to define and implement OH&S policy objectives. In 2001, the International Labor Organization (ILO) published ILO-OSH 2001, also titled "Guidelines on occupational safety and health management systems" to assist organizations with introducing OSH management systems. These guidelines encourage continual improvement in employee health and safety, achieved via a constant process of policy, organization, planning and implementation, evaluation, and action for improvement, all supported by constant auditing to determine the success of OSH actions. The occupational health and safety management process is demonstrated below;



Figure 2.6: The Occupational Safety and Health Management Cycle

Source: ILO, 2001b.

The ILO management system was created to assist employers to keep pace with rapidly shifting and competitive industrial environments. The ILO recognizes that national legislation is essential, but sometimes insufficient on its own to address the challenges faced by industry, and therefore elected to ensure free and open distribution of administrative tools in the form of occupational health and safety management system guidance for everyone. This open access forum is intended to provide the tools for industry to create safe and healthy working environments and foster positive safety cultures within the organizations

It cannot be emphasized too strongly that the prevention of accidents and elimination of H&S hazards are a prime responsibility of management and managers in order to minimize suffering and loss. Dessler (2003) echoes Armstrong sentiments when he says this ‘telling supervisors to watch for spills and telling employees to work safely

is futile if everyone in the firm believes management isn't serious about safety. Safety starts with top management commitment. Mondy(2008) ; Rao,(2005) emphasizes that although every individual in a firm should be encouraged to come up with solutions to potential safety problems, the firm's manager must take the lead. Management's unique role is clear since OSHA places primary Responsibility for employee safety on the employer.

2.3.3 Training and Implementation of Occupational Safety and Health Programmes.

According to National safety council (1995) training is an important component of any OHS management programme. There is evidence to suggest that effective training is a feature of companies with exemplary OHS performance Cohen (1997) and that training is an aspect of a positive safety culture (Zohar, 1980). Cooper and Cotton (2000) suggest that the provision of training is not only fundamental to satisfying employees' basic rights to be protected from workplace hazards but is also a statutory requirement in many jurisdictions. Managers, supervisory staff and workers all need to be trained. Training in occupational safety and health should not be treated in isolation; it should feature as an integral part of job training and be incorporated into daily work procedures on the shop floor (Alli, 2008). Supervisors should also act as role models for promoting safety awareness and supporting safe behavior (Mattila, Hyttinen & Rantanen, 1994).

The provision of OSH training to employees constitutes an additional strong preventative action that is associated with reduced workplace injuries and disease. In a wide-ranging literature review of published reports drawn from the period 1980 to 1996, Cohen and Colligan (1998) find overwhelming evidence to show the merits of training in increasing worker knowledge of job hazards, and in effecting safer work practices and other positive actions in a wide array of worksites. Cohen (1997); Chew (1988) recommends training practices emphasizing early indoctrination and follow-up instruction in job safety procedures.

Wayne (1995), Mamoria and Gankar (2008) observed that unsafe acts may be as a result of lack of knowledge and skill on the part of employee. ILO (1991) explains that unskilled workers in developing countries who have neither vocational training nor previous industrial experience, coupled with ignorance and illiteracy, are predisposed to a high risk of accidents or occupational diseases. To them accidents are matters of fate or an inevitable part of the game. Many studies have also been made to determine why people behave unsafely. Some of the reasons are that workers have not been given specific instructions in the operation or they misunderstood the instructions, did not listen to the instructions, considered the instructions either unimportant or unnecessary and disregarded the instructions. To prevent such occurrence it is essential that safety training work be conducted efficiently and a follow up made to determine that the training achieved its purpose (National Safety Council, 1995).

Safety training need to be carried out in the three settings: at induction, on the job and refresher courses using a variety of different training techniques such as lectures, discussions, films, role playing and slides, posters, safety awareness and campaigns and communications (Derek & Laura,1998). Training and orientation of new employees emphasizing safety is especially important as the early months of employment are often critical because work injuries decrease with the length of service (Mondy, 2008). Training should also be a continuous process as changes in technology may give rise to new hazards and thus need for refresher training (National safety council ,1995).

Shannon et al. (1996); Shannon et al. (1997); Mearns, Whitaker and Flin (2003); Zohar, (2002) relates safety training of workers to better OSH performance across enterprises. Part of the employer's social responsibilities toward employees, of necessity, should encompass industrial workers being given opportunities to participate in periodic workshops, seminars and lectures to sharpen their awareness on safety precautions (Ayodele & Olubayo-Fatiregun, 2010). Having recognized the

beneficial role of health and safety at work, Eklof (2008) opined that “like it or not, organizations have a duty to provide health and safety training”.

As O’Dea and Flin (2001); Havlovic and McShane (2000) have demonstrated, employees have little knowledge of hazards, safety rules and proper personal protective behavior. Employees require knowledge and experience to cope with hazards. There is need to establish signs, warnings, introducing personal counseling, training and qualification effort (Bentley & Haslam, 2001). In many cases (16.1%), perception of hazards is supported by signs and warnings; however people rely on knowledge, training and work experience. It is without doubt mandatory to improve the indication of hazards and risk by warning signs and labels but the use of labels and warnings to combat potential hazards, however, is a controversial procedure for managing risks. Too often they are seen as a way for manufacturers to avoid responsibility for unreasonably risky products; obviously, labels and warning signs will be successful only if the information they contain is read and understood by members of the intended group of people (Komaki, Barwick & Scott, 1998).

A common method (or reflexive action) to encourage safe work-related behavior is for organizations to create or purchase an education and/or training program (Clarke & Ward, 2006). Training compliments education by providing employees opportunities to apply the knowledge provided by the education. Thus, the purpose of an education/ training procedure is to provide an environment for the acquisition of attitudes, knowledge or skills, so that newly acquired behaviors may be transferred to the job setting. A successful education/training program can impact workers’ safety by giving them the tools and knowledge to use when faced with a novel emergency on or off the job. According to Vojtecky and Schmitz (2006) although widespread, education/training programs are rarely systematically evaluated in any type of industrial application, if education and training methodologies are combined, implemented in good faith Viscusi (1986) and evaluated systematically to assess the transfer of knowledge they have a great potential to make a difference in the safety and health of many employee (Mukherjee, Overman, Leviton & Hilyer, 2000; McQuiston, 2000).

Although employers never provide prospective employees the average annual death risk or chance of acquiring an injury, when workers begin a job they have some general idea of the risks they face. However, once they gain experience on the job, their risk perception change (Weinstein, 1980). A major challenge exists to build the necessary capacity, not only for regulators, supervisory and advisory institutions but also for employers and workers (Laukkanen 1999). ROSPER (2005) posits that in many cases the average member of Management, while trained in his own skills and techniques, is without specialized knowledge in the field of safety, apart from what practical experience may have taught him even though his primary tasks is to provide safety training for company employees.

2.3.4 Legal Framework and Implementation of Occupational Safety and Health Programmes.

ILO (2006) requires each ratifying member country to formulate, implement and periodically review a coherent national policy to prevent accidents and injury to the workers' health by minimizing workplace hazards. Similarly, it requires governments to take some actions at the national level and others at enterprise level. At the national level, states have to take necessary measures to provide guidance to workers and employer and maintain an adequate and appropriate system of inspection to make sure that different labor regulations, especially those related to workplace safety, are complied with. Hence the most effective interventions for improving occupational safety and health appear to be implementation of top-down governmental regulations.

As Heinrich, et al. (1980) point out, legislation is one process by which government affects safety. For example Singapore, which has one of the lowest workplace accident rates is subjected to strict enforcement of safety standard, training of workers and safe work practice through its employment and the factories Acts that aim to protect the safety and health of employees. According to Bernardin, John and Russel (1993); Wayne (1995) OSH authorities should conduct work place inspections through DOHSS officers who are chosen for their knowledge and

experience in the OSH field and are trained in recognition of safety and health hazards. One of the many factors behind workplace accidents is that labour inspection systems in developing countries are not fully equipped with required manpower and not allowed to perform their task objectively and independently (McGarity & Shapiro ,1996). For example Federation of Kenyan Employers, annual report (2008) indicates that in the year 2007/2008 occupational safety and health officers visited, inspected and examined only 2,694 work places.

According to Cliff (2012); Viscusi (1986); Gray and Scholz (1993) OHS regulation could be characterized as being uniformly prescriptive, with an emphasis on detailed and highly technical specifications and standards, and with compliance to rules enforced by government-funded independent inspectorates with broad inspection powers. Cliff sees such rigid approaches as having a number of weaknesses such as abstract and challenging rules, reduction in organizational innovativeness as the compliance approach focused on minimum standards rather than excellence and little involvement of other stakeholders such as workers and unions. As opinionated by Mendeloff (1988), administrative regulation does not increase workplace safety because the cause of most accidents is a complex interaction of labor, equipment and workplace environment. In light of this mismatch, Barcow (1980) predicts that OSHA may be incapable of preventing more than 25 percent of all workplace accidents. Moreover, Rea (1981) hypothesizes that moral hazard may reduce the level of safety because workers will attempt to substitute wages for safer jobs.

Bartel and Thomas (1985) ask why the government has failed to reform, or even eliminate, OSHA in light of its apparent inefficacy. Mendeloff (1988), warned against the tendency to rely too much on government regulations and not enough on voluntary efforts and individual responsibility. The first step taken to improve this situation according to Robens committee on Safety and Health at Work-London is to reduce the burden of legislation which should not preoccupy itself too much with circumstantial details but rather aim to shape attitudes and create the infrastructure for a better organization of occupational safety and health by industries own efforts.

Mendeloff (1988) attempts to explain OSHA's limited impact on OSH. He identifies OSHA's mandate as the cause because it requires the strict regulation of H&S rules. Mendeloff argues that strict regulation of OSHA causes less protection of workers because employers vigorously resist overregulation. As a result, OSHA spends inordinate time and resources defending strict standard (Bartel & Thomas, 1985). Mendeloff proposes that OSHA could successfully promulgate more standards if it balanced costs and benefits. OSHA would be more successful because industry would be less likely to challenge more lenient regulations in court and if such regulations were challenged, OSHA would be more likely to prevail (Miller, 1984). In this manner, workers ultimately would receive more protection from a more lenient approach because the sum total of protection for workers would be greater (Shapiro & McGarity, 1991, 1993).

According to Maina (2006) and Kitumbo (2006) there have been complaints that the undertakings introduced by the Occupational Safety and Health Act have been loaded upon employers and as such there is need for collaboration between the employers and the government to come to a favorable compromise. The argument is that the compulsory annual safety and health audits, risk assessments and the requirement for a health and safety statement by all employers will drive out the small investors who will not be able to comply for lack of capacity as the Act requires.

2.3.5 Employee Participation and Implementation of Occupational Safety and Health Programmes.

As indicated by Cohen (1997); Shannon, et al. (1997) some of the factors associated with high safety performance are: close contact and interaction between workers, supervisors, and management enabling open communications on safety as on other job matters. According to Mearns, et al. (2003), a genuine and consistent management commitment to safety prioritize involvement of employees, including empowerment, delegation of responsibility for safety and encouraging commitment to the organization. Most of the safety and health related hazards in industry can be

eliminated, reduced or minimized if people have to perceive, detect and control hazards and dangers if confronted with them at work (Saari, 1996, 1988). Factors related to better OSH performance across enterprises include: the delegation of safety activities; the inclusion of workers in decision-making; the presence of Joint Health and Safety Committees (JHSCs) (Shannon et al., 1996; Shannon et al., 1997; Mearns et al., 2003; Zohar, 2002; O’Dea & Flin, 2001; Havlovic & McShane, 2000).

One way to strengthen a safety program is to include employee input, which provides workers with a sense of accomplishment; this includes setting safety standards which should form part of organization’s performance management (Zohar, 2002). This view is supported by Dejoy (1995) as well as Lin and Mills (2001) with the former stressing on a two way communication between employees and managers to facilitate the effective implementation of OSH.

According to Dessler (2003); Cole (2004); Sagimo (2002); Mondy (2008) employees are responsible for complying with all applicable OSHA standards, following all employer safety and health(S&H) rules and regulations, and for reporting hazardous conditions to the supervisor. They also have a right to demand safety and health on the job without fear of punishment. The OSHA forbids employers from punishing or discriminating against workers who complain to Directorate of occupational safety and health services (DOSHS) about job safety and health hazards. In the opinion of Akpan (2009) employee’s participation in decision making fosters corporate citizenship (belongingness), cordial management–employees relations, accountability among employees and high level of commitment to goal attainment. National safety council (1995) workers should know that the company wants to protect them against injury and they should know what they can do for their own protection (Taylor, 1991). Researchers have shown that accidents at workplace can be reduced if employees and employer are more sensitive or have good safety behavior (Christian, Bradle, Wallace, Burke, 2009).

Mamoria and Gankar (2008) observed that unsafe acts may be as a result of lack of knowledge and skill on the part of employee, certain bodily defects and attitudes. These acts include operating without authority, failing to secure equipment or warning other employees of possible danger, failure to use personal protective equipments, operating at unsafe speeds and using unsafe procedures (Hacket, 1999). The first approach in a safety program is to create a psychological environment and employee attitudes that promote safety and creating a climate where the safe way of doing things is the right and the only way of doing things (Horswill & McKenna, 1999; DeJoy, 1994; Hacket, 1999). Supervisors therefore should, according to the national safety council (1995) constantly strive to develop good attitudes in their staff; the attitudes of people towards safety matters can be enhanced through safety clubs, use of safety booklets and bulletins, safety weeks announced in advance during which particular attention may be given to safety matters(ROSPER ,2005).

Forming employee's committees is one of the best ways to create and maintain interest and get employees involved in making a personal contribution to the overall safety programme (ROSPA, 2005). The formation of a safety committee is regarded as an essential element of joint consultation between manager and work people on safety matters. According to Rao (2005) the committee should consist of representatives from workers and supervisors from various departments and levels. The function of such a committee is to keep under review the measures taken to ensure health and safety at the work place. Pratt and Bernett (1985) indicates that the Act provides for the appointment of employee safety representatives. Employers have a duty to consult with representatives for the purpose of making arrangements for promoting and developing health and safety measures (Derek & Laura ,1998).

Employees need also to be involved in designing safety equipments otherwise the employee would have to endure while operating hazardous equipment (Hale & Glendon, 1987, p. 2). With an estimated 88% of all industrial accidents being attributed to the at-risk behavior of the employee, Heinrich, (1931) as quoted in Erick

2009), interaction between the human, machine, and their work environment (ergonomics) is to be of the greatest importance in causing and preventing injury.

2.3.6 Organizational Structure and Implementation of Occupational Safety and Programmes.

The structure of the organization was viewed in terms of existence of an OSH officer position and the size of the industry. A report by world bank (2004) categorized large manufacturing firms in Kenya as those employing more than one hundred employees, medium sized industries as those employing 50-100 employees and small enterprises as those employing 10-50 employees. For the purpose of this study the same categorization was adopted.

Though there is no legislation that specifies the need for a safety advisor it is found necessary to appoint a person to specialize in this area of work (Shannon et al., 1996; Foot & Hook, 2008). There is need for either full or part-time officer to discharge or spearhead the safety programme. The position should occupy a reasonable position in the management hierarchy and if the position is without status, then the management is giving a clear indication of the importance it places on it (Pratt & Bernett ,1985)

It should also be stressed that many managerial and operational factors contributing to better OSH performance are affected by the size of the enterprise. Micheli and Cagno, (2010) examined the relevance of different OSH factors among micro, small, and medium-sized enterprises. They showed that the management of medium sized enterprises typically has greater commitment and invests more resources in OSH issues. As indicated by Rantanen, Jorma, Warshaw and Leon (2011) the coverage of workers in small-scale enterprises (SSEs) is perhaps the most daunting challenge to systems for delivering occupational health services.

In most countries, SSEs comprise the vast majority of the business and industrial undertakings, reaching as high as 90% in some of the developing and newly

industrialized countries and they are found in every sector of the economy. They employ on average nearly 40% of the workforce in the industrialized countries add up to 60% of the workforce in developing and newly industrialized countries. Although their workers are exposed to perhaps an even greater range of hazards than their counterparts in large enterprises they usually have little of any access to modern occupational health and safety services (Reverente, 1992).

Bartel and Thomas (1985) observe that OSHA regulations may give large firms a competitive advantage over their smaller rivals because the smaller firms are less able to afford expensive regulations. They hypothesize that larger firm's support OSHA because the gains from this competitive advantage exceed the costs of complying with OSHA regulations. Fuess and Loewenstern (1990) have similar evidence for coal mine regulation. They state that the imposition of expensive engineering controls shifted production to large mines by driving smaller, less safe mines out of business. Hughes, Magat and Ricks (1986), however, were unable to establish that OSHA's cotton dust standards permitted large firms to gain in profitability at the expense of smaller producers.

2.4 Empirical Framework

While the need for a systematic approach to health and safety management has been promoted, empirical studies have been few and critical evaluation of health and safety management systems has been limited. Past studies on occupational safety and health (OSH) touch on various issues and topics that are related to not only employee well-being and welfare but also to OSH management systems, employee involvement safety audits, emerging problems in OSH, effects of OSH on performance and the effect of legislation on OSH.

A study on development of occupational wellbeing in the Finnish European Network of Health Promoting schools was carried out by Terhi, Kerttu, Hannele and Paula (2006). The study aimed to improve school community staff's occupational wellbeing by means of activities that maintain their ability to work in co-operation

with occupational health nurses. The project design was practice-based and participatory which means that the project was carried out in co-operation between the researcher and the participants. The study found that the most problematic factors of occupational wellbeing were the urgency and pace of work at school and the problems in working space, postures and equipment. In addition, the activities supporting resources, including stress control, exercise, and relaxation and mentoring, were inadequate at work. The study recommended that school communities must consider which areas of development and action are important to prevent staff burnout under the pressure of continuous development and occupational health care units should provide better information about their services and develop their competence according to the content model of occupational wellbeing in school communities.

Few studies identifying the influential factors on the implementation of OHSM in the mining industry are available. Such studies on managing occupational health and safety in construction sites include a study in the mining industry in Asia by Chen and Zorigt (2013) and a study by Nayanthara and Wimalaratne (2012) on OSH management framework for workers at construction sites in Sri Lanka. The studies noted that the mining industry is a high health risk occupation and thus the need to implement OHSM to achieve business goals. Both studies carried a comprehensive literature and research survey among the safety and health (S&H) experts to identify the occupational safety and health (OSH) management strategies that could be implemented in the construction sites. Chen and Zorigt (2013) identified five influential factors on the implementation of OHSM in the mining industry; these factors were Act and regulation, stakeholder pressure, investment from the government, integrated OHSM and organizational culture. In addition, lack of adequate investment from the government was reported by the majority of the OHS specialists.

On the other hand Nayanthara and Wimalaratne (2012) established further ten OSH management mechanisms to be implemented in the Sri Lankan construction industry

to inculcate a “safe and healthy” working environment for its workers; these mechanisms included safety supervision, site environment, controlling the workers’ safe and healthy behavior, centralized OSH management unit, resources and insurance policies, management commitment, supportive devices, OSH documentation, OSH education and awareness, and OSH committee. Success of these mechanisms in the local industry was analyzed and was subsequently used to develop the OSH management framework to be implemented in Sri Lankan construction sites.

Other studies on the implementation of OSH include studies conducted in Saudi Arabia and Taiwan by Al-Darrab, Gulzar and Ali (2013); Chen, Chun-Yu; Wu, Gwo-Sheng; Chuang, Kai-Jen; Ma, Chih-Ming (2009); Al-Darrab, Gulzar and Ali (2013); analyzed the status of implementation of OSH management systems in a nationwide survey covering 314 Saudi Arabian industries. Results revealed that though OSHS systems plentifully existed in Saudi Arabian industries their implementation was generally unproductive and the concept of integration of the systems to the regular management of organizations had not gained much acceptance. The authors suggested state-driven awareness campaigns organized on a massive scale to popularize the concept of OSH management systems and their integration day to day management systems of the organizations.

Chen, Chun-Yu et al. (2009) also looked into the factors affecting the implementation of occupational health and safety management systems in the printed circuit board industry in Taiwan. This was driven by the fact that these industries had been certified as compliant to the guidelines on OHSMS of the Occupational Health and Safety Assessment Series (OHSAS) 18001. The results of the survey indicated that the implementation of OHSAS 18001 in the PCB industries was motivated externally by customer requirement, and internally by corporate image and top management commitment. The most critical factor for the success of OHSAS implementation was top management’s commitment and support while the main reason of its failure was poor collaboration among company personnel.

Nadine and Jennifer (2013) also identified key enablers and challenges in the implementation of a comprehensive approach to the management of employee well-being using case study of a large organization. Key enablers identified were strong senior leadership support, dedicated resources, involvement of stakeholders and intensive communication. Challenges revolved around the integration of OSH management systems into a coherent whole, striking a balance between a focus on occupational risks and lifestyle risks; readiness of managers to bring attention to the concept of employees' well-being and their ability to monitor employees' health related needs. Together with a target-driven work culture, these challenges worked against promoting workers' health and safety well-being.

Another study on occupational health and safety management in the Norwegian oil and gas industry was carried by Jan, H., Terje, Jan and Bodil (2008). They found that lack of cooperation between employer and employees posed a problem to safety management of oil and gas industry. They suggested that good understanding among both parties was very crucial in planning and making good decision on occupational safety and health management. Therefore, collective responsibility is necessary to ensure the successful implementation of safety program that has been promoted.

Studies on employee involvement include a study by Colin (1999); David and Walters (1998); Dillard (1998). Colin (1999) did a case study of a division of an UK international oil company to establish employee-management consensus approach to continuous improvement in safety management. It looked at issues affecting the success of employee involvement schemes and the methods used during the implementation stages of the programme to address them. Collins reported an employee-management consensus approach for identifying safety initiatives that were both appropriate to the working environment and also perceived to be appropriate by the workforce. The research found that in some industries, management's attention was often distracted from safety by other issues competing for their time, e.g. production, costs, efficiency, quality and the environment.

On the other hand, the workforce's awareness and understanding of safety issues was often more focused as they dealt with and suffered from the consequences of operational risks on a daily basis. This case study demonstrated how the implementation of a consensus programme between management and employees could provide a logical and productive approach for the assessment of safety and the identification of potential improvement strategies. The study also demonstrated the benefits of taking account of and addressing the issues that can affect the successful implementation of employee involvement initiatives.

David and Walters (1998) focused on employee representation and health and safety performance in small enterprises. The variables of the study included the support of the trade unions, the support of the employers and the role of regulation. It concluded that in their present form the trade unions, the employer and the law offer only very limited support for employee representation in health and safety in small enterprises. The study finally argued that regional health and safety representatives offer a potentially cost effective contribution to employee representation improvement and support from legislation; collective agreements between employers and the trade unions at national and industry level; Support from employers locally; co-operation of the regulatory authorities (the labour inspectorate); and support from the trade unions particularly with regard to resource, training and provision of information were all important in determining the effectiveness of regional health and safety representatives.

Finally Dillard (1998) did a study on employee involvement: An effective strategy for reducing workers' compensation costs The study examined the practice by US apparel companies of involving employees on safety teams or committees as a strategy for reducing workers' compensation costs. Data were generated from responses to a mailed questionnaire by 134 upper level managers in apparel companies located throughout the USA. Results indicated that 60 per cent of the respondents involved employees on a safety team or committee. Employee involvement was reported as a component of ergonomics and safety programmes by

over two-thirds of the companies that were developing and implementing such programmes. The findings from this study provided support for involving employees on safety teams or committees as a cost reduction strategy.

Occupational safety and health audit studies have also been conducted notably by Aliyu and Saidu (2011); Ariffin, e tal. (2010). In their study Aliyu and Saidu looked into the pattern of occupational hazards and provisions of occupational health and safety among workers of Kaduna refinery and petrochemical company ltd (KRPC) in Kaduna, Nigeria. The study showed that the workers were exposed to a wide variety of hazards which could cause various forms of disabilities, loss of man-power leading to decreased productivity and in severe cases lead to death. Although workers were aware of safety measures and majority had a formal training on occupational safety there still existed knowledge-practice gap in the use of protective devices as only 78% of respondents admitted to regular use. They recommended that management should, look at health and safety performance of their company just as they consider performance in terms of productivity and profit and most importantly provide H&S training as well as urge employees to utilize regularly the protective devices provided.

On the other hand Ariffin e tal. (2010) in their study attempted to identify the safety and health level at several places in Kebangsaan Ungku Omar (KUO) university college in Malaysia. In general, the average safety score measured at three different areas in KUO was 77.6% which is placed as a first category of the modified safety indicator. However, among the three areas, the general administrative office was the only area recorded as a very safe area. They concluded that based on the modified safety indicators, the occupational safety and health level in KUO was lacking and university authority could use the study as a guideline to improve certain infrastructures of the college to a required level of a very safe category. Similarly, students and employees should play a proactive role by particularly notifying college management of risk prone areas. Auty (1999) and Heron (1999) also used audit assessment in their studies to observe and to evaluate hazard risk in organization and

found that a good management will improve the effectiveness of accident and injury prevention at workplace. This implies indirectly impact of moral and also commitment among employee and employer.

A study related to effect of OSH on performance of firms was carried in Kenya by Makori, et al. (2012). They attempted to find out the Influence of occupational health and safety programmes on performance of manufacturing firms in Western Province of Kenya. The study findings showed a moderate positive relationship between occupational health and safety programmes (OHSP) and organizational performance of the manufacturing firms. This was an indication that OHSP were not efficient in the studied firms, thus, affecting organizational performance of these firms in terms of sales, profitability, production, order delivery, reputation, target achievement, product quality and production costs. The researchers recommended that Management of firms must put in place policies and structures for improving occupational health and safety. For instance they should put in place active health and safety committees which should be given mandate to implement their recommendations and also ensure that everyone in the organization adhere to laid down policies, rules and safety precautions to reduce accidents.

A study on Promotion of the health of construction workers in the Sydney region of the Australian construction industry was also carried by (Thomas & Jan,1998).The research attempted to ascertain the attitudes of the management and site personnel of general contractors and subcontractors on the issue of health promotion in the workplace. The main focus was on fitness and nutrition programmes, and the existence of a relationship between the health of employees and their productivity. The attitudes of the respondents toward health promotion in the workplace were found to be highly positive, and supportive of the development and implementation of health promotion programmes. In the opinion of the respondents, job performance and productivity may be increased through health promotion programmes in the workplace.

A research on Emerging issues in occupational and environmental health was carried by Kazutaka (1997). It aimed to shed light on emerging problems in occupational and environmental health in the Asia-Pacific region. The emerging issues in occupational health in the countries surveyed were related to both the technological progress occurring to a varied degree and the way existing occupational health programmes were organized in each local situation. The study found emerging problems in occupational and environmental health in the Asia-Pacific region which included the changing employment structure such as increased participation of women and ageing workers, hazards from new kinds of carcinogens and organic chemicals, reproductive hazards, AIDS, technology-related stress at work, and environmental problems resulting from industrial operations. The study recommended that realistic solutions and action-oriented management procedures are sought. For example, identification of acute and long term risks of workers exposed to complex environmental hazards and work stresses, close teamwork of occupational health service personnel with management and workers and establishment of risk assessment methods linked with the implementation of practical risk reduction measures.

Lastly, Igor, Lorraine and Cameron (2010) did a study on obtaining compliance with occupational health and safety regulations. The study aimed to establish whether autonomous inspectors are more effective in obtaining compliance to safety rules than controlling inspectors. The study confirmed the researchers' prediction that autonomy supportive inspectors would achieve compliance with OHS laws more effectively than coercive inspectors. This study suggested that educational interventions designed to enhance inspectors' skills in adopting autonomy supportive interpersonal styles in their interactions with worksite representatives (e.g. acknowledging their perspectives, providing feedback to them in a non-controlling way, offering choice, and encouraging self-initiation rather than pressuring them to conform to OHS regulations could enhance effectiveness of occupational health and safety inspections.

In the view of the reviewed literature the current proposed study incorporated the major features of the past studies. For example it embraced in its variables management support and commitment, employees' involvement, OSH education and awareness, legislation, as some of the influential factors in the management of OSH. The current study therefore used an integrated approach of dealing with the occupational health and safety issue in the manufacturing industries in Kenya.

2.5 Critique of the Review

As interest in health and safety management systems has grown over the past decade, questions have been explored and concerns aired in the health and safety community, among employer, union and government representatives, and health and safety specialists and others at enterprise level. Though Health and safety management systems (OSHMSs) have been the topic of much discussion and debate empirical research studies on the efficacy of health and safety management systems and alternative systems have been few; there is lack of systematic reviews on their effects on worker health and safety and associated socioeconomic and health-related outcomes. The studies in OHSMS also reveal inconsistent results with some researchers claiming that good OSH management systems improve safety while others contrast and say that it is only industries with long serving history are able to improve OSH status by use of OHSMS (Gray & Scholz 1993).

Several studies have also focused on government legislation in relation to OSH. In many jurisdictions around the world, workplace inspections are used to facilitate adherence to occupational health and safety (OHS) regulations. Compliance orders issued to worksites as a result of OHS inspections are designed to reduce or eliminate risks of occupational injuries and exposure to health hazards. Research shows that greater frequency and severity of penalties issued as a result of non-compliance to health and safety regulations are associated with reduced risk of employee injuries at large manufacturing plants. A similar Canadian study, Lanoie (1992) reported that a 1% increase in occupational health, and safety inspection rates was associated with a 0.2–0.3% decrease in frequency of individual workplace injuries. However this is

contrary to some studies which predict that autonomy supportive inspectors would achieve compliance with OHS laws than forceful and controlling inspectors.

A lot of research has also been done in the construction industry focusing on reducing the safety risks, rather than increasing the safety effort. The construction safety literature has paid little attention to worker errors and effective ways to manage errors in the workplace (Auld et al. 2001). Other several studies have looked at the effect of OSH programmers on the productivity of firms and have found that job performance may be increased through health promotion programmes in the work place but (Zohar 2000) argues that they have failed to go into the details of interventions required to improve OSH.

Audit assessment studies have also been the focus of several researchers. However such studies have only attempted to identify the major risk factors which the researchers have recommended as a guide to management and improvement of safe work environment failing to give elaborative strategies that can be employed by management to handle the risk areas. As well put by Gambatese (2000), Just telling managers ‘these are the high priority risk areas’ and not telling them how to handle them is not enough.

Other studies have also dwelled on a single variable such as training, employee participation or management commitment to show how such one variable can be used as an intervening strategy in curbing H&S menace. By researching on a single variable the researchers fails to give an all embracing approach towards confronting OSH problem. This current proposed study intends to be all inclusive by looking at the role of workers, employers and the government in ensuring a safe and healthy workplace.

2.6 Research Gap

Although there have been numerous studies in the field of worksite health and safety promotion all over the world researchers have focused on addressing one

fundamental research question ;how accidents and unsafe behavior can be prevented. Some studies have attempted to identify critical risk factors and emerging issues in OSH area, and demonstrated how to improve intervention effectiveness, increase particular safety-related behaviors like using hearing protection, how organizational factors lead to occupational injuries, and how various predictive variables can prevent injuries. Other studies have concentrated on the construction industry and the medical world and the few studies in manufacturing industries have looked into the relationship between OSH practices and organizational performance or effects of a single variable such as training, employees' participation and other variables on occupational health safety.

In addition only a few studies in OSH have been carried in Kenya and these studies are inclined more towards effects of OSH on performance of firms. Most of these studies are also either case studies of certain firms or regions. This proposed study is unique in that it will adopt an integrative approach that will capture not only all the manufacturing industries in Kenya but also the core tripartite factors in successful implementation of OSH programmes, that is, management through their support, employees through training and involvement and the government through legislation. It is therefore a more comprehensive and integrative study that has not been the focus of researchers.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides a description of the research method. It starts with a research philosophy that underpinned the study followed by research design, population of the study, sampling design, instruments for data collection, pilot testing and finally explains how data will be analyzed in order to achieve the results of the study.

3.1.1 Research Philosophy

Research philosophy relates to foundation of knowledge upon which important assumptions and predispositions of a study or research are based. It is a belief about the way in which data about a phenomenon should be gathered, analyzed and used (Denzin & Lincoln, 2003). In social sciences, there are two main research philosophies, namely; the positivism (scientific) and phenomenology (interpretivism) which may also be viewed in terms of two perspectives, namely; quantitative and qualitative approaches (Coopers & Schindler, 2004).

The positivist position is characterized by the testing of propositions developed from existing theory, with empirical verification then sought (hence deductive or theory testing) through measurement of observable social realities (Babbie, 2005). This position presumes that knowledge is valid only if it is based on observations of external reality and that universal laws or theoretical models can be developed that are generalisable and which can explain cause and effect relationships. According to Travers (2001) positivism focus purely on facts, gathered through direct observation of people behaviour and experience and measured empirically using quantitative methods (Blaikie, 1993; Saunders, Lewis and Thornhill, 2007; Eriksson and Kovalainen, 2008; Easterby-Smith, Thorpe and Jackson, 2008; Hatch and Cunliffe, 2006). Such quantitative methods include, surveys and experiments as well as statistical analysis.

Phenomenology paradigm, on the other hand, argues that understanding of the social world is possible from the point of view of the people we are studying. Under this paradigm, participants are allowed to provide an account of their world in their own words (Weinstein et al., 2009; Denzin & Lincoln, 2003). The researchers' role is to work with others in order to understand their points of view, and to interpret these experiences in the context of the researchers' academic experience. Hatch and Cunliffe (2006), and hence is inductive or theory building. This paradigm is thus highly contextual and hence is not widely generalisable. Saunders, Lewis and Thornhill (2007) and also given its subjective and the emphasis on language, it is associated with qualitative approaches to data gathering (Eriksson & Kovalainen, 2008; Weinstein et al. (2009).

The current study adopted a positivistic approach in the use of quantitative tools and techniques that emphasize measuring and counting, use of questionnaires and establishing possible relationships that existed among the identified variables. It was also a cross-sectional study which emphasized reliability and generalisability.

3.2 Research Design

Research design according to Wiersma (1986); Gary (2009); Cooper and Schindler (2006); Jill and Roger (2009) is a plan for collection, measurement, analysis and utilizing data so that desired and valid information can be obtained with sufficient precision. There are different types of designs which include: exploratory design that focus on discovery of ideas and insights Kothari (1990, 2004); descriptive design which aims at describing characteristics of variables of a research phenomena; case study where the researcher observes the characteristics of an individual unit; experimental research which involves control by manipulation of values of variables where effects have to be measured; longitudinal studies which study phenomena at several points in time (Mbwesa, 2006; Mugenda & Mugenda, 2003; Silverman, 2006).

This study adopted cross-sectional survey design, a type of descriptive design that enables collection of data by observing a relatively large number of cases quickly and at a particular point in time (Brandy & Johnston, 2008). The design was useful in offering an explanation on how the independent and moderating variables affected dependent variable across manufacturing industries in Kenya and taking quantitative measures that helped in making inferences about possible relationships that existed between independent and dependent variables (Miles & Huberman, 1994; Babbie, 2007; Wisker, 2001; Osman, 1984; Mugenda & Mugenda, 1999; Kothari, 1990).

3.3 Population

A population is a complete set of individuals, group of people, cases or objects with some common observable characteristics from which we draw conclusions (Orotho, 2004; Babbie, 2007; Mugenda 2008). It is recommended that the researcher should identify and define the target population, sample population and the unit of observation (Mugenda & Mugenda, 2003; Nassiuma, 2000). The unit of observation refers to independent collections of elements from the population that covers the entire population (Nassiuma, 2000).

The target population in this study was the manufacturing industries in Kenya and the unit of analysis were the individual factories while the unit of observation which Dan and Nassiuma (2000) defines as independent elements in a population was the occupational health and safety designate, that is, the officer in charge of OSH. According to Kenya Association of manufacturers (2013) there were 735 registered industries in Kenya. Since it was difficult to study the total population due to its large size, limitation of time and resources the study population consisted of an appropriately selected sample of industries as explained in the sampling design.

3.4 Sample and Sampling Technique

According to Orotho (2004) sampling design is a way or definite plan of selecting a sample from the target population. A sample is as subgroup or subject of the population Sekaran (2003). Due to the limitation of time and resources a few items

(sample) from the targeted population were selected for the study (Mugenda, 2008, Orodho, 2004). The assumption in studying a sample was that the characteristics of the sample would adequately reflect the characteristics of the population in question and it would be possible to obtain sufficiently accurate results that would be generalized to the population of interest (Kothari, 2004; Mugenda & Mugenda, 2003). To ensure this, the sampling design was appropriately chosen (Sekaran, 2003; Gary, 2009; Mugenda, 2008).

Orotho (2004) also recommends identification of the sampling frame before the actual selection of the sample; a sampling frame is a list containing the names of all items of the universe under study (Kothari 2004). For this study the sampling frame was a list of all manufacturing industries in Kenya drawn from Kenya Association of manufacturers' Directorate (2013).

An approximate sample size was derived from Yamane formula for calculating sample size (Israel, 1992).

The formula is $n = N / 1 + N(e)^2$

Where n = sample size, N = population size e = error term

N = 735, e = .05 hence,

$$\begin{aligned} n &= 735 / 1 + 735(.05)^2 \\ &= 259 \end{aligned}$$

Yamane's formula yielded a sample size of 259 firms at 95 percent level of certainty which translated to 35.2 percent of the total population. The sample size was sufficient since it surpassed the 20% of small population (n < 1000) of the target population suggested by (Gay, 2005).

Since the population of interest was homogenous, random sampling procedure was used to select the sample. The selection of the manufacturing industries from the sampling frame was based on simple random sampling. The table of random numbers was used to select 259 industries after blindly assigning each industry in the sampling frame a unique number. All the industries that were assigned between 1 to

259 were selected for the study. According to Mugenda and Mugenda (2003) simple random sampling ensure that every member stand an equal chance of being selected and this allowed generalization of results and use of inferential statistics.

3.5 Data Collection Method

The researcher collected relevant information from both primary and secondary data. Primary data is raw data collected directly from the field. Secondary information consists of sources of data and other information collected by others and archived in some form (Stewart & Kamins, 1993; Mugenda & Mugenda, 2003). Secondary data offers relatively quick and inexpensive answers to many questions, provides a useful starting point for additional search and is always a useful comparative tool as new data may be compared to existing data for purposes of examining differences or trends. Several methods are available for collecting primary data. They include questionnaires, interviews, focus groups and observations (Senkaran, 2003; Wisker, 2001).

For this study primary data was collected by use of self administered semi-structured questionnaires which were also capable of administration by the interviewer. As observed by Saunders, Lewis and Thorn Hill (2003) interviewer administered questionnaires have a higher response rate than self administered questionnaires. The questionnaires contained both open ended and closed ended questions as well as likertscales. The open ended questions enabled the researcher to get detailed feelings, motives, opinions and interests towards the subject of the study while the likerts were used to measure the employees' opinions, perception, feelings and attitudes (Kothari, 1990; Mugenda & Mugenda 2003; Pigors and Myers (1981)). Questionnaires were chosen as the basic instrument because they are exhaustive in data capturing and the information is verifiable (Mugenda & Mugenda 2003. There was also limited use of personal unstructured interviews to enable the researcher ask, in case of need, supplementary questions which would add to the knowledge of the study.

3.6 Pilot Study

As indicated by Borg and Gall (1993); Wisker (2001); Mutai (2000); Mugenda and Mugenda (2003), validity and reliability of the research instruments should be established. The purpose of validity and reliability was to find out if research instrument fitted with and measured the issues being researched (Borg & Gall, 1993; Wiersma, 1996; Saunders, Phillip & Thornhill, 2003). Pilot testing which focused on content validity and reliability of the research instrument was thus conducted.

Validity and Reliability

Validity is the degree to which an instrument measures what it purports to measure while reliability is a measure of the degree to which a research instrument would yield the same results or data after repeated trials (Dervillis, 1991; Mugenda, 2008). To ensure content validity a detailed review of the literature was done to ensure all variables were captured and academic peers attested to the content validity of the instrument as recommended by (Senkaran, 2003). Content validity proved that the items in the questionnaire were representative of variables or concepts that it was intended to measure (Senkaran, 2003; Mugenda, 2008; Wisker, 2001). Reliability of the research instrument was established by pilot testing the questionnaires with twenty three industries, randomly drawn from the sample of 259 industries under study and which were not included in the final analysis. This was followed by test-retest reliability where the same instrument was repeated on a second occasion as suggested by (Senkaran, 2003).

The most commonly used reliability coefficient is the Cronbach's Alpha coefficient which estimates internal consistency by determining how all the items on a test relate to all other items and to the total test internal coherence of data. The reliability is expressed as a coefficient between 0 and 1.00. If the formula yields a coefficient which is more than 0.7 then the data collection instrument is taken as reliable but if it is below the instrument is treated as unreliable (Fraenkel & Warren (2000); Sekaran, 2003). The piloted questionnaires were subjected to Cronbach's Alpha coefficient formula to assess the internal consistency of the instrument. The formula is:

$$\alpha_{\text{standardized}} = \frac{K\bar{r}}{(1 + (K - 1)\bar{r})}$$

where K is number of items used to measure the concept

\bar{r} the mean of the $K(K - 1)/2$

The purpose of pilot testing was to ensure consistence of the instrument in attaining the study objectives, the research instrument captured the objectives of the study and measured what was intended. It also familiarized the researcher with research administration procedure (Senkaran, 2003; Mugenda, 2008; Wisker, 2001).

3.7 Data Analysis and Presentation

Data processing and analysis is essential to ensure that all relevant data is gathered for making contemplated comparisons and analysis (Mugenda, 2008). Kothari (2004) and Uwe (2007) define analysis as the computation of certain measures along with searching for patterns of relationships that exist among data groups. Various methods are available to a researcher for analyzing data; such methods include descriptive analysis, correlation analysis and regression analysis.

Descriptive analysis involves finding numerical summaries to provide a deeper insight into the characteristics and description of the variables under study. Correlation analysis involves collecting data to determine whether a relationship exists between two or more quantifiable variables; the degree of correlation is expressed as a Correlation Coefficient. Regression analysis involves measuring the linear association between a dependent and an independent variable. It assumes the dependent variable Y is predicatively linked to the independent variable X ; regression analysis therefore attempts to predict the values of a continuous interval or scaled dependent variable from the specific values of the independent variable (Mbwesa, 2006; Mugenda & Mugenda, 1999).

Since the current study intended to generate both qualitative and quantitative data there was need to use statistical measures. Qualitative data was discussed under various themes while statistical package for social sciences (SPSS) software version 21 assisted in running the statistical tests. SPSS was chosen because as indicated by Castillo (2009) it is user friendly and gives all the possible analysis. Foremost, uniform categories of responses were identified and entered into appropriate categories in a SPSS computer variable data sheet for both descriptive and quantitative analysis. Thereafter data cleaning was done to enable analysis.

Descriptive analysis generated measures of central tendency such as frequencies, percentages and means which were interpreted appropriately. Various diagnostic tests were conducted to clear the data for further analysis. These tests included sampling adequacy test to determine adequacy of the sample size for factor analysis, Bartlett's test to examine if correlation matrix was an identity matrix, autocorrelation tests to find out if there was correlation between the residue terms for any two observations, outliers test to identify if there was any observation far placed from the other observations and normality tests to determine if data was normally distributed. After conducting diagnostic tests, factor analysis was done to identify factors which may not be instrumental to the study constructs.

Correlation analysis was conducted to establish the strength and the direction of the relationship and association between independent variables, that is, management support, employee training, legal framework, employee involvement and dependent variable which was implementation of occupational health and safety programmes. Pearson correlation coefficient(r) was used to determine the magnitude and the direction of the relationships between the variables. Values of the correlation coefficient are always between -1 and +1. A value of 0 implies no relationship, +1 correlation coefficient indicates that the two variables are perfectly related in a positive linear sense, that is, both variables increase together while -1 correlation coefficient indicates that two variables are perfectly related in a negative linear sense,

that is, one variable increases as the other decreases (Jill & Roger, 2009; Neuman, 2000; Sekeran, 2008; Kothari, 2004).

Finally regression analysis was done to establish whether independent variables predict the dependent variable and the linear association between them. The statistical significance of the estimated relationship, that is, the degree of confidence that the true relationship is close to the estimated relationship was assessed Jackson (2009). Thus the R squared, t-tests and F-tests, ANOVA tests were all generated through SPSS to test the significant of the variables under study and establish the extent to which the predictor variables explained the dependent variable. Regression analysis was also used to assess the effect of the moderating variable on the whole model Snelgar et al.(2012).

This study had five objectives to each of which research questions had been identified. In objective one, the researcher wished to find out the respondents' perception of the effect of management support on the implementation of occupational safety and health programmes in manufacturing industries in Kenya. For this objective, regression analysis was used. Generally, if there are two variables X and Y in which X is an independent variable with Y being the dependent one, then a simple linear regression of Y on X would be $Y = \beta_0 + \beta_1 X$ where β_0 and β_1 are the regression coefficients. In particular β_0 is the intercept of the variable Y whereas β_1 is the slope or gradient of the regression line (it summarizes the manner in which Y relates with X). In this study, implementation of occupational safety and health (OSH) programmes was Y and management support was X and the relationship between the two was investigated. The model was expressed as:

$$Y = \beta_0 + \beta_1 X + e_i$$

Since the study had more than one independent variable the simple linear regression model above applied for each of the independent variables.

The overall multiple regression model was expressed as:

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

The overall moderated multiple regression model was expressed as:

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

Where

Y= implementation of occupational safety and health programmes

X₁= Management support

X₂= Employee Training

X₃= Legal framework

X₄= Employee Participation

Z= Organizational structure (moderating variable)

β_0 is constant (intercept) which is the value of dependent variable when all the independent variables are 0. $\beta_1, \beta_2, \beta_3$ and β_4 are regression constants or the regression coefficients or rate change induced by X₁ X₂ X₃ X₄ on Y.

e is the error term.

From the outputs of SPSS, it was possible to get the exact values of $\beta_1, \beta_2, \beta_3$ and β_4 . Finally, IBM AMOS Version 22 was used to generate structural equation modeling (SEM) which was used to find out if the model was fitting well using fit indices (Moss, 2009). The analyzed data was summarized and presented mainly in tables and a few graphs to help make data more meaningful as recommended by (Sherri, 2009).

3.7.1 Measurement of Variables

The research questions had been set to investigate the extent to which dependent variable (OSH programmes implementation) could be predicted by the independent variables (management support, employee training, legal framework and employee participation). Descriptive tests, inferential tests and linear regressions were used to analyze this relationship. A summary of data analysis tools is shown in Table 3.1

Table 3.1 Data Analysis Tools Plan

Research Objective	Independent Variables	Dependent Variable	Descriptive Tools	Inferential Tools
To establish the perceived effect of management support on the implementation of OSH programmes in manufacturing sector in Kenya.	Management support	Implementation of occupational safety and health programmes	Mean, frequencies, percentages, Normality test Outlier test	Correlation coefficient, Simple linear regression, ANOVA
To determine the perceived effect of employee training on the implementation of OSH programmes in manufacturing sector in Kenya.	Employee Training	Implementation of occupational safety and health programmes	Mean, , frequencies and percentages Normality test Outlier test	Correlation coefficient, Simple linear regression, ANOVA
To establish the perceived effect of legal framework on the implementation of OSH programmes in manufacturing sector in Kenya.	Legal framework	Implementation of occupational safety and health programmes	Mean, frequencies and percentages Normality test Outlier test	Correlation coefficient, Simple linear regression, ANOVA
To determine the perceived effect of employee participation on the implementation of OSH programmes in manufacturing sector in Kenya.	Employee participation	Implementation of occupational safety and health programmes	Mean, frequencies and percentages Normality test Outlier test	Correlation coefficient, Simple linear regression, ANOVA
To establish the moderating effect of organization structure on the relationship between independent variables and dependent variables.	Management support Employee Training Legal framework Employee participation	Implementation of occupational safety and health programmes	Mean, frequencies and percentages Normality test Outlier test	Correlation coefficient Multiple regression ANOVA

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

The study employed various statistical tools to investigate the perceptions of determinants of implementation of occupational safety and health programmes in manufacturing industries in Kenya. In particular, the study sought to find out the perceptions of influence of management support, employee training, legal framework, and employee participation and moderation effect of organization structure on the implementation of occupational safety and health programmes. To achieve these objectives, this chapter first provides descriptive analysis and later inferential statistics. Finally the model was fitted and explained.

4.2 Response Rate

The target population was composed of all the manufacturing industries in Kenya that were registered by Kenya association of manufacturers (2013). The survey units were occupational safety and health designate who was either the Human Resource Manager or Occupational safety or health officers. Out of the proposed 259 Occupational safety and health officers designates in the manufacturing industries, 252 responded to the questionnaires. This constitutes 99.8 % which far exceed 70% suggested by (Mugenda & Mugenda, 2003) as very good. It also concurs with Kothari (2004) who rate any response rate above 70% as excellent.

4.3 Results of the Pilot Study

A pilot testing was carried out prior to implementation of the study to ensure that the research instrument measured what was intended in conformity with (Cooper & Schindler, 2010). During the pilot test phase of this research, Reliability Test was also performed; to this end, the Cronbach's Coefficient Alpha was employed. According to Fraenkel and Warren (2000); Sekaran (2003) if the reliability coefficient is more than 0.7 the data is taken as reliable. The items on each of the variables in the questionnaire were subjected to Cronbach's Coefficient Alpha test and all the items were found to be reliable for measurement because the reliability

coefficient was found to be above the recommended threshold of 0.7. The findings are shown in Table 4.1.

Table 4.1 Reliability Test Statistics

Constructs	Cronbach's Alpha	No. of Items
Legal frame work	.716	7
Management support	.943	8
Implementation of occupational health factors	.766	12
Organization structure	.713	6
Employee participation	.798	8
Training	.733	5

Content validity was ensured by carrying out a detailed literature review to ensure all variables were tackled as recommended by (Senkaran, 2003). Academic peers were also used to review the items and comment on whether the items covered a representative sample of the behaviour domain (Foxcroft, Paterson, Roux & Herbst 2004).

4.4 Background of the Respondents

This study considered gender, age and education background of the respondents in an attempt to ensure that there was no biasness in terms of demographic characteristics of the respondents. The results are given in Tables 4.2, 4.3 and 4.4.

4.4.1 Respondents' Gender

Findings presented in Table 4.2 shows that out of the 252 respondents, 169 (67.1%) were males while 83 (32.9%) were females. This indicates that both genders were represented in the study although the males were more than the females but however gender biasness was avoided.

Table 4.2 Gender of the Respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	169	67.1	67.1	67.1
Female	83	32.9	32.9	100.0
Total	252	100.0	100.0	

4.4.2 Respondents' Age

Respondent's age was also evaluated and the findings presented in Table 4.3. The findings indicate that the age of the respondents ranged between 25-56 years with majority respondents falling between the age of 26-35 (42.9%) and 36-45 (33.7%) years. This could be expected as it is at the age of 35 that most workers start entering into supervisory and management positions. Others who were below 35 years of age could have been ordinary employees, especially in small industries, deployed into OSH position at a supervisory level.

Table 4.3 Ages of the Respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Below 25 years	19	7.5	7.5	7.5
26-35	108	42.9	42.9	50.4
36-45	85	33.7	33.7	84.1
46-55	37	14.7	14.7	98.8
56 and above	3	1.2	1.2	100.0
Total	252	100.0	100.0	

4.4.3 Respondents Education Background

The results presented in Table 4.4 indicate that majority of the respondents were of diploma and degree level of education rated as 45.2 % (114) and 44% (111) respectively. The minority 2.8% and 7.9% held certificate and secondary qualifications respectively. Those with degree qualification were majorly in human resource management and occupational health and safety positions in large organizations. However there were diploma holders who still held those senior positions with a staggering number of certificates and secondary level education

holders deployed into health and safety positions as supervisors. The level of education was significant in this study because it was an indicator of the management commitment to health and safety going by the education level of the person it had charged with the responsibility of health and safety.

Table 4.4 Educational Qualification

	Frequency	Percent	Valid Percent	Cumulative Percent
Degree	111	44.0	44.0	44.0
Diploma	114	45.2	45.2	89.3
Certificate	7	2.8	2.8	92.1
Secondary	20	7.9	7.9	100.0
Total	252	100.0	100.0	

4. 5 Descriptive Analysis of Constructs

The study sought to establish the perceptions of respondents on the influence of management support, employee training, legal framework and employee participation on implementation of OSH programmes, and the moderating effect of organization structure on the relationship between the independent variables and the dependent variable. Descriptive statistics (percentages and means) were computed to reduce the large amount of data to manageable summaries permitting easy understanding and interpretation of the data (Kent, 2001). This section provides an explanation of the descriptive statistics on independent, moderating and dependent variables.

4.5.1 Descriptive Analysis for Construct Management Support

The study sought to determine the perceptions of the effect of management support on implementation of occupational safety and health programmes in the manufacturing sector in Kenya and the descriptive statistics are presented in Table 4.5. The results show that 31.3% and 48% (79.3 %) of the respondents agreed and strongly agreed respectively that management was totally committed to healthy and safety while 1.6% and 6.7% (8.3%) strongly disagreed and disagreed respectively and 12.3% took a neutral position. Management commitment was supported by responses on specific statements used to collect data related to management support

as follows; 76.9% of the respondents agreed that management provided all the necessary safety equipments, 75.4% agreed that they had an OSH policy, 65.3% agreed that management allocated funds for OSH, 68.3% agreed that management organized internal safety audits and inspections, 72.6% agreed that management had constituted a health and safety committee and 66.1% agreed that management took responsibility for injuries and sicknesses at work. However, only 57.9 % strongly agreed and agreed that safety is an agenda in meetings while a sizeable 24.2% and 17.5 % (41.4%) disagreed and took a neutral position respectively. Based on a rating scale of 1 to 5 the means for all the factors tested under management support were above 3 implying that majority of the respondents were in agreement that the entire factors listed under management support were affecting implementation of occupational health and safety programmes.

These findings correspond with the views of many scholars on the role of management in the implementation of OSH programmes. For example Nyakang'o (2005) observes that management have a general responsibility under the occupational safety and health Act to furnish a work place free from any recognized hazards. This is also supported by Cole(2002, 2004) ; Wayne (1995) ;Alli (2008) who indicates that employer is liable at common law for accidents encountered by his or her employees in the course of their employment. The results are also in line with Cohen (2008); Shannon, Mayr and Haines (2007) who indicate that one of the factor associated with high safety performance and low injury rates is strong management involvement and commitment to safety. The findings further support the views of Alli (2008); National safety council (2005); Wayne (1995) and Shafai-Sahrai (2001) who sees management commitment being reflected in the way it makes safety inspections a regular part of a company's operating procedures and invest money into OSH activities in order to effectively implement OSH programmes.

The existence of a policy is supported by Armstrong (2003, 2006) who contends that a written health and safety policy is required to demonstrate that top management is

concerned about the protection of the organization's employees from hazards at work and to indicate how this protection would be provided. The findings also confirm an empirical study by Cohen and Cleveland (2003) who found that prioritization of safety in meetings and in decisions concerning work as one of the factors prevalent in low injury rate companies.

Though, according to the results, majority of the respondents indicated that management was committed to OSH, slightly above 30% of the respondents thought otherwise. This was an indication that management in some industries needed to improve its commitment to OSH especially in allocation of funds, taking responsibilities for injuries at work, organizing internal safety audits and inspections, making safety an agenda in meetings and fully implementing the OSH policy. The respondents disagreements with management's supportive role collaborates with empirical study in UK international oil companies by Colin (2009) who found that in some industries, management's attention is often distracted from safety by other issues competing for their time such as production, costs efficiency, quality and the environment. Armstrong (2003, 2006) also sees the importance of health and safety policies and practices as, sadly, often underestimated by those concerned with managing businesses and by individual managers within those businesses. Respondents' opinions on management support is presented in Table 4.5

Table 4.5 Descriptive Statistics on Management Support

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean
The management is totally committed to health and safety	1.6%	6.7%	12.3%	31.3%	48.0%	4.17
The management always provide all the necessary safety equipments	3.6%	9.9%	9.5%	44.8%	32.1%	3.92
We have a company policy on occupational safety and health	4.0%	6.3%	14.3%	25.4%	50.0%	4.11
Management allocates funds for occupational safety and health	3.2%	10.3%	21.4%	30.6%	34.5%	3.83
The management often organize internal safety audits and inspections	4.4%	11.9%	15.5%	25.8%	42.5%	3.90
The management has constituted a safety and health committee	4.8%	12.3%	10.3%	25.4%	47.2%	3.98
Management takes responsibility for injuries at work	5.6%	11.1%	16.3%	25.8%	41.3%	3.86
Occupational safety and health is always an agenda in meetings	6.7%	17.5%	17.9%	20.6%	37.3%	3.64

4.5.2 Descriptive Analysis for Construct Employee Training

The study also aimed at establishing respondent's perceptions of the effect of training on the implementation of occupational safety and health programmes in manufacturing sector in Kenya. According to Cohen (1997); National safety council (1995), training is an important component of any OHS management programme and an effective feature of companies with exemplary OHS performance.

The findings on employee training revealed that 22.6% and 1.6% (24.2%) agreed and strongly agreed respectively that they were given induction when they first joined the organization while 2.4% and 34.5% (36.9%) disagreed and strongly disagreed respectively and 38.9% did not take any position. Similarly, only 36.9% agreed employees were sponsored for OSH training outside the organization while 27.4% and 35.7% disagreed and took a neutral position respectively. In contrast, 67.5% of the respondents were in agreement that they were provided with materials containing OSH information while 0.6% disagreed and 30.2% did not take any position.

The study further revealed that 40.5 % of the respondents agreed that employees did not take OSH training seriously while 16.7% had a contrary opinion with 42.9% taking a neutral position. On whether funds were allocated for OSH training, half of the respondents, that is, 44.8% and 6.3% (51.1%) agreed to the statement while the remaining half, that is, 6.8% and 42.1% (48.9%) disagreed and took a neutral position respectively. A further 44.8% and 6.3 % (51.1%) agreed and strongly agreed respectively that OSH training was part and parcel of OSH policy while 6.8 % and 42.1 % (48.9%) disagreed and took no position respectively.

Again based on a rating scale of 1 to 5, the means for most of the factors tested under employee training were above 3 implying that majority of the respondents were in agreement that the factors listed under employee training were affecting implementation of occupational safety and health programmes.

OSH training being an important element of any successful OSH management system requires employees to know and understand what they need to do when they are faced with potential risks and hazards. According to the results, half of the respondents disagreed and took a neutral position on the statements that were used to measure training and this gives a strong indication that employee training was not given the attention it deserves by both the employer and the employee and particularly during induction of new employees.

These findings are contrary to the views of many scholars who underscore the importance of OSH training in many aspects. For example Cohen and Colligan (1998) find overwhelming evidence to show the merits of training in increasing worker knowledge of job hazards, and in effecting safe work practices and other positive actions in a wide array of worksites. Mondy (2008) also asserts that orientation of new employees emphasizing safety is critical in the early months of employment because work injuries decrease with the length of service. O'Dea and Flin,(2001); Havlovic and McShane, (2000) further argue that employees have little knowledge of hazards, safety rules and proper personal protective behavior and thus require knowledge and experience to cope with hazards.

The importance of training is also emphasized by Derek and Laura (1998); Bentley and Haslam (2001) who contends that safety training need to be carried out through on the job and refresher courses. Additionally, Alli (2008) asserts that training in occupational safety and health should not be treated in isolation but should feature as an integral part of job training and be incorporated into daily work procedures on the shop floor.

The findings also show that majority of the respondents (67.5%) agreed that employees were provided with materials containing OSH information. This concurs with opinion of Derek and Laura (1998) that safety training needs to be carried out using a variety of different training techniques such as lectures, discussions, films, role playing and slides, posters, safety awareness and campaigns and

communications. It is necessary to supplement OSH information with external training as studies reported by National Safety Council (1995) indicates that people behaved unsafely because they did not listen to the instructions and considered the instructions either unimportant or unnecessary and thus disregarded the instructions.

The results also show that 63.1% of the respondents indicated that employees were not sponsored for OSH training outside the organization. This contradicts Ayodele and Olubayo (2010) who asserts that part of the employer’s social responsibilities toward employees should encompass industrial workers being given opportunities to participate in periodic workshops, seminars and lectures to sharpen their awareness on safety precautions. The respondents’ opinions on the effect of employee training on the implementation OSH programmes are summarized in Table 4.6

Table: 4.6 Descriptive Statistics on Employee Training

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean
Health and safety awareness is part of employees’ induction process	2.4%	34.5%	38.9%	22.6%	1.6%	2.87
Employees are sponsored for OSH training outside the organization	2.8%	24.6%	35.7%	28.6%	8.3%	3.15
Employees take OSH training very seriously	2.8%	13.9%	42.9%	35.7%	4.8%	3.26
Employees are provided with Materials containing OSH information	0.4%	2.0%	30.2%	50.0%	17.5%	3.82
Funds are allocated for OSH training	1.2%	5.6%	42.1%	44.8%	6.3%	3.50
OSH training is part and parcel of OSH policy	1.2%	5.6%	42.1%	44.8%	6.3%	3.50

Frequency of Training

The respondents were further asked to indicate the frequency of OSH training in their organizations and the results are given in table 4.7. The results indicate that 33.7% and 44% stated that it was offered on monthly and yearly basis respectively while 11.9% and 5.6% indicated that it was offered weekly and fortnightly respectively with 4.8% stating that it was never offered. The findings indicate that training was not continuous in most of the organizations and this is contrary to Pratt and Bernett (1985); Rao (2005) suggestions that safety training should commence immediately a member of staff is employed and after induction further safety training may be necessary in connection with an individual's particular job. Training according to National safety council (1995) should also be a continuous process as changes in technology may give rise to new hazards and thus need for refresher training.

Table 4.7 Frequency of OSH Training

	Frequency	Percent	Valid Percent	Cumulative Percent
Weekly	30	11.9	11.9	11.9
Fortnightly	14	5.6	5.6	17.5
Monthly	85	33.7	33.7	51.2
Yearly	111	44.0	44.0	95.2
Never	12	4.8	4.8	100.0
Total	252	100.0	100.0	

Training Areas

The respondents were also asked to highlight the occupational health and safety issues covered during training and the results are presented in Table 4.8. According to the results majority of the respondents, that is, approximately 80% indicated that employees were trained on a variety of areas related to safety and health. This is in line with the suggestion by Pratt and Bernett (1985); Rao (2005) that employees should be made aware of their responsibility for H&S, general health hazards, the use of safety clothing and equipment, the availability of medical services, safety rules, material handling, first aid, fire prevention and procedures for reporting accidents. Other training areas as given by the respondents included HIV awareness, personal presentation, handling stress at workplace, personal hygiene, provision of the Act,

membership and roles of the OSH committee, hazard controls, mock drills, fire fighting, incident and accident reporting .

Table 4.8 Areas of OSH Training

Training Areas	Trained	Not Trained
Knowledge of hazards	76.2%	23.8%
Job safety procedures	81.7%	18.3%
Safety rules	81.3%	18.7%
Proper personal protective behavior	79.0%	21.0%
Response to work accidents and injuries	80.2%	19.8%
Response to fires	84.1%	15.9%
Use of safety equipments	77.0%	23.0%
Others	12.7%	87.3%

Dissemination of OSH Information

Further probe on how OSH information was disseminated revealed that signs and warnings, posters, safety policy document, workshops and seminars were mainly used as indicated by 83.7%, 74.2%, 67.9% and 67.9% of the respondents respectively. Other methods that were used to a lesser extent were films (41.3%), safety awareness and campaign weeks (54%) and bulletins (44%). This implies that the most effective methods such as films, safety awareness and campaign weeks and bulletins were not given much attention. The findings are in line with the views of Derek and Laura (1998); Bentley and Haslam (2001) who observe that safety training needs to be carried out using a variety of different training techniques such as lecturers, discussions, films, signs, warnings, role playing and slides, posters, safety awareness campaigns and communications as well as personal counseling. The details on techniques used to disseminate OSH information are given in Table 4.9

4.9 Tools for OSH Information Dissemination

Methods of Disseminating OSH Information	YES	NO
Signs and warnings	83.7%	16.3%
Films	41.3%	58.7%
Safety policy document	67.9%	32.1%
Posters	74.2%	25.8%
Safety awareness and campaign weeks	54.0%	46.0%
Bulletins	44.0%	56.0%
Workshops and seminars	64.3%	35.7%
Others	0.0%	0.0%

4.5.3 Descriptive Analysis for Construct Legal Framework

Respondents' perceptions were sought on the influence of legal framework on implementation of OSH programmes and the results are presented in Table 4.10. Legal framework refers to specific standards on government's laws and policies regarding OSH practices in all work places. The effect of seven legislative factors on implementation of OSH programmes was measured. These factors were; OSH national policy, OSH Act (OSHA), familiarity with OSHA, government inspections and audits, ease of implementation of OSHA, government support and implement ability of OSHA.

According to the results majority 65.5% of the respondents indicated that the OSH policy affected implementation of OSH programmes to a large and very large extent while 23.4% felt it affected to a small and moderate extent and only 11.1% felt it did not affect at all. Similarly, 72.3% felt that the OSH Act affected implementation of OSH programmes to a large and very large extent while 22.6% indicated it affected to a small and moderate extent and only 5.2% felt it did not affect at all. On the extent to which workers familiarity with OSHA affected implementation of OSH programmes, 68.6% of the respondents were of the opinion that it affected implementation to a large and very large extent while 22.8% indicated it affected to a small and moderate extent and only 7.5% felt it did not affect at all.

A further 69.1% of the respondents indicated that government OSH inspections and audits affected implementation of OSH programmes to a large and very large extent while 27.4% indicated it affected to a small and moderate extent and only 3.6% felt it did not affect at all. However, a comparatively lower number of the respondents (59.1%) indicated that government support affected implementation of OSH programmes to a large and very large extent while the rest indicated that it either did not at all or it did to a small and moderate extent. This implies that government support was crucial in the implementation of OSH programmes. On the contrary majority 67.9% of the respondents felt the Act was only implementable to a moderate extent while minority 28.2% thought the Act was largely implementable with 4% stating it was not at all implementable. The means for most of the factors tested under legal framework as presented in Table 4.10 were above 3 implying that majority of the respondents were in agreement that the factors listed under legal framework were affecting implementation of occupational safety and health programmes.

The role of the government in the implementation of OSH programmes cannot be overemphasized. Government laws and regulations have a strong influence on the extent to which firms implement OSH programmes. Employers may not be willing to provide comprehensive OSH programmes and an external force is necessary to exert pressure on them. This is in line with Heinrich et al. (1980) that legislation is one process by which government affects safety. The government's role in safety and health is also emphasized by ILO (2006) pointing out that each ratifying member country should formulate, implement and periodically review a coherent national policy and make sure that different labor regulations, especially those related to workplace safety are complied with. The findings also concurs with Bernardin, John and Russel (1993); Wayne (1995) who suggest that OSH authorities should conduct work place inspections through DOHSS officers who are chosen for their knowledge and experience in the OSH field and are trained in recognition of safety and health hazards.

The respondents opinion that the Act was largely not implementable is also shared by Mendeloff (1988) who indicates that OSHA impact on OSH implementation is limited due to its strict regulation of safety and health rules which causes less protection of workers because employers vigorously resist overregulation. The importance of workers being familiar with OSH Act underscores a baseline survey conducted in Kenya which found that lack of familiarity with OSHA by both managers and workers was affecting OSH practices. Details of respondents' responses on legal framework are presented in Table 4.10.

Table: 4. 10 Descriptive Statistics on Legal Framework

Legislative Areas	Not At All	Small Extent	Moderate Extent	Large Extent	Very Large Extent	Mean
Effect of national OSH policy on implementation of OSH programmes	11.1%	9.5%	13.9%	35.7%	29.8%	3.63
Effect of occupational health and safety Act on implementation of OSH programmes	5.2%	13.1%	9.5%	31.0%	41.3%	3.90
Effect of workers familiarity with OSHA on implementation of OSH programmes	7.5%	8.7%	15.1%	32.5%	36.1%	3.81
Effect of OSH inspections and audits by the government on the implementation of OSH programmes	3.6%	9.5%	17.9%	30.6%	38.5%	3.91
Effect of the ease of implementation of OSH Act on the implementation of OSH programmes	1.6%	10.3%	26.6%	33.3%	28.2%	3.76
Effect of Government support in the implementation of OSH Act on implementation of OSH programmes	3.2%	12.7%	25.0%	25.0%	34.1%	3.74
Effect of implement ability of occupational health and safety Act on implementation of OSH programmes.	4.0%	0.0%	67.9%	15.5%	12.7%	3.33

4.5.4 Descriptive Analysis for Construct Employee Participation

The study sought to establish the perceptions of respondents on the effect of employee participation on the implementation of occupational safety and health programmes in manufacturing sector in Kenya. According to Mearns et al. (2003), a genuine and consistent management commitment to safety prioritize involvement of employees which includes empowerment and delegation of responsibility for safety. The results in this study revealed significant employee participation in OSH management in which 64.3% of the respondents agreed and strongly agreed that workers had embraced a health and safety culture while 18.7 % disagreed and 17.1% took no position.

The respondents were also required to indicate whether employees felt their employer was responsible for their health and safety and not themselves and 60% strongly agreed and agreed while only 19.4 disagreed and 20.6% did not take any position. On further probe on employee involvement, an average 57.5% of the respondents agreed that employees always wore personal protective items provided to them while 42.5% disagreed and took a neutral position showing that a sizeable number of employees did not wear personal protective equipments . 44.8% of the respondents also disagreed with the statement that employees did not comply with OSH rules and safe work procedures while 36.1% agreed and 19% took a neutral position implying that 55.1% did not comply with OSH rules and safe work procedures.

Employee involvement should also be reflected in representation in health and safety committees, proactive role of OSH representatives and employees in reporting of hazardous condition to the supervisor. 68.6%, 62.3% and 64.3% of the respondents were in agreement that employees were represented in OSH committees, OSH representatives took an active role and employees reported hazardous conditions respectively. On whether Employees were given safety targets on which they were appraised 48.4% of the respondents agreed while 51.6 % disagreed and took a neutral position implying that half of the employees were not appraised on safety. Again the

means for most of the factors tested under employee participation were above 3 implying that majority of the respondents were in agreement that the factors listed under employee participation were affecting implementation of occupational health and safety programmes.

Employee involvement is actually a major determinant of any successful OSH programme since employees are always the first direct victims of a poor OSH management system. They must therefore take an active role to assist the employer put in place a healthy and safe work environment. Need for employee involvement collaborates with views of scholars all over the world. For instance Horswill and McKenna (1999); DeJoy (1994); Hacket (1999) are all in agreement that the first approach in a safety program is to create a psychological environment and employees' attitudes that promote safety and create a climate where the safe way of doing things is the right and the only way of doing things. Use of protective equipments and compliance with OSH rules is in line with the views of Dessler (2003); Cole (2004); Sagimo (2002); Mondy (2008) that employees are responsible for complying with all applicable OSHA standards and following all employer safety and health (S&H) rules and regulations.

Formation of employees' committees conforms with ROSPA (2005) which observes that formation of employees' committees is one of the best ways to create and maintain interest and get employees involved in making a personal contribution to the overall safety programme. The function of such a committee according to Mondy (2008) is to keep under review the measures taken to ensure health and safety at the work place and in consultation with other employees report hazardous conditions to the supervisor. As suggested by Zohar (2002), another way to strengthen a safety program is to provide workers with a sense of accomplishment by including safety standards in organization's performance management. Details of respondents' opinion on employee participation are given in Table 4.11

Table 4.11 Descriptive Statistics on Employee Participation

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean
Employees have embraced a health and safety culture	5.6%	13.1%	17.1%	29.4%	34.9%	3.75
Employees feel employer is responsible for their health and safety and not them	8.7%	10.7%	20.6%	29.8%	30.2%	3.62
Employees always wear personal protective items provided to them	3.2%	17.1%	22.2%	25.4%	32.1%	3.66
The employees are represented in health and safety committee	7.5%	9.1%	14.7%	36.1%	32.5%	3.77
Employees' representative takes an active role in safety and health issues	5.6%	14.3%	17.9%	33.7%	28.6%	3.65
Employees do not comply with OSH rules and safe work procedures	21.4%	23.4%	19.0%	19.8%	16.3%	2.86
Employees always report hazardous conditions to the supervisor	5.6%	11.9%	18.3%	34.1%	30.2%	3.71
Employees are given safety targets on which they are appraised	11.1%	22.2%	18.3%	21.0%	27.4%	3.31

4.5.5 Descriptive Analysis for Moderating Variable (Organization Structure)

The study sought to establish whether organization structure had a moderating effect on the relationship between implementation of OSH programmes and each independent variable. Organization structure was viewed in the context of the size of the organization and the position of OSH officer.

Size of the Organization

As reflected in Figure 4.1, 56.74% of the industries had over 100 employees and according to the categorization given in chapter three for the purpose of this study they can be considered as large scale organizations. The rest 30.56% and 12.70% were medium and small sized industries respectively. Therefore majority 87.3% (56.74+30.56) of all the firms represented in the study were medium and large sized enterprises.

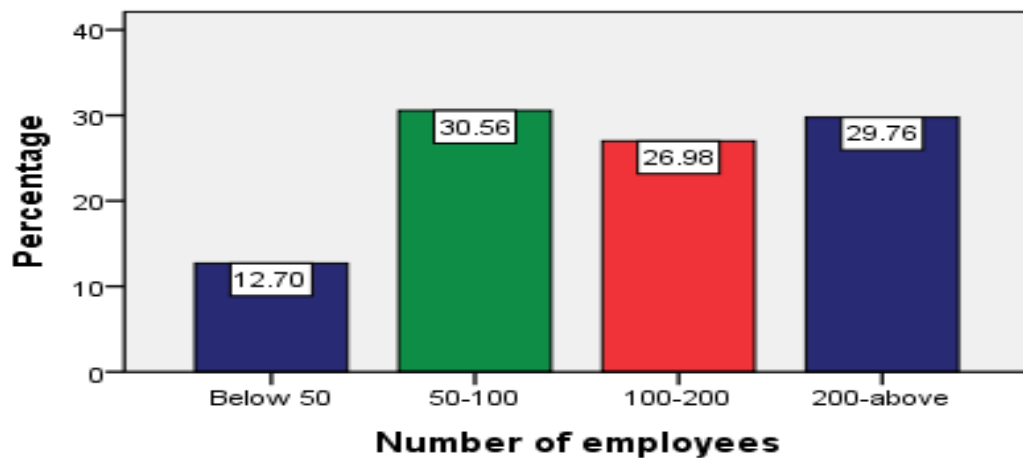


Figure 4-1 Size of Organization in Terms of Number of Employees

Majority of the respondents agreed that larger firms had an advantage over smaller firms in the implementation of OSH programmes and were also able to engage an OSH officer. For example 73.4 % and 78.2% of the respondents agreed that larger firms were more able to cope with strict OSH regulations and had more resources to implement OSH programmes respectively than small firms. Also 79% of the respondents strongly agreed and agreed that larger firms could afford to engage an OSH officer as compared to small firms. In addition 65.8% of the respondents agreed that Large and medium sized enterprises had greater commitment and invested more

resources in OSH. Further probe on the effect of size of the firm on implementation of OSH programmes 57.6% of the respondents were in agreement that large firms did not mind implementing OSH regulations because the gains resulting from implementation exceeded the costs of complying while 42.4% either disagreed or took no position. This indicates that almost half of the employers did not believe that implementation of OSH programmes would result in long term economic gains.

Another 53.9 % strongly agreed and agreed that small firms had little if any access to modern occupational health and safety services while 46% either refuted or took a neutral position this implying that both small and large firms had almost equal access to OSH services. Based on a rating scale of 1 to 5, the means for most of the factors tested under organization structure were also above 3 implying that majority of the respondents were in agreement that organization structure had a moderating effect on implementation of occupational health and safety programmes.

Provision of OSH programmes is an expensive engagement which small firms may not cope with. The findings concur with Bartel and Thomas (1985) who observe that OSHA regulations may give large firms a competitive advantage over their smaller rivals because the smaller firms are less able to afford expensive regulations. These are views also shared by Micheli and Cagno (2010) when they examined the relevance of different OSH factors among micro, small, and medium-sized enterprises. They found that the management of medium sized enterprises typically had greater commitment and invested more resources in OSH issues. Regarding access of OSH facilities by small firms, the findings differed with the view of Reverente (1992) who contend that workers in small scale enterprises (SSEs) usually have little if any access to modern occupational health and safety services.

However, the respondents who disagreed that larger firms have advantage over small firms in the implementation of OSH programmes concur with Hughes, Magat and Ricks (1986) who in their study were unable to establish that OSHA's standards permitted large firms to gain in profitability at the expense of smaller producers. The

descriptive statistics of respondents' opinions on the moderating effect of size of the organization on the implementation of OSH programmes is shown in Table 4.12

Table 4.12 Descriptive Statistics on Organization Structure (Size of the Organization)

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean
Larger firms are more able to cope with strict OSH regulations than small firms	6.3%	11.1%	9.1%	21.4%	52.0%	4.02
Larger firms have more resources to implement OSH programmes than small firms	3.6%	8.7%	9.5%	30.6%	47.6%	4.10
Large firms don't mind implementing OSH regulations because gains exceed costs of complying	8.3%	12.7%	21.4%	27.4%	30.2%	3.58
Large and medium sized enterprises have greater commitment and invest more resources in OSH	1.6%	14.3%	18.3%	32.5%	33.3%	3.82
Small firms have little if any access to modern occupational health and safety services	9.1%	22.6%	14.3%	22.6%	31.3%	3.44
Larger firms can afford to engage an OSH officer as compared to small firms	7.1%	6.3%	7.5%	25.4%	53.6%	4.12

OSH Position

It is necessary for industries to engage an OSH officer as indicated by Shannon et al. (1996); Foot and Hook (2008), to discharge or spearhead the safety programmes. Figure 4.2 presents the results of who was in charge of OSH in the industries and the results showed that 42.46% of the industries had the Human Resource Manager in

charge of OSH while 38.9% of the industries had engaged an OSH officer and 14.68% of the industries had appointed an OSH employees' representative to oversee health and safety issues. The others 4.36% according to the respondents were factory or production managers, section heads, directors or owners of the organizations. These results indicates that quite a number of the industries did not have OSH officers and the Human Resource Managers or OSH representatives were tasked with a job they could not perform efficiently since the Human Resource Managers were burdened with other human resource management functions and OSH employee's representatives might lack formal authority to enforce OSH rules and regulations among their peers. In addition some of the people acting as Human resource managers had been deployed into the position at a supervisory level.

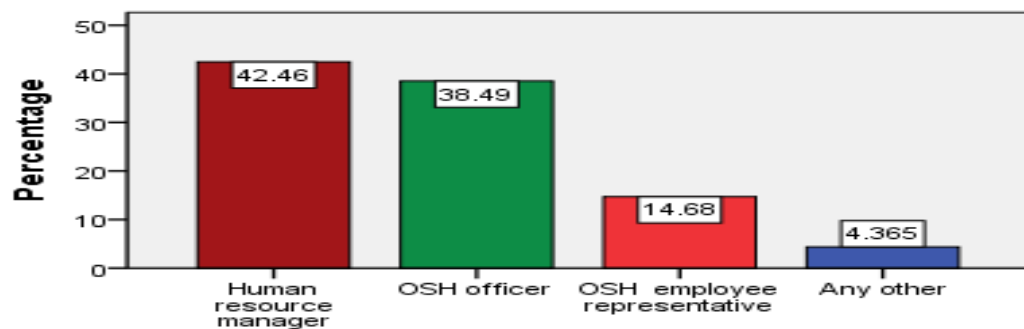


Figure 4.2: OSH Position

OSH Position Structural Level

Results in Figure 4.3 show the level of OSH position in the organizations' structure. The results showed that half (50%) of the people who were entrusted with OSH in their industries were in management position while the other 50% were in the position on a supervisory basis or were just senior and junior staff deployed to the position. Those in management positions were mainly Human Resource Managers and a few OSH officers in large organizations. Appointment of junior staffs to be in charge of OSH implies that more than half of the industries did not attach much importance to the position of an OSH officer. This contradicts Pratt and Bernet (1985) views that OSH position should occupy a reasonable position in the

management hierarchy and if the position is without status, then the management is giving a clear indication of the importance it places on it.

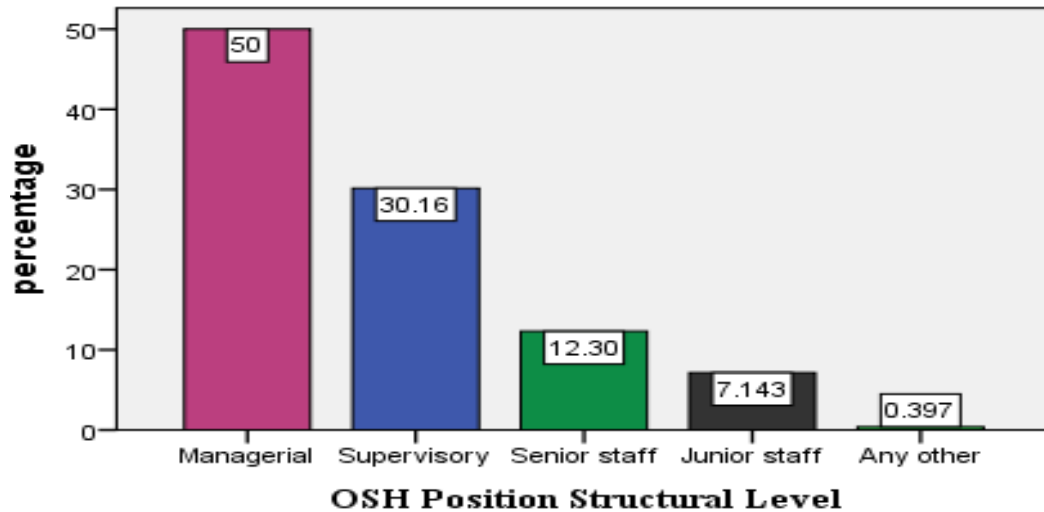


Figure 4.3: OSH Position Structural Level

4.5.6 Descriptive Analysis for Construct Implementation of OSH Programmes.

The study finally sought to establish respondent's perceptions about the impact of successful implementation of OSH programmes. The results showed that more than 70% of the respondents were in agreement that implementation of OSH programmes impacted on injury rates, loss of working hours, accident rates, absenteeism, insurance premiums and compensations, organizational productivity and profits to a large and very large extent. These views are in line with those of European Agency for Safety and Health at Work- EU-OSHA (2012) which in the review of mandatory OSHMS interventions suggests positive effects of OSH implementation manifested in reduction in working hours lost as a result of lower injury rates and rise in workplace productivity. The views are also shared by Mondy (2008) who observes that implementation of OSH programmes can help to reduce costs associated with safety hazards such as absence rates, reduced productivity or compensation to families of employees involved in work place accident or health hazards.

Majority of the respondents were also of the opinion that all the factors determined implementation of OSH programmes to a large and very large extent as follows; management support (85.8%), training (82.6%), legal framework (75.4%), employee participation (84.5%) and organization structure (size 61.9% and OSH position 60.3%). These findings correspond with Akpan (2011); Aswathappa (2004) who contend that successful implementation of OSH system requires management commitment and show of leadership, effective allocation of resources, developing health and safety policy, a high level of employee participation coupled with (Saksvik & Quinlan,2003) cooperation between the government and management.

It is therefore imperative that employers understand that lack of implementation of OSH programmes is costly since incurring much of safety and health bills and expenses can subject an organization to negative economic and profitability condition, hence decreasing its competitive advantage position in the market place and destroy its corporate image that is capable of attracting potential investors and customers. Details of respondent's opinions of all the factors under implementation can be viewed in Table 4.13.

Table 4.13 Descriptive Statistics on Implementation of OSH programmes

Implementation Factors	Not at all	Small extent	Moderate extent	Large extent	Very large extent	Mean
Effect of implementation of OSH programmes on injury rates	4.0%	12.7%	8.7%	33.7%	40.9%	3.95
Effect of implementation of OSH programmes on loss of working hours	6.7%	9.1%	17.9%	29.0%	37.3%	3.81
Effect of implementation of OSH programmes on accident rates	2.8%	11.1%	10.7%	35.3%	40.1%	3.99
Effect of implementation of OSH programmes on insurance premiums and compensations	2.4%	12.3%	19.4%	31.7%	34.1%	3.83
Effect of implementation of OSH programmes on absenteeism	3.6%	14.3%	17.9%	26.2%	38.1%	3.81
Effect of implementation of OSH programmes on organizational productivity and profits	3.2%	6.3%	16.7%	34.9%	38.9%	4.00
Effect of management support on implementation of OSH programmes	1.2%	6.0%	7.1%	31.0%	54.8%	4.32
Effect of employee training on implementation of OSH programmes	3.6%	5.2%	8.7%	41.3%	41.3%	4.12
Effect of legal framework on implementation of OSH programmes	2.4%	8.3%	13.9%	36.9%	38.5%	4.01
Effect of employee participation on implementation of OSH programmes	1.6%	4.8%	9.1%	35.3%	49.2%	4.26
Effect of the organization size on implementation of OSH programmes	2.8%	10.3%	25.0%	24.6%	37.3%	3.83
Effect of OSH position on implementation of OSH programmes	6.3%	7.1%	26.2%	23.8%	36.5%	3.77

Challenges of Implementation

It was also found necessary to find out whether the industries faced challenges in the implementation of OSH programmes. According to the results in Table 4.14 an overwhelming 91.7% of the respondents indicated that challenges were faced in the implementation of OSH programmes implying that only 8.3% thought otherwise. The challenges according to the respondents included lack of cooperation from employees who failed to use protective equipments in their daily work routine, loss of working hours during trainings, difficulties in interpreting OSH statutory requirements, lack of management commitment, low level of education among the shop floor workers, lack of well trained OSH officers , lack of qualified trainers, compromise of inspection standards by government officers, problems of balancing compliance with costs, costly safety audits, inadequate resources for buying equipments and training, high turnover of some employees hired through contractors, managements reluctance to provide PPE'S(Personal protective equipments) and firefighting equipments etc.

These findings support the empirical results by Al-Darrab, Gulzar and Ali (2013) on the status of implementation of safety, quality and environmental management systems in Saudi Arabian industries in which they found that though OSHS systems plentifully existed in industries their implementation was generally unproductive and the concept of integration of the systems to the regular management of organizations had not gained much acceptance.

Table 4:14 Challenges of Implementation of OSH

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	231	91.7	91.7	91.7
No	21	8.3	8.3	100.0
Total	252	100.0	100.0	

4.6 Requisite Tests

Regression can only be accurately estimated if the basic assumptions of multiple linear regressions are observed Greene (2002). Therefore various diagnostic tests

which included sampling adequacy tests, normality tests and autocorrelation tests were conducted to ensure accuracy of the results.

4.6.1 Sampling Adequacy Test

According to Field (2005) the reliability of factor analysis is dependent on sample size. Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was thus conducted to determine adequacy of the sample size. KMO is an index used to examine and justify the appropriateness of application of Factor Analysis; values between 0.5-1.00 indicate that a factor is significant (Magd, 2008). Hutcheson and Sofroniou (1999) also suggest values between 0.7 and 0.8 as good for factor analysis. The results in Table 4.15 show that the KMO test on all the factors in this study generated a sufficient value of more than 0.7 implying that the sample size was adequate for further analysis.

Table 4.15 KMO (Kaiser-Meyer-Olkin) Test

Management Support	Kaiser-Meyer-Olkin Adequacy. Approx. Chi Square	Measure of Sampling	.892 1333.056
Training	Kaiser-Meyer-Olkin Adequacy. Approx. Chi Square	Measure of Sampling	.798 9.452
Legal Framework	Kaiser-Meyer-Olkin Adequacy. Approx. Chi-Square	Measure of Sampling	.828 917.813
Employee Participation	Kaiser-Meyer-Olkin Adequacy. Approx. Chi-Square	Measure of Sampling	.817 724.945
Organization Structure	Kaiser-Meyer-Olkin Adequacy. Approx. Chi-Square	Measure of Sampling	.788 508.555
Implementation	Kaiser-Meyer-Olkin Measure of Sampling Adequacy. Approx. Chi-Square		.909 2074.009

4.6.2 Bartlett's Test of Sphericity

Bartlett's Test of Sphericity is used to measure the strength of the relationship among variables. It tests whether the correlation matrix is an identity matrix. An identity matrix can be described as matrix with zero elements except that all the leading diagonal elements have values 1 (Field, 2005). Results presented in Table 4.16 show that the entire correlation matrixes for the variables were all identity matrix since Bartlett's Test of Sphericity values were all significant hence absence of multicollinearity.

Table 4.16 Bartlett's Test of Sphericity

Management Support	Bartlett's Test of Sphericity	df	28
		Sig.	.000
Employee Training	Bartlett's Test of Sphericity	df	10
		Sig.	.000
Legal Framework	Bartlett's Test of Sphericity	df	21
		Sig.	.000
Employee Participation	Bartlett's Test of Sphericity	df	28
		Sig.	.000
Organization Structure	Bartlett's Test of Sphericity	df	21
		Sig.	.000
Implementation	Bartlett's Test of Sphericity	df	66
		Sig.	.000

4.6.3 Autocorrelation (With and Without Moderator)

One of the basic assumptions of the regression model is the independence of the errors. This assumption is sometimes violated when data are collected over sequential time periods because a residue at any one time period may tend to be similar to residues at adjacent time periods an eventuality described as autocorrelation. Auto correlation is correlation between the residue terms for any two observations; it is expected that the residue terms for any two observations should be

uncorrelated or independent (Field, 2005; Levine, Fustephan, Krehbiel and Berenson, 2004).

Durbin- Watson statistic was used to measure autocorrelation. According to Field (2005) it is a test for serial correlation between errors, that is, it test the correlation between each residue and the residue for the previous time period. The test statistic can vary between 0 and 4 with a value of 2 meaning that the residues are uncorrelated. As a very conservative rule of thumb values less than 1 or greater than 3 are cause of concern. Results presented in Table 4.17 shows that the value for Durbin-Watson for model1 (without moderating variable) was 1.701 and model 2 (with moderating variable) was 1.747 implying that the variables were uncorrelated and this ensured the independence of errors and enhanced accuracy of the regression model.

Table 4.17 Durbin-Watson – Measure Of Autocorrelation

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate	Durbin-Watson
1	.786a	.618	.612	6.03796	1.701
2	.714a	.509	.501	6.86509	1.747

a. Predictors: (Constant), X4, X3, X2, X1

b. Dependent Variable: Implementation of OSH

4.6.4 Confirmatory Factor Analysis

According to Shenoy and Madan (1994), not all variable factors are statistically important in a research. Factor analysis acts as a gauge of the substantive importance of a given variable to the factor and it is used to identify and remove hidden constructs or variable items that do not meet the objectives of the study and which may not be apparent from direct analysis (Ledesma & Valero-Mora, 2007; David et al., 2010). The communalities and eigenvalues were used to indicate the substantive importance of variable factors.

Communalities

For communalities, a loading value of 0.7 as a rule of thumb is believed to be satisfactory but due to the seemingly difficulties of meeting the 0.7 criterion a loading of up to 0.4 level is acceptable (Rahim & Magna, 2005) . After the factor analysis, none of the variables was removed because most of them had a coefficient of 0.7 and therefore exceeded the criterion of 0.4. The Table of communalities 4.18 shows how much of the variance in the variables was accounted for by the extracted factor; in other words, it shows the variations from the expected initial value which is one (Rahim & Magner, 2005).

Table 4.18: Communalities

Statements	Initial	Extraction
Management support		
The management always provide all the necessary safety equipments	1.000	.892
Management takes responsibility for injuries at work	1.000	.877
The management often organize internal safety audits and inspections	1.000	.812
The management is totally committed to health and safety	1.000	.777
Occupational health and safety is always an agenda in meetings	1.000	.772
The management has constituted a health and safety committee	1.000	.721
We have a company policy on occupational health and safety	1.000	.648
Management allocates funds for occupational health and safety	1.000	.685
Training		
OSH training is part and parcel of OSH policy	1.000	.989
Funds are allocated for OSH training	1.000	.989
Employees are sponsored for OSH training outside the organization	1.000	.897
Employees take OSH training very seriously	1.000	.866
Health and safety awareness is part of employee's induction process	1.000	.649
Employees are provided with Materials containing OSH information	1.000	.677
Legal framework		
Effect of occupational health and safety Act on implementation of OSH programmes	1.000	.810
Effect of national OSH policy on implementation of OSH programmes	1.000	.788
Effect of OSH inspections and audits by the government on implementation of OSH programmes	1.000	.756
Effect of the ease of implementation of OSHA on the implementation of OSH programmes	1.000	.717
Effect of Government support in the implementation of OSHA on the implementation of OSH programmes	1.000	.662
Effect of workers familiarity with OSHA on the implementation of OSH programmes	1.000	.611
Effect of implement ability of occupational health and safety Act on implementation of OSH programmes.	1.000	.646

Table 4.18 continues.....

Employee participation	Initial	Extraction
Employees have embraced a health and safety culture	1.000	.833
Employees are represented in health and safety committee	1.000	.796
Employees' representative takes an active role in safety and health issues	1.000	.776
Employees always report hazardous conditions to the supervisor	1.000	.765
Employees always wear personal protective items provided to them	1.000	.734
Employees do not comply with OSH rules and safe work procedures	1.000	.734
Employees feel employer is responsible for their health and safety and not them	1.000	.726
Employees are given safety targets on which they are appraised	1.000	.660
Organization structure		
Larger firms are more able to cope with strict OSH regulations than small firms	1.000	.888
Larger firms have more resources to implement OSH programmes than small firms	1.000	.851
Small firms have little if any access to modern occupational health and safety services	1.000	.821
Large firms don't mind implementing OSH regulations because gains exceed costs of complying	1.000	.783
Larger firms can afford to engage an OSH officer as compared to small firms	1.000	.648
Large and medium sized enterprises have greater commitment and invest more resources in OSH	1.000	.631
Implementation of OSH Programmes		
Effect of legal framework on implementation of OSH programmes	1.000	.847
Effect of OSH position on implementation of OSH programmes	1.000	.824

Table 4.18 continues.....

Effect of implementation of OSH programmes on accident rates	1.000	.766
Effect of size of the organization on implementation of OSH programmes	1.000	.765
Effect of OSH training on implementation of OSH programmes	1.000	.753
Effect of implementation of OSH programmes on injury rates	1.000	.742
Effect of implementation of OSH programmes on insurance premiums and compensations	1.000	.741
Effect of implementation of OSH programmes on loss of working hours	1.000	.723
Effect of implementation of OSH programmes on organizational productivity and profits	1.000	.710
Effect of employees' participation on implementation of OSH programmes	1.000	.686
Effect of implementation of OSH programmes on absenteeism	1.000	.685
Effect of management support on implementation of OSH programmes	1.000	.635

Summary of eigenvalues

The eigenvalues for each variable were extracted through principal component analysis. A scree plot was also used to decide whether an eigenvalue was large enough to represent a meaningful factor. This was done by plotting a graph with the eigenvalues on the Y-axis against the factor with which it was associated on the X-axis). The cut off point for selecting factors from the scree plot curve was at the point of inflexion of the curve, that is, the point where the slope of the lines changed drastically and the curve started to flatten. All the factors that had eigen values greater than one were retained as significant as recommended by Kaiser's rule. The

discussion that follows shows the tables and the scree plots for each independent variable, showing all the variable factors extracted through principal component analysis along with their eigenvalues, the percent of variance attributable to each factor, and the cumulative variance of the factor and the previous factors.

Management Support

The results in Table 4.19 show that for management support, only one factor that had an eigenvalue of more than 1 and accounted for 74.793% was extracted and the rest were insignificant.

Table 4.19 Management Support Total Variance Explained

Component	<u>Initial Eigen values</u>		of Cumulative %	<u>Extraction Sums of Squared Loadings</u>	
	Total	% of Variance		Total	Cumulative %
1	5.983	74.793	74.793	5.983	74.793
2	.829	10.359	85.151		
3	.358	4.480	89.632		
4	.344	4.300	93.932		
5	.239	2.984	96.916		
6	.152	1.898	98.814		
7	.054	.675	99.489		
8	.041	.511	100.000		

Extraction Method: Principal Component Analysis.

The scree plot in Figure 4.4 shows the eigenvalues against all the factors in management support. From the graph, the curve starts to flatten at factors 2 which have an eigenvalue of less than 1, so only one factor was retained as being more significant in explaining management support.

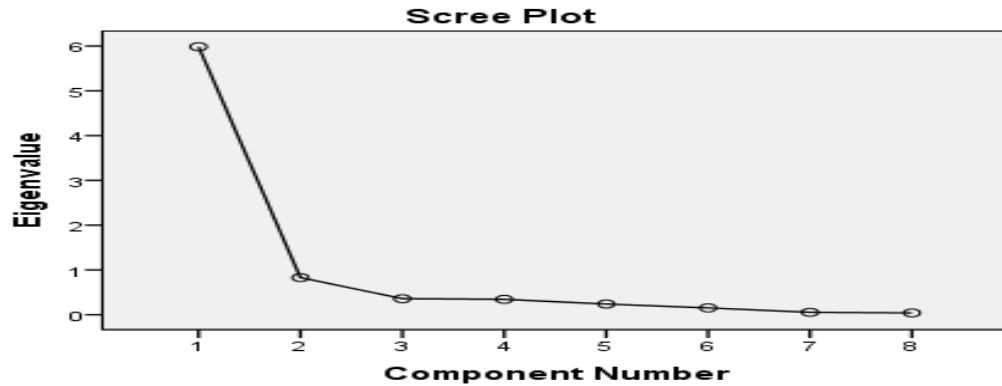


Figure 4.4 Management Support Scree Plot

Employee Training

The results presented in Table 4.20 show that 3 factors for the variable employee training were found significant because they had an eigenvalue of more than 1. The first factor accounted for 34.16% of the variance, second 18.211% and the third 17.085%. All the remaining factors were not significant and so the three factors were more significant in explaining employee training.

Table 4.20 Employee Training Total Variance Explained

Component	<u>Initial Eigenvalues</u>			<u>Extraction Sums of Squared Loadings</u>		
	Total	% of Variance	of Cumulative %	Total	% of Variance	of Cumulative %
1	2.050	34.163	34.163	2.050	34.163	34.163
2	1.093	18.211	52.374	1.093	18.211	52.374
3	1.025	17.085	69.458	1.025	17.085	69.458
4	.946	15.768	85.226			
5	.886	14.774	100.000			
6	5.779E-17	9.631E-16	100.000			

Extraction Method: Principal Component Analysis.

The scree plot in Figure 4.5 shows the eigenvalues against all the factors in employee training. The curve begins to flatten between factors 2 and 5 however factor 4 and 5 have an eigenvalue of less than 1, so only three factors were retained as significant in explaining employee training.

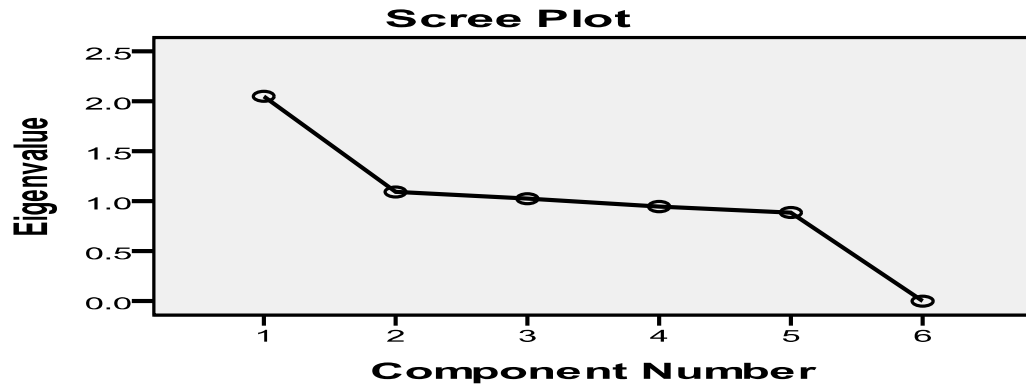


Figure 4.5 Employee Training Scree Plot

Legal Frame Work

The results in Table 4.21 shows that for legal frame work two factors that accounts for 39.064% and 22.232% respectively were retained as significant while the rest were less significant.

Table 4.21 Legal Framework Total Variance Explained

Component	<u>Initial Eigenvalues</u>			<u>Extraction Sums of Squared Loadings</u>		
	Total	% of Variance	% of Cumulative	Total	% of Variance	% of Cumulative
1	2.735	39.064	39.064	2.735	39.064	39.064
2	1.556	22.232	61.297	1.556	22.232	61.297
3	.922	13.169	74.466			
4	.746	10.662	85.128			
5	.537	7.672	92.800			
6	.311	4.446	97.246			
7	.193	2.754	100.000			

Extraction Method: Principal Component Analysis.

The scree plot Figure 4.6 shows the eigenvalues against all the factors in legal framework. From the graph the curve starts to flatten at factors 3 which have an eigenvalue of less than 1, so only two factors were retained as more significant in explaining legal framework.

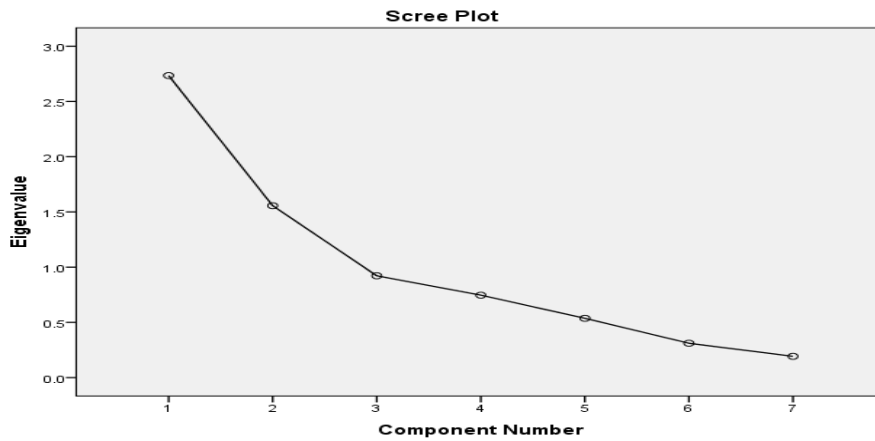


Figure 4.6 Legal Frame Work Scree Plot

Employee Participation

The results in Table 4.22 show that for employee participation 2 factors were found significant. The first factor accounts for 52.642% of the variance and the second 16.409%. All the remaining factors were not very significant.

Table 4.22 Employee Participation Total Variance Explained

Component	<u>Initial Eigenvalues</u>			<u>Extraction Sums of Squared Loadings</u>		
	Total	% of Variance	of Cumulative %	Total	% of Variance	of Cumulative %
1	4.211	52.642	52.642	4.211	52.642	52.642
2	1.313	16.409	69.052	1.313	16.409	69.052
3	.830	10.373	79.425			
4	.592	7.399	86.824			
5	.419	5.244	92.068			
6	.347	4.332	96.399			
7	.172	2.147	98.546			
8	.116	1.454	100.000			

Extraction Method: Principal Component Analysis.

The scree plot for employee participation in Figure 4.7 shows that the curve begins to flatten between factors 2 and 8 but only factor 1 and 2 were retained as significant because they had an eigenvalue of more than 1 and therefore were more important in explaining employee participation.

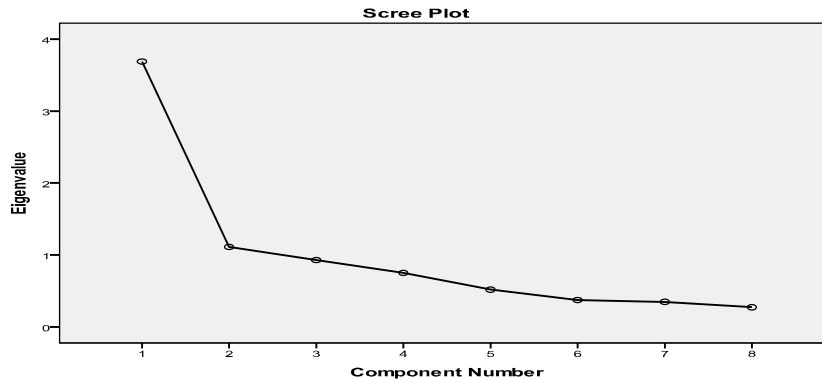


Figure 4.7 Employee Participation Scree Plot

Organization Structure

Results in Table 4.23 show that for organization structure only one factor that had an eigenvalue of more than 1 and accounted for 52.312% was extracted and the rest were insignificant.

Table 4.23 Organization Structure Total Variance Explained

Component	<u>Initial Eigen values</u>			<u>Extraction Sums of Squared Loadings</u>		
	Total	% Variance	% of Cumulative	Total	% Variance	% of Cumulative
1	3.139	52.312	52.312	3.139	52.312	52.312
2	.884	14.736	67.048			
3	.745	12.421	79.469			
4	.538	8.972	88.441			
5	.389	6.478	94.918			
6	.305	5.082	100.000			

Extraction Method: Principal Component Analysis.

The scree plot Figure 4.8 shows the eigenvalues against all the factors in organization structure. The curve begins to flatten at factors 2 which had an eigenvalue of less than 1, so only one factor was retained as more significant in explaining organization structure.

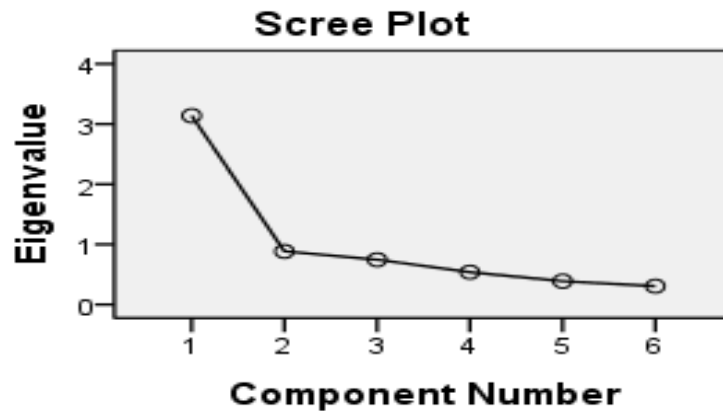


Figure 4.8 Organization Structure Scree Plot

OSH Implementation

For OSH implementation the factors extracted from the analysis along with their eigenvalues presented in Table 4.24 show that only two factors that had an eigenvalue of more than 1 and accounted for 55.075% and 12.243% were extracted and the rest were less significant.

Table 4. 24 OSH Implementation Total Variance Explained

Component	<u>Initial Eigenvalues</u>			<u>Extraction Sums of Squared Loadings</u>		
	Total	% of Variance	of Cumulative %	Total	% of Variance	of Cumulative %
1	6.609	55.075	55.075	6.609	55.075	55.075
2	1.469	12.243	67.318	1.469	12.243	67.318
3	.964	8.036	75.354			
4	.626	5.218	80.572			
5	.428	3.563	84.135			
6	.372	3.101	87.236			
7	.333	2.778	90.015			
8	.317	2.640	92.654			
9	.266	2.213	94.868			
10	.245	2.038	96.906			
11	.200	1.666	98.572			
12	.171	1.428	100.000			

Extraction Method: Principal Component Analysis.

The scree plot in Figure 4.9 shows the eigenvalues against all the factors in OSH implementation. From the graph the curve starts to flatten at factors 2 but only the first 2 factors which had an eigenvalue of greater than 1 were retained as most significant in explaining implementation of OSH programmes while the rest were less significant.

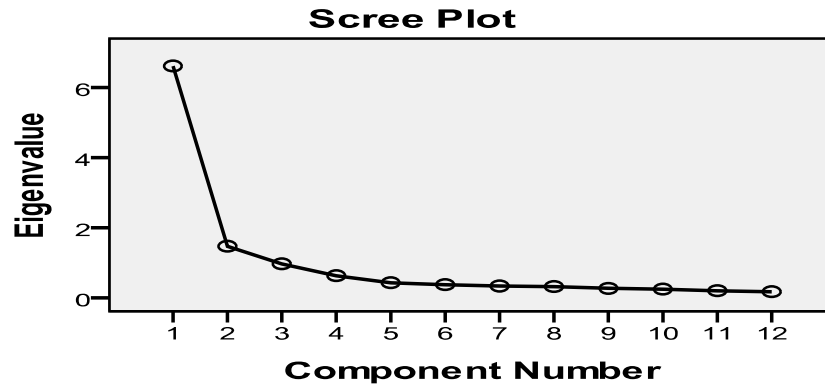


Figure 4.9 OSH Implementation Scree Plot

4.6.5 Outliers Test

An outlier is an observation which is far placed from the rest of other observations Cox (2006). The presence of outlier may be misleading thus compromising the quality of research output. The outliers can be detected and removed using box plots. The results in Figure 4.10 show that management support had one outlier, employee training two outliers and employee participation one outlier. Legal Framework, OSH implementation and organization structure had no outliers.

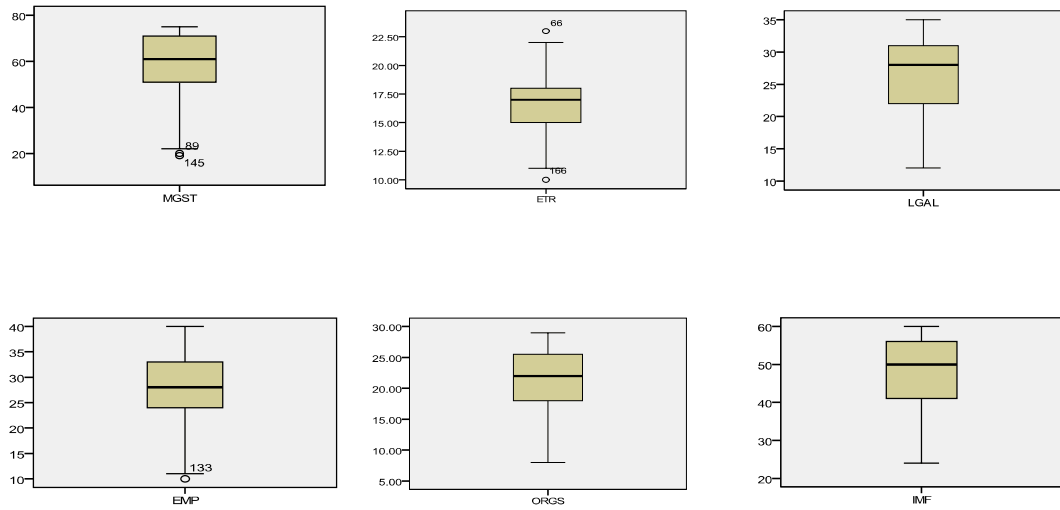


Figure 4.10 Box Plots before Removal of Outliers Plot

After removal of the outliers the boxes were as follows.

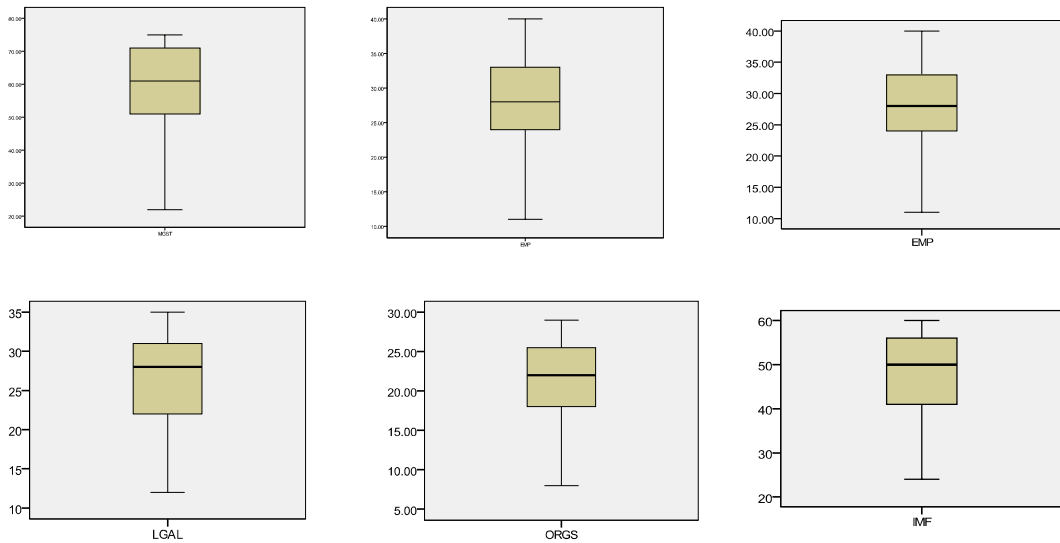


Figure 4.11 Box Plots after Removal of Outliers Plot

Where **MGST**-Management support, **LGAL**-Legal framework, **EMP**- Employee participation, **MF**- Implementation factors, **ETR**-Employee Training, **ORGS**- Organization structure.

4.6.6 Normality Tests

According to Gujarati (2002), tests of normality determine if the data is well modeled and normally distributed. A researcher should ensure that variables have roughly normal distribution. This is most important especially if the results are to be generalized beyond the sample collected (Ghasemin & zahediasi, 2012). Both kolmogorov-Sminorv and Shapiro-Wilk normality tests were used. For kolmogorov-smirnov test, if the tests of normality yield a figure less than 0.05 then it mean that the data is not normally distributed but for Shapiro-wilk if the figure is less than 0.05 then the data is normally distributed. In this study kolmogorov-smirnov test showed that all the variables were not normally distributed but based on Shapiro-wilk test which is more powerful, the p-values were all significant indicating that all the variables were normally distributed as shown in Table 4.25

Table 4.25 Results of Tests of Normality

	<u>Kolmogorov-Smirnov^a</u>			<u>Shapiro-Wilk</u>		
	Statistic	df	Sig.	Statistic	df	Sig.
Management support	.120	247	.000	.918	247	.000
Legal frame work	.137	247	.000	.941	247	.000
Employee participation	.058	247	.041	.981	247	.002
Organization structure	.089	247	.000	.969	247	.000
OSH implementation	.118	247	.000	.932	247	.000
Employee training	.108	247	.000	.973	247	.000

Further normality tests were conducted using skewness and kurtosis tests. Skewness is a measure of the extent to which a frequency is a symmetric. The skewness of a normal distribution is zero meaning the distribution is symmetrical. On the other hand kurtosis is a measure of the extent to which a frequency distribution is flatter or more peaked than a normal distribution; a normal distribution has a kurtosis of zero (Jill & Roger, 2009). A variable is reasonably close to normal if its skewness and kurtosis have values between -1.0 and + 1.0 (Myoung, 2008). Based on skewness and kurtosis tests, normality of the six variables was again confirmed since all skewness and kurtosis values were lying between -1 to +1 as shown in Table 4.26

Table 4.26 Skewness and Kurtosis Tests of Normality

Descriptive		Statistic	Std. Error
Management support	Std. Deviation	13.73654	
	Skewness	-.770	.155
	Kurtosis	-.227	.309
Employee training	Std. Deviation	5.89607	
	Skewness	-.622	.155
	Kurtosis	-.533	.309
Legal Framework	Std. Deviation	6.37397	
	Skewness	-.254	.155
	Kurtosis	-.161	.309
Employee participation	Std. Deviation	4.60489	
	Skewness	-.395	.155
	Kurtosis	-.310	.309
Organization structure	Std. Deviation	9.75622	
	Skewness	-.601	.155
	Kurtosis	-.606	.309
OSH implementation	Std. Deviation	1.87573	
	Skewness	-.021	.155
	Kurtosis	.082	.309

4.7 Inferential Tests

To establish the nature of relationship between independent variables and dependent variable both correlation and linear regression analysis were conducted. Correlation is a measure of the direction and strength of association between two quantitative variables (Jill & Roger, 2009; Tabachnick & Fidell, 2001). Pearson coefficient correlation determined the strength and direction of relationships between independent variables and dependent variable under study. The scatter plots gave a quick visual observation of the relationship between the variables and the line of best fit determined how well the model fitted the data in question; the line is a key indicator of the predictive accuracy of the model (Anderson et al., 2002).

For further analysis linear regression model summary, ANOVA and regression model coefficients were generated. Linear regression is a measure of the ability of an independent variable to predict an outcome in a dependent variable where there is a linear relationship between them. Finally the overall multiple regression was

conducted for all the variables with and without the moderating variable in order to determine the moderating effect of organization structure on the relationship between the dependent variable (implementation of OSH programmes) and independent variables (management support, employee training, legal framework, employee participation).

4.7.1 Correlation and Regression Analysis for Management Support and Implementation of OSH Programmes

A visual observation of the scatter plot Figure 4.12 between implementation OSH programmes and management support indicated that there was a positive correlation between the two variables. This suggests that management support had some influence on implementation of OSH programmes.

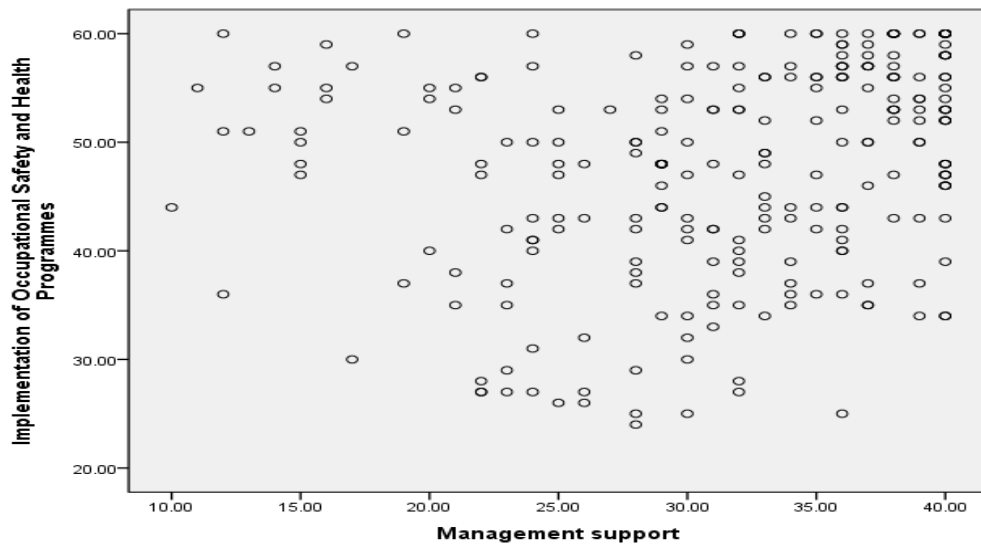


Figure 4.12: Scatter plot for Implementation of OSH programmes and Management support

Results of Pearson Correlation for Management Support

The Pearson correlation analysis results presented in Table 4.27 revealed that there was a positive significant correlation between implementation of OSH programmes and management support, with $p\text{-value} = 0.000 < 0.01$ and $r = 0.421$ other factors held

constant. This implies that there was a significant relationship (42.1%) between management support and implementation of OSH programmes which is above the recommended 30% (Mugenda & Mugenda, 2003). These findings were consistent with (Armstrong 2006; Dressler 2003) who contend that the prevention of accidents and elimination of H&S hazards are a prime responsibility of management and managers.

Table 4.27 Correlation between Implementation of OSH Programmes and Management Support

		Implementation of OSH	Management Support
Implementation of OSH	Pearson Correlation	1	.421**
	Sig. (2-tailed)		.000
	N	252	252
Management Support	Pearson Correlation	.421**	1
	Sig. (2-tailed)	.000	
	N	252	252

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

By fitting a line of best fit it can be observed that some points may not be closer to the line but the general observation of the points show that there is some positive correlation between implementation of OSH programmes with management support. This is shown in Figure 4.13

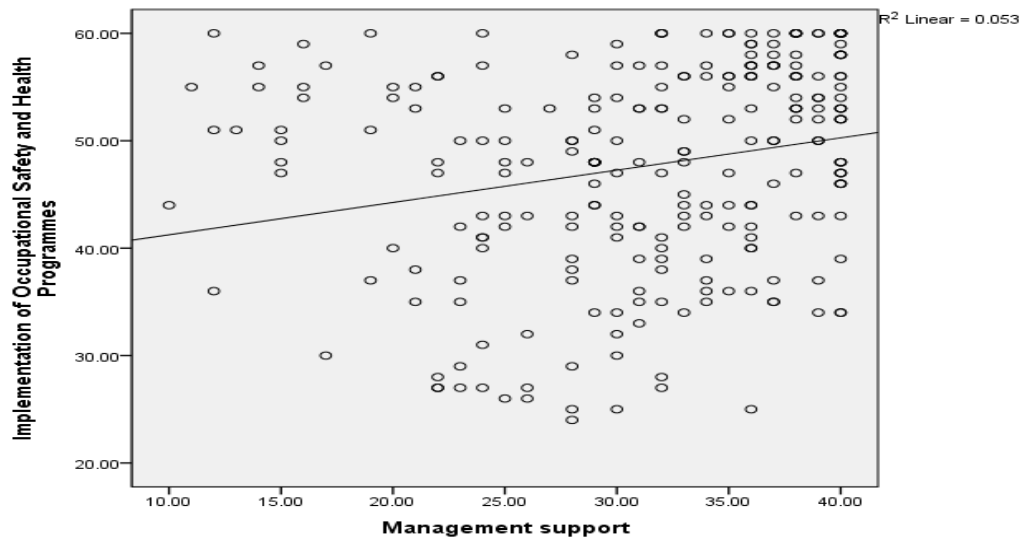


Figure 4.13 Line of best fit between Implementation of OSH programmes and Management support

Results for Regression Analysis for Management Support

Regression analysis for management support with implementation of OSH programmes was conducted and the model summary Table 4.28 clearly indicates a relationship between management support and implementation of OSH programmes in which $R^2 = 0.177$ implying that 17.7% of implementation of OSH programmes was explained by management support. This suggests that management support is required in the implementation OSH programmes in the manufacturing industries in Kenya. The findings support empirical studies by Nadine and Jennifer (2013) which concluded that strong senior leadership support was a key enabler in the implementation of a comprehensive approach to the management of employee well-being.

Table 4.28: Model Summary for Management support

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.421 ^a	.177	.171	9.39783

a. Predictors: (Constant), Management Support

b. Dependent variable: Implementation Of OSH Programmes.

Results for Analysis of Variance for Management Support

Table 4.29 gives ANOVA summary for management support and implementation of OSH programmes in which F-Statistics value=17.659 and p value 0.000<0.05 meaning that the model of implementation of OSH programmes with management support was significant. This indicates that there was a significant relationship between management support and implementation of OSH programmes in manufacturing sector in Kenya.

Table 4.29: ANOVA Test for Management Support and Implementation of OSH Programmes

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	1559.593	1	1559.593	17.659	.000 ^b
1	Residual	21903.163	248	88.319		
	Total	23462.756	249			

a. Dependent Variable: Implementation of OSH programmes

b. Predictors: (Constant), Management Support

Results of the Coefficient for Regression between Management Support and Implementation of OSH Programmes

From the beta coefficient summary Table 4.30 the t-values are 14.051 and 4.202 with p-values being 0.000 which is less than 0.05 hence it was concluded that the model was statistically significant. The model was defined as $Y = 36.921 + 0.182X_1 + e$ indicating that every unit change of management support lead to 0.182 increase of implementation of OSH programmes. This implies that management support is essential in the implementation of OSH programmes in industries.

Table 4.30: Test of Beta Coefficient on Implementation of OSH Programmes and Management Support

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	36.921	2.628		14.051	.000
Management Support	.182	.043	.258	4.202	.000

a. Dependent Variable: Implementation of OSH programmes

The results on correlation and regression on management support and implementation of OSH programmes show a clear relationship between management support and implementation of OSH programmes. These findings are in agreement with the views of other scholars such as Alan (2007); Rao (2008) who have suggested that success in safety and health depends on the dedication of top management and dedication of all cadres of management. The findings are also consistent with Empirical studies by Nayanthara and Wimalaratne, (2012); Nadine and Jennifer (2013) who in their studies on effective OSH management systems and framework identified management commitment and strong senior leadership support as key in implementing a comprehensive workplace health and well-being approach. The study concluded that there was a positive correlation between implementation of OSH programmes and management support and therefore research question one was answered.

4.7.2 Correlation and Regression for Employee Training and Implementation of OSH Programmes

Visual examination of the scatter plot in Figure 4.14 indicates that there was a positive linear relationship between Implementation of OSH programmes and employee training. This means that increased employee training leads to success in implementation of OSH programmes.

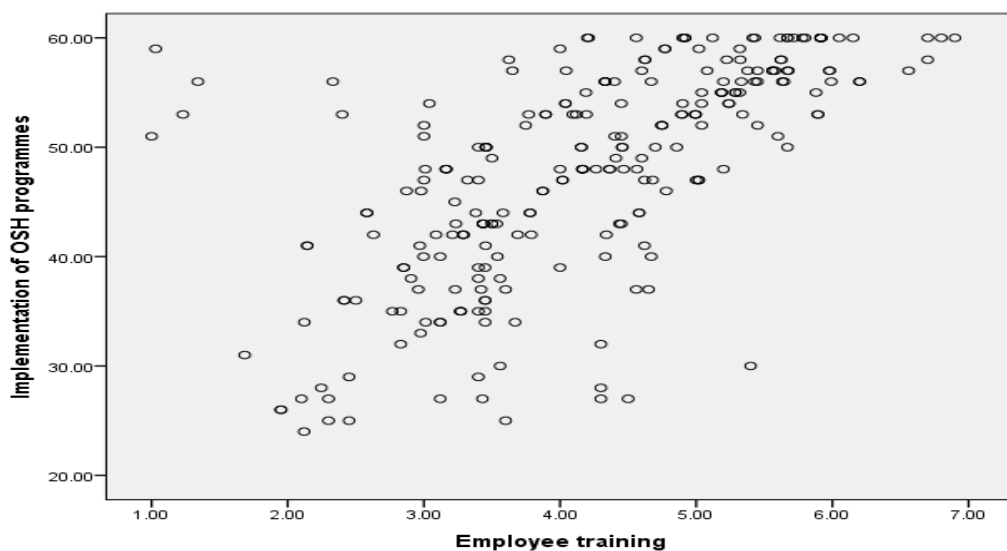


Figure 4.14: Scatter Plot for Implementation of OSH Programmes and Employee Training

Results of Pearson Correlation for Employee Training

Based on the results in Table 4.31, the correlation coefficient shows that there was a positive linear relationship between employee training and implementation of OSH programmes indicated by $r = 0.649$. The model was statistically significant considering P value < 0.01 . This implies that there was a close relationship between the two variables (64.9%).

Table 4.31: Correlation between Implementation of OSH Programmes and Employee Training

		Implementation of Employee Training OSH	
Implementation of OSH	Pearson Correlation	1	.649**
	Sig. (2-tailed)		.000
	N	252	252
Employee Training	Pearson Correlation	.649**	1
	Sig. (2-tailed)	.000	
	N	252	252

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

The correlation results were supported by the line of best fit in Figure 4.15 which shows that most points were concentrated near the line of fit meaning that there was a positive correlation between implementation of OSH programmes and employee training. This implies that increased employee training positively improved implementation of OSH programmes in manufacturing industries in Kenya.

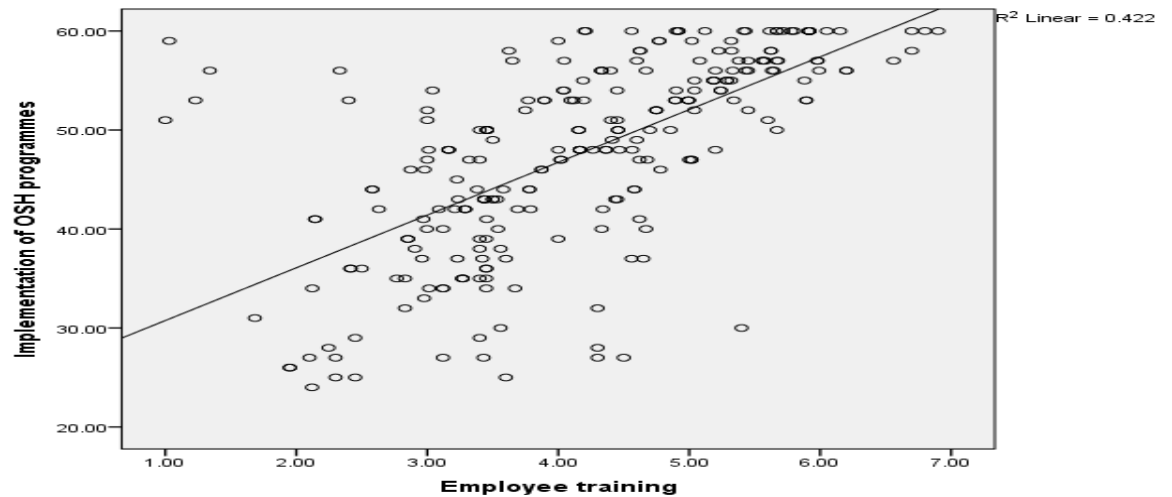


Figure 4.15 Line of Best Fit between Implementation of OSH Programmes and Employee Training.

Results for Regression Analysis for Employee Training and Implementation of OSH Programmes.

Regression analysis between Employee training and Implementation of OSH programmes was conducted. The results in Table 4.32 show that the R value was 0.649 indicating that there was a positive relationship between employee training and implementation of OSH programmes. The coefficient of determination R^2 of 0.422 means that 42.2 % of implementation of OSH programmes was explained by the employee training. This implies that training in OSH is a requirement for successful implementation of OSH programmes in industries in Kenya. This finding collaborates with Ayodele and Olubayo-Fatiregun (2010) who argue that one way of reducing accidents and injuries at work is to have employers give workers opportunities to participate in periodic workshops, seminars and lectures to sharpen their awareness on safety precautions.

Table 4.32: Model Summary for Employee Training

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.649 ^a	.422	.419	7.37797

a. Predictors: (Constant), Employee Training

b. Dependent variable: Implementation of OSH Programmes

Results for Analysis of Variance for Employee Training

The ANOVA results in Table 4.33 indicates that the model for employee training with implementation of OSH programmes was significant with $F=182.260$ and $p=0.000$ which is less than 0.05 meaning that employee training had a significant effect on implementation of OSH programmes in manufacturing industries.

Table 4.33 ANOVA Test for Employee Training and OSH Programmes

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9921.240	1	9921.240	182.260	.000 ^b
	Residual	13608.618	250	54.434		
	Total	23529.857	251			

a. Dependent Variable: Implementation of OSH Programmes

b. Predictors: (Constant), Employee Training

Results of the Coefficient for Regression between Employee Training and Implementation of OSH Programmes

The beta coefficient Table 4.34 shows t- values of 14.840 and 13.500 respectively and p value of 0.000 less than 0.05 suggesting that the model was statistically significant. Additionally the b-value tells to what degree the predictor (training) affects the outcome and the $\beta=5.328$ indicates that as employee training increased by one unit implementation of OSH programmes improved by 5.328. By substituting b values in the model equation the model is defined as $Y = 25.426 + 5.328X_2 + e$.

Table 4.34: Test of Beta Coefficient on Implementation of OSH Programmes and Employee Training

Model	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	25.426	1.713		14.840	.000
Employee Training	5.328	.395	.649	13.500	.000

a. Dependent Variable: Implementation of OSH Programmes

The findings from the correlation and regression analysis for training and implementation of OSH programmes indicates that the two variables are positively related indicating that training affects implementation of occupational health and safety programmes in the manufacturing sector in Kenya. These findings collaborate with the views of National safety council (1995); Cohen (1997); (Zohar, 1980) that training is an important component of any OHS management programme, a feature and aspect of positive safety culture of companies with exemplary OHS performance. The results also support Nayanthara and Wimalaratne (2012) who in their study recommended use of OSH documentation, education and awareness as part of OSH management mechanisms. It was therefore concluded that the study findings satisfied research question two.

4.7.3 Correlation and Regression for Legal frame work and Implementation of OSH Programmes

Visual observation of scatter plot Figure 4.16 shows a positive correlation between implementation of OSH programmes with legal framework. Further analysis also shows that legal framework affects implementation of OSH programmes.

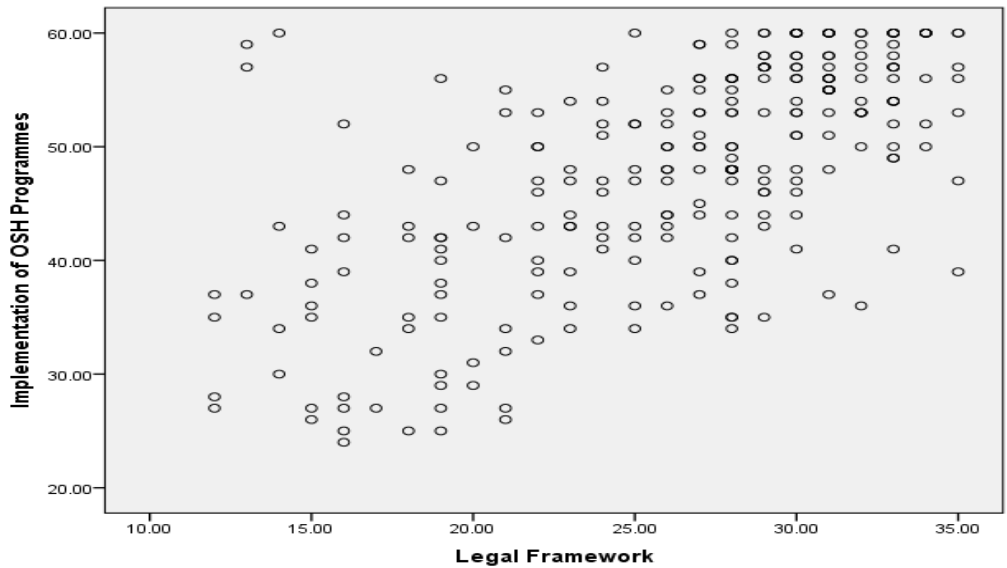


Figure 4.16: Scatter Plot for Implementation of OSH programmes and Legal Frame Work

Results of Pearson Correlation for Legal Framework

The results of Pearson correlation in Table 4.35 indicates a positive correlation between implementation of OSH programmes with legal framework as $r=0.649$. This implies that there was a close relationship between the two variables. The model was also considered to be statistically significant because $p \text{ value}=0.000 < 0.01$. These findings are consistent with empirical studies by Chen and Zorigt (2013) who in their study identified the Act, regulation and government’s investment in OSH as some of the influential factors in the implementation of occupational health and safety management (OHSM) in industries.

Table 4.35: Correlation between Implementation of OSH Programmes and Legal Frame work

		Implementation of OSH	Implementation of Legal framework
Implementation of OSH	Pearson Correlation	1	.649**
	Sig. (2-tailed)		.000
	N	252	252
Legal framework	Pearson Correlation	.649**	1
	Sig. (2-tailed)	.000	
	N	252	252

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

A regression line fitted for implementation of OSH programmes and legal framework also shows that a number of points were close to the line of best fit meaning that there was positive correlation between implementation of OSH programmes and legal framework. This implies that appropriate legal frame work leads to increase in implementation of OSH programmes in the manufacturing sector in Kenya.

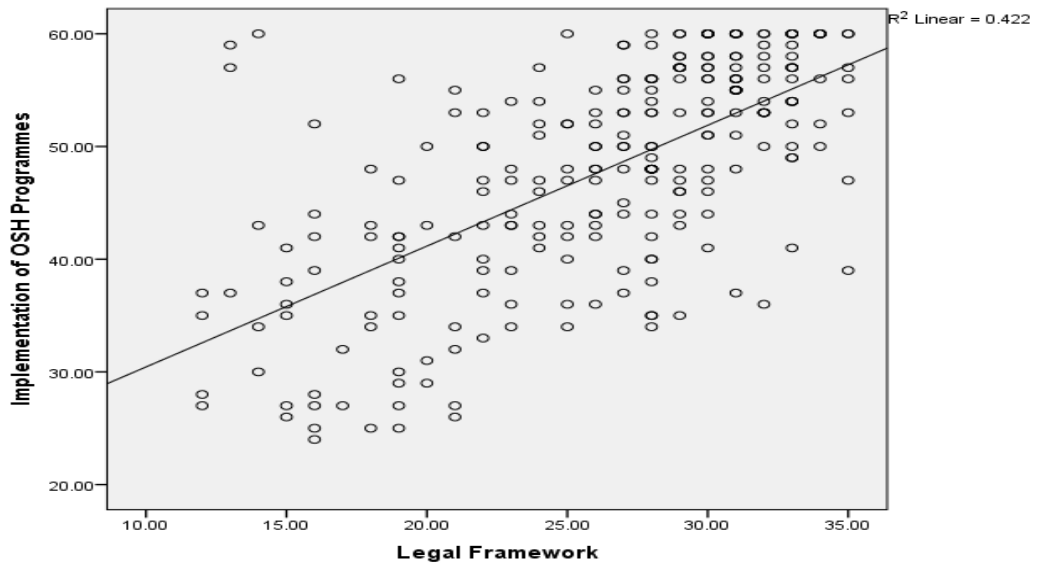


Figure 4.17: Line of best fit between Implementation of OSH programmes and Legal framework

Results for Regression Analysis for Legal Framework with implementation of OSH Programmes.

The results for regression analysis between implementation of OSH programmes and legal frame work presented in model summary Table 4.36 depicts a relationship in which $R^2 = 0.422$ which implies that 42.2% of implementation of OSH programmes is explained by legal framework. These findings support ILO (2006); Heinrich (1999) that the most effective interventions for improving occupational safety and health is implementation of top-down governmental regulations and enforcement of legislation.

Table 4.36: Model Summary for Legal Framework

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.649 ^a	.422	.419	7.37764

a. Predictors: (Constant), Legal framework

b. Dependent Variable: Implementation of OSH Programmes

Results for Analysis of Variance for Legal Framework

Further analyses based on analysis of variance shown in the ANOVA Table 4.37 gives F-statistics value 182.299 with p-value =0.000 < 0.05. Again this means that the model was statistically significant implying that there was a highly significant relationship between implementation of OSH programmes and legal framework in manufacturing industries in Kenya.

Table 4.37 ANOVA Test for Legal Framework and Implementation of OSH Programmes

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9922.464	1	9922.464	182.299	.000 ^b
	Residual	13607.393	250	54.430		
	Total	23529.857	251			

a. Dependent Variable: Implementation of OSH programmes

b. Predictors: (Constant), Legal framework

Results of the Coefficient for Regression between Legal Framework and Implementation of OSH Programmes

The Beta coefficient Table 4.38 revealed that p-values=0.000 which is less than 0.05 with t-values being 9.289 and 13.502 respectively. This implies that the model was statistically significant and it was defined by $Y = 19.721 + 1.072X_3 + e$ indicating that every unit change of legal framework led to 1.072 increase of implementation of OSH programmes.

Table: 4.38 Test of Beta Coefficient on Implementation of OSH Programmes and Legal Framework

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	19.721	2.123		9.289	.000
Legal framework	1.072	.079	.649	13.502	.000

a. Dependent Variable: Implementation of OSH programmes

According to the results, legal framework has a positive effect on implementation of OSH programmes thus answering research question 3. This collaborates with the views of other scholars such as Chen and Zorigt (2013) who in their study identified the Act, regulation and government’s investment in OSH as some of the influential factors on the implementation of occupational health and safety management (OHSM) in the mining industry. This also concurs with what Heinrich et al. (1980) who pointed that legislation and top-down governmental regulations and enforcement is one process by which government affects safety.

4.7.4 Correlation and Regression for Employee participation and Implementation of OSH Programmes

Visual examination of the scatter plot in Figure 4.18 indicates that there is some positive linear relationship between Implementation of OSH programmes and employee participation. This means that increased employee participation leads to success in implementation of OSH programmes in manufacturing industries in Kenya.

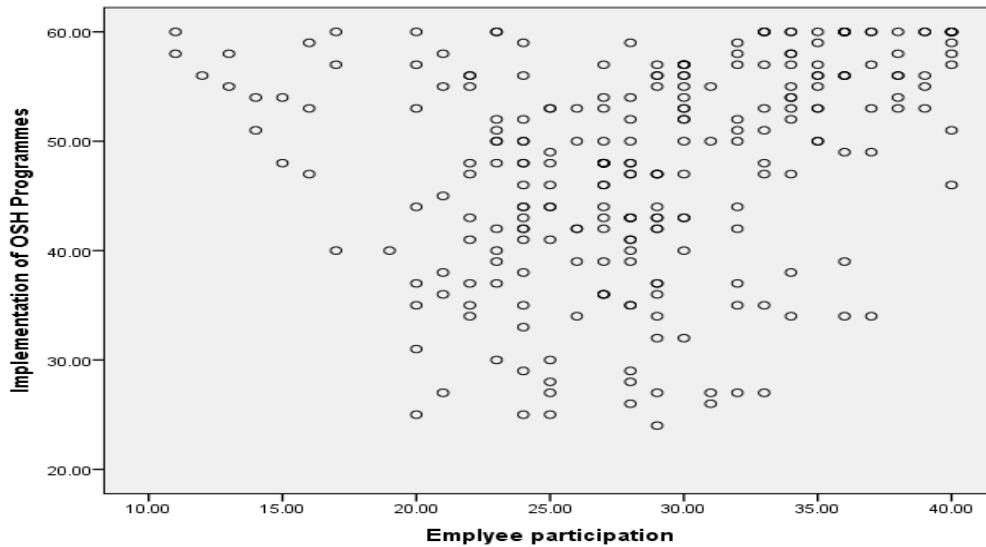


Figure 4.18: Scatter plot for Implementation of OSH programmes and Employee participation

Results of Pearson Correlation for Employee Participation

Results presented in Table 4.39 show that there was a linear relationship between employee participation and implementation of OSH programmes indicated by $r = .350$. This suggests that a relationship exist (35%) which is again above the recommended 30 %. The model was also found to be statistically significant considering $P \text{ value} < 0.01$. The findings supports the views of Rao (2005); Derek and Laura (1998) that employers have a duty to constitute OSH committees including representatives from workers and supervisors from various departments and levels and make it a practice to consult with such committees for the purpose of making arrangements for promoting and developing health and safety measures.

Table 4.39: Correlation between Implementation of OSH Programmes and Employee Participation

		Implementation of OSH	Implementation of Employee participation
Implementation of OSH	Pearson Correlation	1	.350**
	Sig. (2-tailed)		.000
	N	252	252
Employee participation	Pearson Correlation	.350**	1
	Sig. (2-tailed)	.000	
	N	252	252

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

An observation of the line of best fit for the linear relationship in figure 4.19 shows that even though there are some observations that lie away from the line of best fit, there is a general trend demonstrating a positive correlation between implementation of OSH programmes and employee participation. This implies that involvement of employees in OSH, improved implementation of OSH programmes in the manufacturing sector in Kenya.

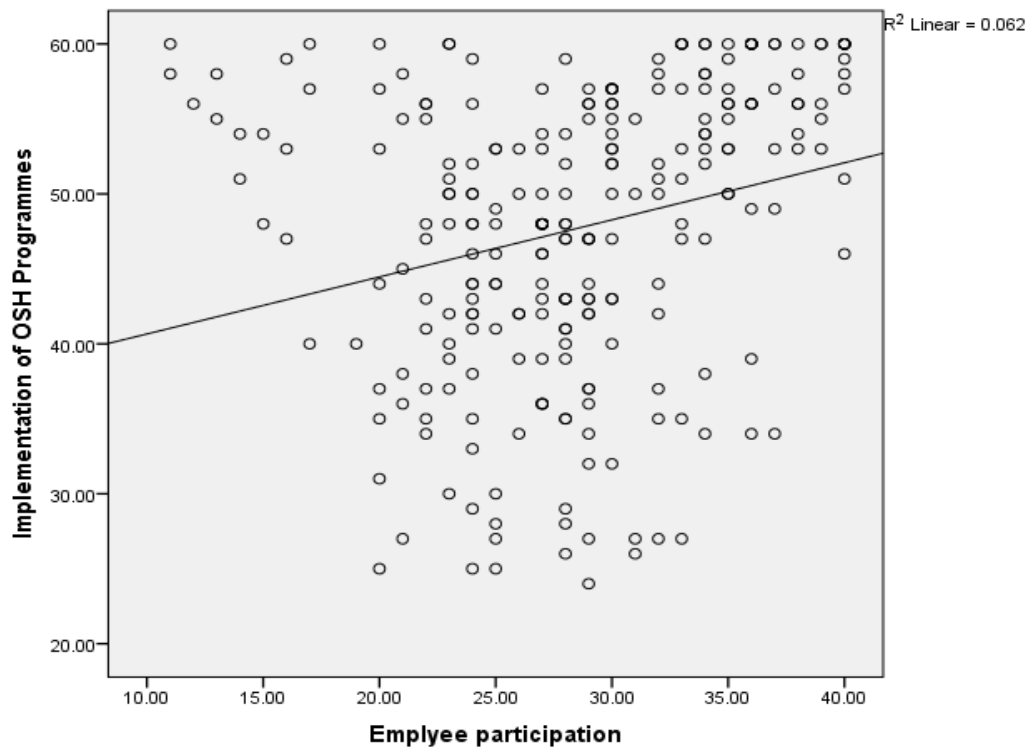


Figure 4.19: Line of best Fit between Implementation of OSH Programmes and Employee Participation

Results for Regression Analysis for Employee Participation and Implementation of OSH Programmes.

A regression analysis between employee participation and implementation of OSH programmes is presented in Table 4.40. It shows that the R value was 0.350 indicating that there was a positive relationship between employee participation and implementation of OSH programmes. R^2 value of 0.1225 shows that 12.25% of implementation of OSH programmes was explained by employee participation.

Table 4.40 Model summary for Employee Participation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.350 ^a	.1225	.1206	9.40752

- a. Predictors: (Constant), Employee Participation
- b. Dependent Variable: Implementation of OSH Programmes

Results for Analysis of Variance for Employee Participation

The ANOVA results in Table 4.41 below indicated that the model for employee participation was significant with $F=16.550$ and $p=0.000$ less than 0.05 meaning that employee participation had a significant effect on implementation of OSH programmes in the manufacturing sector in Kenya.

Table 4.41 ANOVA Test for Employee Participation and OSH Programmes

Model	Sum Squares	of df	Mean Square	F	Sig.
Regression	1464.703	1	1464.703	16.550	.000 ^b
Residual	22036.851	249	88.501		
Total	23501.554	250			

- a. Dependent Variable: Implementation of OSH programmes
- b. Predictors: (Constant), Employee participation

Results of the Coefficient for Regression between Employee Participation and Implementation of OSH Programmes

A further test on the beta coefficient of the resulting model in Table 4.42 shows t-values of 13.530 and 4.068 respectively and p value of 0.000 which is less than 0.05

suggesting that the model is statistically significant. The model was defined by $Y = 36.854 + 0.381X_4 + e$ indicating that for every unit of employee participation there was an increase of implementation of OSH programme by 0.381.

Table 4.42: Beta Coefficients on Implementation of OSH Programmes and Employee Participation

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
(Constant)	36.854	2.724		13.530	.000
Employee Participation	.381	.094	.250	4.068	.000

a. Dependent Variable: implementation of OSH programmes.

From the correlation and regression results on employee participation and implementation of OSH programmes the study concluded that employee participation influenced implementation of OSH programmes and therefore research question one was answered. Several empirical studies are also consistent with the findings of the current study. Such studies include a study on Promotion of the health of construction workers by Thomas and Jan (1998) who found attitudes of employees toward health promotion in the workplace to be highly positive and supportive of the development and implementation of health promotion programmes. Another study by Dillard (1998) on effective strategy for reducing workers' compensation costs provided support for involving employees on safety teams or committees as a cost reduction strategy. Similarly a study by Canadian labour and business centre (2002) on wellness programmes found employee involvement critical to the wellness initiatives, particularly when employees were involved in identifying the need for specific initiatives, designing and implementing them and monitoring their impact.

4.7.5 Regression Summary for All Variables without Moderating Variable

The findings for the overall multiple regression model without moderating variables are presented in Tables 4.43 4.44 and 4.45.

Table: 4.43 Model Summary for all Variables without Moderating Variable

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.786 ^a	.618	.612	6.03796

a. Predictors: (Constant), X4, X3, X2, X1

b. Dependent Variable: Implementation of OSH Programmes.

X4-Employee participation, X3-Legal framework, X2-Employee training, X1-Management support

Table 4.44 ANOVA Test for all Variables without Moderating Variable

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14533.144	4	3633.286	99.660	.000 ^b
	Residual	8968.410	246	36.457		
	Total	23501.554	250			

a. Dependent Variable: Implementation of OSH programmes

b. Predictors: (Constant), X4, X3, X2, X1

Table: 4.45 Test of Beta Coefficient for all Variables without Moderating Variable

Model		Unstandardized Coefficients		Standardized t	Sig.
		B	Std. Error	Beta	
1	(Constant)	7.937	2.453	3.236	.001
	X1	.055	.058	.042	.956
	X2	3.774	.358	.458	10.547
	X3	.744	.071	.450	10.409
	X4	.099	.067	.065	1.467

a. Dependent Variable: Implementation of OSH programmes

The results in model summary Table 4.43 clearly indicates a relationship between X4-Employee participation, X3-Legal framework, X2-Employee training, X1-Management support and implementation of occupational safety and health programmes in which R= 0.786. The value of $R^2 = 0.618$ implies that 61.8% of implementation of OSH programmes was explained by X4, X3, X2, X1 meaning that other factors could explain the implementation of OSH programmes. ANOVA results in table 4.44 show that the model of implementation of OSH programmes and X4,

X3, X2, X1 was statistically significant with $F=99.660$ and $p\text{-value}=0.000$ less than 0.05. It was therefore concluded that the overall regression model resulted in significantly better prediction of implementation of OSH programmes. Finally the beta coefficient summary in Table 4.45 shows positive b values for all the predictor variables indicating positive relationships; all the p-values are less than 0.05 hence it was concluded that the model was statistically significant. The model was defined as: $Y = 7.937 + 0.055X_1 + 3.774X_2 + 0.744X_3 + 0.099X_4$ which indicates that all the factors were affecting implementation of OSH programmes positively.

4.7.6 Moderating Effect Test

In order to test the moderating influence of organization structure (moderating variable) on the relationship between dependent and independent variables, regression analysis was conducted for each independent variable with the moderating variable and for all independent variables combined with the moderating variable.

Moderating Influence of Organization Structure on the Relationship between Implementation of OSH Programmes and Management Support.

The regression for management support with moderating variable (organization structure) is presented in Table 4.46, 4.47 and 4.48. The results in Table 4.46 shows that the R value was 0.398 indicating that there was a positive relationship between implementation of OSH programmes and management support with moderating variable. The same model summary table shows that when organization structure was absent $R\text{ squared} = 0.177$ (17.7%) and it decreased to 0.158 (15.8%) when organization structure was introduced which implies that organization structure lowers the influence that management support has on implementation of OSH programmes. However the relationship is still statistically significant as indicated by $P\text{ value} < 0.05$. The lowering effect of organization structure on management support could be as a result of diseconomies of scale where management of large industries may be unable to cope with high OSH costs such as training and PPE (personal protective equipments) costs besides difficulties in monitoring OSH programmes.

The ANOVA results for management support with moderating variable in Table 4.47 also indicates that the model was significant with $F=46.552$ and $p=0.000<0.05$ meaning that management support with organization structure had significant effect on implementation of OSH programmes. A further test on the beta coefficient of the resulting model in Table 4.48 shows a significant change in the beta coefficients before and after the introduction of the moderating variable. The model remained statistically significant with p value= $0.000 < 0.05$. The model is given by $Y = 36.642 + 0.009X_1 * Z$.

Table 4.46: Model Summary for Management Support with Moderating Variable

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.421 ^a	.177	.171	9.39783
2	.398 ^a	.158	.155	8.92500

a. Predictors: (Constant), x1z

Table 4.47: ANOVA Test for Management Support with Moderating Variable

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1559.593	1	1559.593	17.659	.000 ^b
	Residual	21903.163	248	88.319		
	Total	23462.756	249			
2	Regression	3708.159	1	3708.159	46.552	.000 ^b
	Residual	19754.597	248	79.656		
	Total	23462.756	249			

a. Dependent Variable: Implementation of OSH programmes

b. Predictors: (Constant), Management support*Organization structure

Table 4.48: Test of Beta Coefficient on Management Support with Moderating Variable

Model		Unstandardized		Standardized	t	Sig.
		Coefficients		Coefficients		
		B	Std. Error	Beta		
1	(Constant)	36.921	2.628		14.051	.000
	Management support	.182	.043	.258	4.202	.000
2	(Constant)	36.642	1.713	.398	21.391	.000
	Management support	.009	.001		6.823	.000

*Organization structure

a. Dependent Variable: Implementation of OSH programmes

Moderating Influence of Organization Structure on the Relationship between Implementation of OSH Programmes and Employee Training.

Regression analysis for employee training with moderating variable is presented in Table 4.49, 4.50 and 4.51. The model summary table 4.49 revealed that the R value was 0.642 indicating that there was a positive relationship between implementation of OSH programmes and employee training with moderating variable. The same table shows a reduction in R^2 from 0.422(42.2%) to 0.412 (41.2%) when moderating variable was introduced which implies that the influence of training on implementation of OSH programmes lowered with the introduction of organization structure; this means that the organization structure has a negative influence on the training role in the implementation of OSH programmes; however, the relationship is still statistically significant as indicated by P value= 0.000 < 0.01. The lowering effect of organization structure on employee training could be associated to high costs involved in training large number of employees which large and medium sized industries would wish to avoid.

Further analyses based on analysis of variance shown in the ANOVA Table 4.50 also gives F-statistics value 175.195 with p-value =0.000 which is also less than 0.05 indicating that the model was statistically significant. The beta coefficient Table 4.51 also shows a significant change in the beta coefficients before and after the

introduction of the moderating variable. The p-values were $0.000 < 0.05$ and it was concluded that the model was statistically significant. The model was given by $Y = 32.326 + 0.167X_2 * Z$.

Table 4.49 :Model Summary for Employee Training with Moderating Variable

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.649 ^a	.422	.419	7.37797
2	.642 ^a	.412	.410	7.43902

a. Predictors: (Constant), Employee training *Organization structure

Table 4.50: ANOVA Test for Employee Training with Moderating Variable

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9921.240	1	9921.240	182.260	.000 ^b
	Residual	13608.618	250	54.434		
	Total	23529.857	251			
2	Regression	9695.102	1	9695.102	175.195	.000 ^b
	Residual	13834.755	250	55.339		
	Total	23529.857	251			

a. Dependent Variable: Implementation of OSH programmes

b. Predictors: (Constant), Employee training *Organization structure

Table 4.51: Test of Beta Coefficient on Employee Training with Moderating Variable

Model	Unstandardized Coefficients		Standardized t	Sig.
	B	Std. Error	Beta	
(Constant)	25.426	1.713		.000
1 Employee Training	5.328	.395	.649	.000
(Constant)	32.326	1.252		.000
2 Employee training *Organization structure	.167	.013	.642	.000

a. Dependent Variable: Implementation of OSH programmes

Moderating Influence of Organization Structure on the Relationship between Implementation of OSH Programmes and Legal framework.

The results in Tables 4.52, 4.53 and 4.54 give regression for legal framework with moderating variable. The results in Table 4.52 show that the R value was 0.638 indicating that there was a positive relationship between implementation of OSH programmes and legal framework with moderating variable. The same Table shows that when organization structure was absent R squared= 0.422 (42.2%) and it decreased to 0.407 (40.7%) when organization structure was introduced which implies that organization structure lowered the influence that legal framework had on implementation of OSH programmes. However the relationship was still statistically significant as indicated by P value < 0.05.

The lowering effect of organisation structure on legal framework could be attributed to the government’s inability to monitor if medium and large sized industries were implementing the OSH programmes. Large organisations could also be able to avoid government rules on adherence to OSH by compromising government officers who are charged with the responsibility of conducting OSH inspections and audits. In addition medium and large industries can afford to engage OSH officers and this could reduce the need for close government monitoring.

The results in Table 4.53 gives ANOVA summary for legal framework with moderating variable in which F-Statistics value=171.375 and p value 0.000<0.05 meaning that the model was significant. The results of beta coefficient summary Table 4.54 shows that before introducing the moderating variable t-values were 9.289 and 13.502 respectively and with moderating variable they were 21.048 and 13.091. The p-values were 0.000< 0.05 and its concluded that the model was statistically significant and it was given by $Y = 30.047 + 0.031X_3 * Z$.

Table 4.52 : Model Summary for Legal Framework with Moderating Variable

Mode	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.649 ^a	.422	.419	7.37764
2	.638 ^a	.407	.404	7.47266

a. Predictors: (Constant), Legal framework *Organization structure

Table 4.53: ANOVA Test for Legal Framework with Moderating Variable Employee Training

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9922.464	1	9922.464	182.299	.000 ^b
	Residual	13607.393	250	54.430		
	Total	23529.857	251			
2	Regression	9569.693	1	9569.693	171.375	.000 ^b
	Residual	13960.164	250	55.841		
	Total	23529.857	251			

a. Dependent Variable: Implementation of OSH programmes

b. Predictors: (Constant), Legal framework *Organization structure

Table 4.54: Test of Beta Coefficient on Legal Framework with Moderating Variable

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error			
		1	(Constant)	19.721	2.123	
	Legal framework	1.072	.079	.649	13.502	.000
2	(Constant)	30.047	1.428		21.048	.000
	Legal framework	.031	.002	.638	13.091	.000
	*Organization structure					

a. Dependent Variable: Implementation of OSH programmes

Moderating Influence of Organization Structure on the Relationship between Implementation of OSH Programmes and Employee Participation

Tables 4.55, 4.56, and 4.57 give regression outputs for employee participation with moderating variable. The model summary Table 4.55 shows that the R value was 0.373 indicating that there was a positive relationship between implementation of OSH programmes and employee participation with moderating variable. In addition the model summary table shows that when organization structure was absent R squared was 0.1225 (12.25%) but when moderating variable was introduced it increased to 0.139 (13.9%) which implies that organization structure increases the influence that employee participation has on implementation of OSH programmes

The relationship between implementation of OSH programmes and employee participation with moderating variable is also statistically significant as indicated by $P=0.000 < 0.05$. Increased employee participation when moderating variable was introduced could be as a result of existence of OSH committees and OSH officers mainly in the medium and large organizations which constituted a large proportion of this study; as a result employees were more aware of occupational health and safety in these industries than in small firms leading to improved implementation of OSH programmes.

The ANOVA results for employee participation with moderating variable in Table 4.56 also indicated that the model for implementation of OSH programmes and employee participation with organization structure was significant with $F=40.226$ and $p=0.000 < 0.05$. The beta coefficient results shown in Table 4.57 shows a significant change in the beta coefficients before and after the introduction of the moderating variable. The model remained statistically significant with p value= $0.000 < 0.05$. The model is given by $Y = 37.621 + 0.016X_4 * Z$.

4.55: Model Summary for Employee participation with Moderating Variable

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.350 ^a	.1225	.1206	9.40752
2	.373 ^a	.139	.136	9.01425

a. Predictors: (Constant), Implementation of OSH programmes

Table 4.56: ANOVA Test for Employee Participation with Moderating Variable

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1464.703	1	1464.703	16.550	.000 ^b
	Residual	22036.851	249	88.501		
	Total	23501.554	250			
2	Regression	3268.645	1	3268.645	40.226	.000 ^b
	Residual	20232.909	249	81.257		
	Total	23501.554	250			

a. Dependent Variable: Implementation of OSH programmes

b. Predictors: (Constant), Employee participation *Organization structure

Table 4.57: Test of Beta Coefficient on Employee Participation with Moderating Variable

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	36.854	2.724		13.530	.000
	Employee Participation	.381	.094	.250	4.068	.000
2	(Constant)	37.621	1.683		22.348	.000
	Employee participation	.016	.003	.373	6.342	.000
	*Organization structure					

a. Dependent Variable: Implementation of OSH programmes

4.7.7 Overall Regression Model with Moderating Variable

A multiple regression analysis was carried to test for the moderating influence of organization structure in the overall model. The tables 4.58, 4.59 and 4.60 give the statistical results of this multiple regression.

Table 4.58: Model Summary for all Variables with Moderating Variable

Mode	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.786 ^a	.618	.612	6.03796
2	.714 ^a	.509	.501	6.86509

a. Predictors: (Constant), x4z, x3z, x2z, x1z

Table 4.59 ANOVA Test for all Variables with Moderating Variable

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14533.144	4	3633.286	99.660	.000 ^b
	Residual	8968.410	246	36.457		
	Total	23501.554	250			
2	Regression	11934.708	4	2983.677	63.308	.000 ^b
	Residual	11499.589	244	47.129		
	Total	23434.297	248			

a. Dependent Variable: IMF

b. Predictors: (Constant), x4z, x2z, x3z, x1z

Table 4.60: Test of Beta Coefficient for all Variables with Moderating Variable

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error			
1	(Constant)	7.937	2.453		3.236	.001
	X1	.055	.058	.042	.956	.040
	X2	3.774	.358	.458	10.547	.000
	X3	.744	.071	.450	10.409	.000
	X4	.099	.067	.065	1.467	.044
2	(Constant)	30.285	1.453		20.845	.000
	x1z	-.001	.002	-.069	-.930	.033
	x2z	.122	.018	.468	6.900	.000
	x3z	.024	.003	.484	6.764	.000
	x4z	-.009	.003	-.198	-2.643	.009

a. Dependent Variable: IMF

Model summary Table 4.58 shows that $R=0.714$ indicating that there is a relationship between implementation of OSH programmes and X4-Employee participation, X3-Legal framework, X2-Employee training, X1- Management support combined with Z-Organization structure. The model summary Table further shows that when moderating variable in the overall model was absent $R^2=0.618$ (61.8%) and it reduced to 0.509 (50.9 %) when organization structure was introduced which implies that organization structure lowers the influence that the predictor variables combined have on implementation of OSH programmes.

ANOVA results in Table 4.59 show that the overall regression model between implementation of OSH programmes and X4z, X3z, X2z, X1z was significant at $F=63.308$ with the $p\text{-value}=0.000 < 0.05$. Based on beta coefficient of the resulting model in Table 4.60, there was no significant change in the beta coefficients before and after the introduction of the moderating variable. This is supported by the fact that the p values were all less than 0.05. The overall Regression model equation with organizational structure as moderating variable was defined as; $Y = 30.285 - 0.001X_1 * Z + 0.122X_2 * Z + 0.024X_3 * Z - 0.009X_4 * Z$ which means that every unit of X1 and X4 with Z leads to decrease in Y; on the other hand every unit of X2 and X3 leads to increase of Y values.

The regression results discussed above show that organization structure had a moderating effect on the relationship between independent variables (management support, employee training, legal framework and employee participation) and dependent variable (implementation of OSH programmes). These results agree with several empirical studies by scholars such as Holmes (1999); Lingard and Rowlinson (1994) ; Lilis (2012); Lindoe and Olsen(2004) ; Micheli and Cagno, (2010) who are all in agreement that large and small firms respond differently to implementation of OSH programmes.

4.7.8 Structural Equation Model (SEM)

Structural equation model without moderator in Figure 4.20 and with moderator in Figure 4.21 gives similar findings as in multiple regression models. Similarly model parameter without moderator in Table 4.61 and with moderator in Table 4.62 gives similar results as in the multiple regression models; in both cases the regression weights are approximately the same with the coefficients of the model. SEM further illustrates the relationship between independent variables as indicated by the covariances and variances values in Tables 4.61 and 4.62.

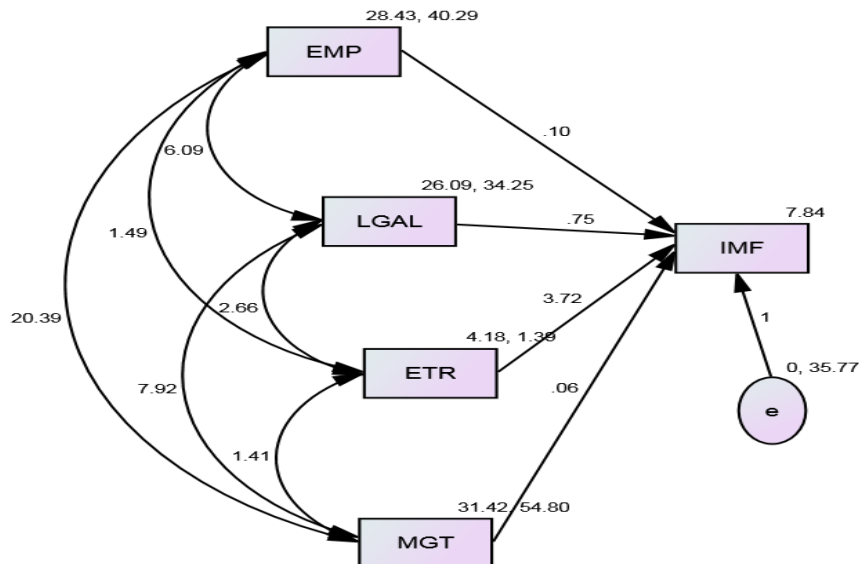


Figure 4.20 Structural Equation Model (SEM) Without Moderator

KEY

EMP-Employee participation

LGAL-Legal framework

ETR-Employee training

MGT-Management support

Table 4.61: Model Parameter Table (Without Moderator)

<u>Regression Weights: (Group number 1 - Default model)</u>						
			Estimate	S.E.	C.R.	P
IMF	<---	X1	.06	.06	1.04	.30
IMF	<---	X4	.10	.07	1.48	.14
IMF	<---	X3	.75	.07	10.65	***
IMF	<---	X2	3.72	.35	10.57	***
<u>Intercepts: (Group number 1 - Default model)</u>						
IMF			7.84	2.43	3.22	.00
<u>Covariances: (Group number 1 - Default model)</u>						
X4	<-->	X1	20.39	3.24	6.30	***
X1	<-->	X3	7.92	2.78	2.85	.00
X1	<-->	X2	1.41	.56	2.53	.01
X3	<-->	X2	2.66	.47	5.70	***
X4	<-->	X3	6.09	2.38	2.56	.01
X4	<-->	X3	1.49	.48	3.10	.00
<u>Variances: (Group number 1 - Default model)</u>						
X4			40.29	3.60	11.18	***
X1			54.80	4.89	11.20	***
X3			34.25	3.06	11.20	***
X2			1.39	.12	11.20	***
e			35.77	3.19	11.20	***

KEY

IMF- Implementation of Occupational Safety and Health Programmes

X1-Management Support

X2-Employee Training

X3-Legal Framework

X4-Employee Participation

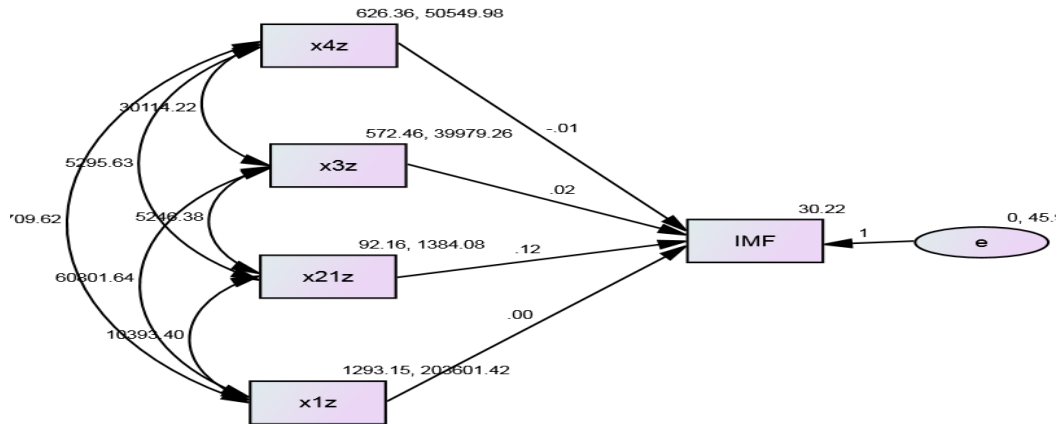


Figure 4.21: Structural Equation Model (SEM) With Moderator

Table 4.62: Model parameter table (with moderator)

<u>Regression Weights: (Group number 1 - Default model)</u>						
			Estimate	S.E.	C.R.	P
IMF	<---	x3z	.02	.00	6.88	***
IMF	<---	x4z	-.01	.00	-2.61	.01
IMF	<---	x2z	.12	.02	7.00	***
IMF	<---	x1z	.00	.00	-.89	.37
<u>Intercepts: (Group number 1 - Default model)</u>						
IMF			30.22	1.43	21.16	***
<u>Covariances: (Group number 1 - Default model)</u>						
x4z	<-->	x1z	77709.62	8076.98	9.62	***
x3z	<-->	x1z	60801.64	6873.95	8.85	***
x2z	<-->	x1z	10393.40	1247.52	8.33	***
x3z	<-->	x4z	30114.22	3416.98	8.81	***
x3z	<-->	x2z	5246.38	574.56	9.13	***
x4z	<-->	x2z	5295.63	625.19	8.47	***
<u>Variances: (Group number 1 - Default model)</u>						
x3z			39979.25	3568.72	11.20	***
x4z			50549.98	4517.47	11.19	***
x2z			1384.08	123.55	11.20	***
x1z			203601.42	18217.15	11.18	***
e			45.94	4.10	11.20	***

4.7.9 Model Fit Summary Parameters

Alternative further analysis was done using Structural Equation Modeling (SEM) a technique commonly used by researchers in the social sciences to find out the relationship between exogenous and endogenous variables and also finding out whether the model is fitting well using fit indices (Moss,2009). If the model is acceptable, then the researcher needs to investigate whether the specific paths are significant. The most widely used fit indices as described by Hooper, Coughian and Mullen (2008) are the Comparative Fit Index (CFI), Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI) and Root Mean Square Error of Approximation (RMSEA).

This study used CFI, GFI, AGFI and RMSEA to examine whether both the overall models, that is, model 1 and model 2 were fit enough. The Comparative Fit Index (CFI) is one of the fit indices popularly used because it is least affected by sample size and it takes into account a sample size that performs well even if the size is small (Tabachnick & Fidell, 2013). The value for this statistic ranges between 0 and 1. Values closer to 1 indicate a good fit.

Goodness of Fit Index-GFI is used to measure the amount of variance and covariance in the observed correlation matrix. Values between 0.9 and 1 are acceptable (Arbuckle & Wothke, 1999). Adjusted Goodness of Fit Index (AGFI) is another version of GFI which corrects GFI affected by the number of indicators of each latent variable. The values of AGFI range between 0 and 1 and for a good fit, AGFI value must be 0.9 and above. Lastly Root Mean Square Error of Approximation (RMSEA) examines how bad the model fits the data by considering the error in the approximation. Values less than 0.1 are acceptable (Byrne, 2001; Shamsuddin, Othman, Shahadan & Zakaria, 2012). Table 4.63 shows that all the model fits met the required threshold value.

4.63: Model Fit Indices Table

	MODEL	CFI	GFI	AGFI	RMSEA
1	Default model	1.000	0.999	0.916	0.050
Without	Saturated model	1.000	1.000		
moderator	Independence model	0.000	0.000	0.001	0.213
2	Default model	0.972	0.898	0.822	0.127
With	Saturated model	1.000	1.000		
moderator	Independence model	0.000	0.283	0.173	0.234

4.7.10 Optimal Model

Based on the tests conducted for this study it was concluded that the independent variables (Management support, employee training, legal framework and employee participation) influenced the dependent variable (Implementation of OSH programmes). The moderating variable (Organization structure) was also found to have a moderating effect on the relationship between independent variables and dependent variable because it lowered the influence of management support, employee training and legal framework and increased the influence of employee participation on implementation of OSH programmes .

By comparing overall regression model 1 (without moderator) with overall regression model 2 (with moderator) in Table 4.58 it was clear that R squared value for model 1 was greater than R squared value for model 2, that is, $R_1^2 > R_2^2 = 0.618 > 0.509$ meaning that organization structure had a negative moderating effect on the overall model. Again Table 4.63 shows that CFI, GFI, AGFI and RMSEA values for model 2 were lower than for model 1. Therefore based on the research findings the proposed study model was retained as the optimal model.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The study sought to determine the perceptions of the determinants of implementation of occupational safety and health (OSH) programmes in the manufacturing sector in Kenya. This chapter provides a summary of major findings based on the objectives of the study. It also gives conclusion of the study and ends with recommendations and suggestions of areas for further research.

5.2 Summary of Major Findings

This section provides a discussion of major findings which are based on the objectives of the study. The objectives are related to the study variables, that is, management support, employee training, legal framework, employee participation and organization structure (moderating variable).

5.2.1 The Effect of Management Support on Implementation of Occupational Safety and Health Programmes.

The findings revealed a positive significant relationship between management support and implementation of OSH Programmes meaning that management support was instrumental in implementation of OSH programmes in Kenya. This indicates that management support is required in efficient OSHMS (Occupational safety and health Management system) in the manufacturing sector in Kenya. Management support was reflected in provision of all the necessary safety equipments, allocation of funds for OSH, organizing internal safety audits and inspections, constitution of health and safety committees, taking responsibility for injuries and sicknesses at work and having safety as an agenda in meetings. These finding are consistent with (Armstrong 2006; Dressler 2003) views that that the prevention of accidents and elimination of H&S hazards are a prime responsibility of management and managers in order to minimize suffering and loss.

5.2.2 The Effect of Employee Training on Implementation of Occupational Safety and Health Programmes.

The findings showed a significant and positive linear relationship between employee training and implementation of OSH programmes meaning that improved employee training enhanced implementation of OSH programmes. According to half of the respondents OSH induction and information was provided, funds were allocated for OSH training and OSH training was incorporated in OSH policy. On the other hand more than half of the respondents indicated that new employees were not inducted in OSH, employees did not take OSH training seriously and were not sponsored for OSH training. This implies that the respondents were in agreement that employee training affected implementation of OSH programmes. However management required improvement especially in H&S induction, allocation of funds for training and exposing employees to training experiences outside the organization. Similarly employees needed to take OSH training seriously.

These findings corresponds with Pratt and Bernett (1985); Rao (2005) who argue that provision of OSH training should commence immediately a member of staff is employed and as part of normal induction, employees should be made aware of their responsibility for H&S, general health hazards, the use of safety clothing and equipment, the availability of medical services, safety rules, material handling, first aid fire prevention and procedures for reporting accidents. After induction further safety training may be necessary in connection with an individual's particular job.

5.2.3 The Effect of Legal Framework on Implementation of Occupational Safety and Health Programmes.

Results indicated that government rules and regulations influenced implementation of OSH programmes. This was reflected in respondents opinions that OSH national policy, OSH Act (OSHA), familiarity with OSHA, government inspections and audits and government support affected implementation of OSH programmes in the manufacturing sector in Kenya to a large and very large extent. However, on the implement ability of OSHA, the respondents felt that it was implementable only to a

moderate extent implying that OSHA was not easy to implement. Correlation and regression analysis on legal frame work and implementation of OSH programmes also suggested a positive significant correlation between the two variables meaning that implementation of OSH programmes was explained by legal framework.

The findings of the study underscores the importance of government interventions in the implementation of OSH programmes but however raises questions as to why the Act was not largely implementable, a question that should concern government policy makers. These findings support ILO (2006); Heinrich (1999) that the most effective interventions for improving occupational safety and health is implementation of top-down governmental regulations and enforcement of legislation, a view also shared by Bernardin, John and Russell (1993); Wayne (1995) who opinion that OSH authorities should conduct work place inspections through DOHSS officers who have knowledge and experience in the OSH field and are trained in recognition of safety and health hazards.

5.2.4 The Effect of Employee Participation on Implementation of Occupational Safety and Health Programmes in Manufacturing Sector in Kenya.

There were mixed feelings across the sub variables that were used to measure employees' participation. On one hand majority of the respondents agreed that workers had embraced a health and safety culture, employees were represented in OSH committees, OSH representatives took an active role in OSH and that employees reported hazardous conditions to the authority. On the other hand only half the respondents agreed that employees always wore personal protective equipments (PPE'S) provided to them, complied with OSH rules and safe work procedures and were given safety targets. This indicated that a sizeable number of employees in the industries did not comply with OSH rules and were not appraised on safety by employers.

The relationship between implementation of OSH programmes and employee participation was also confirmed through correlation and regression analysis which

showed a clear significant linear relationship between the two variables. This means that employee participation had a significant effect on implementation of OSH programmes and therefore implementation of OSH programmes was explained by employee participation.

The findings strongly suggest that cooperation between management and workers or their representatives within an enterprise is an essential element of prevention of accidents and diseases at the workplace. This is consistent with views of other scholars such as Derek and Laura (1998) who assert that although employees have a right to provision of health and safety at work, they too have a duty to take reasonable care for their safety and health. This is echoed by Dessler (2003) who indicates that employee is legally bound to comply with the safety rules and instructions that the employer promulgates. Rao (2005); Derek and Laura (1998) also propagates employee participation through constitution of OSH committees by employers. The committees should include representatives from workers and supervisors from various departments and levels and management should make it a practice to consult with such committees for the purpose of making arrangements for promoting and developing health and safety measures.

5.2.5 Moderating effect of Organizational Structure on the Relationship between Independent Variables and Implementation of Occupational Safety and Health Programmes (Dependent Variable) in Manufacturing Sector in Kenya.

Organisation structure was found to have a moderating effect on the relationship between implementation of OSH programmes and management support, employee training, legal framework and employee participation in the manufacturing sector in Kenya. Majority of the respondents agreed that larger firms were more advantaged than small firms in the implementation of OSH programmes. However, half of the respondents did not think that small firms had little if any access to modern occupational health and safety services meaning that both large and small industries had access to OSH services.

Regression for independent variables with moderating variable on dependent variable showed that organisation structure lowered the influence that management support, employee training and legal framework had on the implementation of OSH programmes but increased the influence of employee participation. The overall regression summary for all the independent variables without moderating variable also showed a positive and significant relationship between all independent variables combined and implementation of OSH programmes implying that implementation of OSH programmes was substantially explained by all the variables combined. Moderating variable was also found to have a moderating influence in the overall model since it lowered R squared in the overall model implying that organization structure lowered the influence that the predictor variables combined had on implementation of OSH programmes.

The findings collaborate with Holmes (1999) who found that smaller businesses were not effective in implementing OSH programmes because the management put the responsibility for workers to look after their own safety and health. These views were also shared by Bartel and Thomas (1985) who observed that smaller firms are less able to afford expensive OSH regulations leave alone employing a safety advisor or officer.

5.3 Conclusion

Based on the findings of the study it can be concluded that all the independent variables in the study, that is, management support, employee training, legal framework, and employee participation affected implementation of OSH programmes (dependent variable). This relationship was confirmed through correlation and regression analysis which revealed that there was a positive significant linear relationship between the independent variables and dependent variable.

Regression model summary indicated that implementation of OSH programmes was explained by management support, employee training, Legal Framework and

employee participation. The model of the study was also found significant since p values in all cases were less than 0.05. The overall multiple regressions also showed that all the factors put together explained 61.8% of implementation of OSH programmes.

Organization structure (moderating factor) was also found to have a moderating effect on the relationship between the independent variables and the dependent variable because the R squared in all the independent variables changed after introduction of moderating variable. It was therefore concluded that organization structure lowered the influence that management, training, and legal framework had on implementation of OSH programmes but increased the influence of employee participation. Organization structure was also found to have a moderating influence in the overall model since R squared in the overall model reduced implying that organization structure lowered the influence that the predictor variables combined had on implementation of OSH programmes.

5.4 Recommendations

Based on the finding of this study recommendations were offered in relation to each objective of the study.

5.4.1 Management Support and Implementation of OSH Programmes.

Though management was found to be supportive of OSH in the industries about 30 % of the respondents were of a contrary opinion. Specifically 57.9 % indicated that safety was not an agenda in meetings. The management should therefore improve in the allocation of funds for OSH, prioritizing safety agenda in meetings and conducting safety audits and inspections within the organisation.

In addition, the study revealed that in more than half of the industries, employees were not appraised on safety. Since wholistic performance management has become an integral part of today's modern management, it is imperative that management extend evaluation to include safety performance. In other words employees

especially in the production units should be appraised on safety compliance and practices. Though OSH policy was found to exist in many firms especially in large industries, management should bring the policy document to the attention of every employee and make practical use of it. Small industries should also develop an OSH policy document.

In general management should improve its commitment to OSH in the understanding that implementation of OSH programmes would result in long term economic benefits. There is need for management to understand that lack of implementation of OSH programmes may prove costly to the employer in the long run.

5.4.2 Employee training and Implementation of OSH Programmes.

The results show that only 24.2% of the respondents agreed that employees were given induction when they joined the organization this implying that the rest 76% thought otherwise. Also about 63% disagreed that employees were sponsored for OSH training outside the organization. In addition half of the respondents indicated that funds were not allocated for OSH training and OSH training was not part of the OSH policy. Qualitative data also indicated that management viewed training as leading to loss of working hours. This study recommends that management of industries in Kenya should incorporate OSH awareness in induction of new employees, allocate specific funds for OSH training, sponsor employees for OSH training outside the organization , incorporate OSH training in the policy document and view OSH training as a long term cost saving measure and not a loss to the company.

Further, 44 % of the respondents indicated that OSH training was offered on a yearly basis and it is recommendable that management provides training on a more frequent basis. The training programme should also incorporate refresher courses to sensitize employees of new hazards that may be brought about by introduction of new technology. Though the results showed that a variety of techniques were used to disseminate OSH information, it also came out that majority of the industries did not

make use of films, safety awareness and campaign weeks, techniques, that have been found efficient in dissemination of OSH information. Management should thus enhance the use of these techniques in order to attract the attention of many employees thus enhance its efficiency in disseminating OSH information.

5.4.3 Legal framework and Implementation of OSH Programmes.

Though legislation was found to have a significant effect on implementation of OSH programmes, 68% of the respondents indicated that the Act was only moderately implementable. The government should therefore review the occupational safety and health Act (OSHA) taking into account the sentiments of the stakeholders. For example it should support the process of implementation by making the cost of implementation of OSHA lower through lowering taxes paid by the industries or even pooling funds for the costly OSH audits.

According to the respondents, the challenges of implementation of OSH programmes included compromise of inspection standards by government inspection officers and difficulties in interpreting OSH statutory requirements. The study recommends that the government should improve on its OSH inspectorate systems by making the inspections frequent and consistent and also formulate ways of dealing with the officers who compromise on the standards of inspections in the industries. It should also simplify the OSHA in order to make it easy to understand and thus enhance compliance. Since face to face interactions revealed that large firms seemed to be more aware of OSH than small firms the government should focus on the small firms while at the same time ensure that large firms comply with OSH practices.

The respondents also indicated that they lacked well trained OSH officers and qualified trainers. In order to increase the number of practitioners in the area of OSH, the government should promote intermediate courses in colleges, undergraduate and post-graduate courses at the University level. This would ensure that the government has readily available trainers in the area of OSH. On the same note the government should provide guidelines on minimum qualifications for the OSH officers and

ensure that those in safety committees are trained by practitioners duly authorized by the Directorate of Occupational Health and Safety Services thereby ensuring quality and ethics in the profession.

5.4.4 Employee Participation and Implementation of OSH Programmes.

According to the opinions expressed by half of the respondents, employees did not take occupational safety and health seriously. This was reflected by 60% respondents indicating that the employees had an attitude that employer was responsible for their health and safety and not themselves and half of the respondents indicating that employees did not wear personal protective items and comply with OSH rules and safe work procedures. Employees therefore should show personal responsibility for their safety and health by taking care of themselves while they are at work. They should always wear protective clothing; comply with safe work procedures and more so familiarize themselves with OSH Act if they are to understand their role in OSH.

The results also indicated that majority of the respondents perceived employees as not taking OSH training seriously and it is recommendable that employees view training as part of their safety management system. OSH committees were also not in existence in about 40 % of the industries. Management should constitute OSH committees in accordance with OSHA (2007) and employees too should initiate formation of such committees in order to enhance their participation in OSH. Both employees and their representatives should be proactive in reporting hazardous conditions to the management in order to ensure that timely decisions are made and thus avoid costly and regrettable health and safety incidences.

5.4.5 Organization Structure and Implementation of OSH Programmes.

Though it came out that large industries were more advantaged in OSH implementation than small firms, it was also clear that both sized industries had access to modern OSH services. According to the respondents' opinion in unstructured interactions with the researcher, commitment was the key determinant of implementation of OSH in all industries. This study therefore recommends that willingness and commitment to implementation of OSH programmes should override

other organizational interests. This should be done in consideration of the sufferings and pains that poor OSH systems can cause not only to employees but also to customers and the public in general.

Some industries did not have an OSH officer position leaving the very involving OSH task either to the Human resource manager or employees' health and safety representative. Management should consider engaging full time OSH officers who are professionals in the area of OSH.

5.5 Areas for Further Research

In view of the findings of this study gaps emerged which can form the basis of future research in OSH in manufacturing industries in Kenya. Most importantly were the results of the regression analysis which showed that all the independent variables combined explained 61.8 % of implementation of occupational safety and health programmes. Future researchers should therefore investigate which factors other than the ones in this current study affect implementation of occupational safety and health programmes in the manufacturing sector in Kenya. Secondly researchers can embark on finding out how each of the predictor variables in the current study can be made more effective. Thirdly, researchers can go ahead and find out whether the existing OSH systems in the manufacturing sector were productive despite their existence. Lastly, since this study focused on the manufacturing sector, similar studies can also be conducted in other sectors of the economy.

REFERENCES

- Akpan, E. I. (2009). Participative goal-setting: A strategic approach to achieving increased productivity in contemporary organizations. *Oxford Mosaic Journal of Business Strategy*, 1, 37-47.
- Akpan, E. I. (2011). Effective safety and health management policy for improved Performance of organizations in Africa. *International Journal of Business and Management vol. 6, no. 3; March 2011*.
- Alberta J. (2006). *Building an Effective Health and Safety Management*. (Online) Available:<http://employment.alberta.ca/documents/WHS/WHS-PS-building.pdf> (January 6, 2010)
- Al-Darrab, I. A., Gulzar, W. A., Ali, Karuvatt S. (2013). Status of implementation of safety, quality and environmental management systems in Saudi Arabian industries. *Journal of Total Quality Management Business Excellence*. Apr2013, Vol.24 Issue4, p336-354
- Allan, P. (2007). *Human Resource Management in a Business Context*(3rd ed.). London: cenyage Learning EMEA.
- Alli, B.O. (2008).*Fundamental Principles of occupational health and safety* (2nd ed.). International Labour office, Geneva
- Aliyu, A. & Saidu S. (2011). Pattern of occupational hazards and provisions of occupational health services and safety among workers of Kaduna refinery and petrochemical company ltd (KRPC), Kaduna, Nigeria. CJTM Vol 5, No 1 (2011): *Continental Journal of Tropical Medicine*.
- Annah (2004). *The Universal Declaration of Human Rights, The International on Economic, Social and Cultural Rights*.
- Arbuckle, J. L., & Wothke, W. (1999). *AMOS 4.0Users Guide*. Chicago: Small Waters.
- Armstrong, M. (2003).*A Hand Book of Human Resource Management Practice* (9th Ed.). London: Kogan page
- Armstrong, M. (2006).*A Handbook of Human Resource Management Practice* (10th ed.). London: Kogan page.
- Anderson, D., Sweeney, J., & Williams, A. (2002). *Statistics Foe Business and Economics*. Singapore: Thomas Asia Ltd

- Ariffin, K., Ahmad, S., Aiyub, K., Awang, A., Aziz, A., Mohamad, L.Z., Mamat, S. A. (2010). A study of occupational safety and health audit on facilities at ungu omar college, university kebangsaan malaysia: a preliminary analysis. *College Student journal. Sep2010, Vol. 44 Issue 3.*
- Aswathappa, K. (2004). *Human Resource and Personnel Management: Text and Cases.* (3rd ed.). New Delhi: Tata McGraw-Hill Publishing Company Limited, (Chapter 20).
- Auty, A.R. (1999). Auditing health and safety management system: an insurer view. *Journal of Occupational Medicine 49(8): 566-567.*
- Ayodele, R. B., & Olubayo-Fatiregun, M. A. (2010). Workability of safety education and training for workers' strategy in accident induction in selected manufacturing industries in Lagos. *International journal of Sustainable Development, 3, 8-14.*
- Babbie, E. (2002). *The Practice of Social Research.* Belmont: Thomson Wadsworth.
- Babbie, E. (2005). *The Basics of Social Research.* Belmont: Thomson Wadsworth.
- Babbie, E. (2007). *The practice of social research* (11th ed.). New York: Thompson Learning.
- Bandura, (1986). *Social Foundations of Thought and Action: A Social Cognitive Theory.*
- Barcow, L. S. (1980). *Bargaining for Job Safety and Health,* Cambridge, MA, MIT Press, 158
- Bartel, A. P. & Thomas, L. G. (1985). 'Direct and indirect effects of regulation: a new look at OSHA'S impact'. *28 Journal of Law and Economics, 1-25.*
- Benner, L. 1995. Accident investigations: Multilinear events sequencing methods, *Journal of safety Research, 7(2):67-73, June.*
- Bentley, T. A., & Haslam, R. A. (2001). A comparison of safety practices used by managers of high and low accident rate postal delivery offices. *Journal of Safety Science, 37, 19-37.*
- Bernardin, J., John, H., Russel, J. (1993). *Human Resource Management: An Experiential Approach.* Singapore: McGraw-Hill book Co.
- Bernold, L., Lorenc, S., & Davis, M. (2001). "Technological intervention, to Management, 127-131, 245-250.

- Blaikie, N. (1993), *Approaches to Social Enquiry (1st ed.)*. Cambridge: Polity Press.
- Borg, W. R. & Gall, D. M. (1993). *Educational Research: An introduction (5th ed.)*. Long publishers.
- Brady, H. E., Johnston, R. (2008). "The Rolling Cross Section and Causal Distribution". University of Michigan Press. Retrieved July 13, 2013.
- Byrne, B.M (2001). *Structural Equation Modelling with AMOS. Basic Concepts, Applications and Programming*. Hillsdale, New Jersey: Lawrence Erlbaum Associates.
- Canadian centre for occupational Health and safety-CCOHS (2007). *Health and safety guide. Human Resource Professionals*.
- Castillo, E. (2009). Process optimization: A statistical approach. *Journal of Quality Technology*, 40(2):117-135.
- Chen, C.Y., Wu, G.S., Chuang, K.J., Ma, C.M.(2009). Comparative analysis of the factors affecting the implementation of occupational health and safety management systems in the printed circuit board industry in Taiwan. *Journal of Loss Prevention in the Process Industries*. Mar 2009, Vol. 22 Issue 2, p210-215. 6p
- Chen, J. K.C., Zorigt, D. (2013). Managing occupational health and safety in the mining industry in Asia. *Journal of Business Research*. Nov 2013, Vol. 66 Issue 11, p2321- 2331. 11p.
- Chew, D. C. E. (1988). Effective occupational safety activities: Findings in three Asian developing countries. *International Labour Review*, 127, 111-124
- Christian ,M.S., Bradle, J.C., Wallace ,J.C., Burke, M.J. (2009). Workplace safety: A meta-analysis of the roles of person and situation factors. *Journal of Applied Psychology*. 94:110–112.
- Clarke, S., & Ward, K. (2006). *The role of leader influence tactics and safety climate in engaging Employees' safety participation*. Risk Analysis. *Journal of Safety Science*, 26(5):117–118.
- Cliff, D. (2012). *The Management of Occupational Health and Safety in the Australian Mining industry; The University of Western Australia*.
- Colin W. F. (1999). An employee-management consensus approach to continuous Improvement in safety management. *Employee Relations*, Vol. 21 No. 4, 1999, pp. 405-417. MCB University Press, 0142-5455.

- Cockburn, I.M., Bailit, H.L., Berndt, E.R., & Finkelstein, S.N. (1999). Loss of work productivity due to illness and medical treatment. *Journal of Occupational and Environmental Medicine*, Vol. 41 No. 11, pp. 948-53.
- Cohen, A. (1997). Factors of successful occupational safety. *Journal of Safety Research*, 9, 168-17
- Cohen, A., & Cleveland, R. J. (2003). *Safety practices in record-holding plant. Professional Safety*, 9, 26-33
- Cohen, J. & Colligan, N.(1998). *Statistical Power Analysis for the Behavioral Sciences* (2nded.).Hillsdale, NJ: Lawrence Erlbaum.
- Cole, G. A. (2002). *Personnel and Human Resource Management*. (5th ed.). London: Biddles Limited, (chapter 40).
- Cole, G.A. (2004). *Management Theory and Practice* (6th ed.). London: Thompson Learning.
- Cooper, M., & Cotton, D. (2000). Safety training - a special case? *Journal of European Industrial Training*, 24/9, 481-490.
- Cooper, R. D., & Schindler, S. P. (2004). *Business Research Methods* (5th ed.). Boston: Irwin McGraw-Hill.
- Cooper, R.D., & Schindler, S. P.(2006). Exploratory analyses of the effects of Managerial support and feedback consequences. *Journal of Organizational Behaviour Management*. 26: 41-82.
- Cooper, R. D., & Schindler, S. P. (2010). *Business Research Methods* (8th ed.). Boston: Irwin McGraw-Hill.
- David F.G., Patrick,W. S., Phillip, C.F. & Kent D.S. (2010).*Business Statistics*(8th ed.). New Jersey: Pearson publishers.
- David, W. & Walters D.(1998). Employee representation and health and safety: A strategy for improving health and safety performance in small enterprises. *Employee Relations Volume: 20 Issue: 2 1998*
- DeJoy D.M. (1994) .Managing safety in the workplace: An attribution theory and model. *Journal of Safety Research*, 25, 3-17.
- Denzin, N. & Lincoln, Y. (2003). *The Discipline and Practice of Qualitative Research in Denzin, N., & Lincoln, Y. (eds.) Collecting and Interpreting Qualitative Materials* (2nd ed.). California: SAGE Publications, Inc., pp. 1-45.

- Derek, T. & Laura, H. (1998). *Human Resource Management* (4th ed.). England: Pearson Education Limited.
- Dervillis R. F. (1991). *Scale Development*. Newbury: Sage Publications.
- Dessler, G. (2000). *Human Resource Management* (8th ed.). New Jersey: Prentice Hall.
- Dessler, G. (2003). *Human Resource Management* (9th ed.). New Jersey: Prentice Hall.
- Dillard, B. G. (1998). Employee involvement: An effective strategy for reducing workers' compensation costs. *Journal of Fashion Marketing and Management, Vol. 2 Iss: 4, pp.318 – 328*.
- Directorate of occupational health and safety report (2011).
- Drais, E., Favaro, M., & Aubertin, G. (2002). *The systems management of occupational health and safety in enterprises*: Paris: Institute of National health and security.
- Easterby S, M., Thorpe, R. & Jackson, P. (2008). *Management Research* (3rd ed.). London: SAGE Publications Ltd.
- Eklöf, M. (2008). The impact of systematic health and safety management for occupational disorders and long-term work attendance. *Journal of Social Science and Medicine, 67, 965-970*.
- Embassy of the republic of Kenya in Japan (2013). *Industry in Kenya*
http://www.kenyarep.jp.com/business/industry_e.html, accessed on 14/10/2013
- Erick, p. (2009). *Accident Causation Theories: Prevention of Accidents*. Newbury: Sage Publications. Newbury: Sage Publications.
- Eriksson, P., & Kovalainen, A. (2008). *Qualitative Methods in Business Research* (1st ed.). London: SAGE Publications Ltd.
- European Agency for Safety and Health at Work –EUOSHA (2012). *Management of Occupational safety and health*: Luxembourg: Publications Office of the European Union
- EU-OSHA – European Agency for Safety and Health at Work (2002), *The Use of Occupational safety and Health Management Systems in the Member States of the European Union-Experiences at company level*. Luxembourg: Office for Official Publications of the European Communities,.

- EU-OSHA. (2009). *Occupational safety and health and economic performance in small and medium –sized enterprises*. [Online] Available: <http://europa.eu> (march 6, 2013)
- Everett J. (2009) “Overexertion injuries in construction.” *Journal of Construction . Engineer Management.*, 125-127, 109–114.
- Federation of Kenyan employers, (2008) .*Annual Report*.
- Field A. (2005). *Discovering Statistics Using SPSS.*(3rd ed.). London: Sage
- Follmann, J.F. (1988). *The Economics of Industrial health; History, Theory and practice*
- Foot M., & Hook C. (2008). *Introducing Human Resource Management* (5th ed.). London: Pearson Education Limited
- Foxcroft, C., Paterson, H., Roux, N., & Herbst, D (2004). Human Sciences Research Council, 'Psychological assessment in South Africa: A needs analysis: The test use patterns and needs of psychological assessment practitioners: Final Report: July. Retrieved from: [http Documents/1716_Foxcroft_Psychologicalassessmentin%20SA.pdf](http://Documents/1716_Foxcroft_Psychologicalassessmentin%20SA.pdf) on 5/11/14
- Franken, J. R., & Wallen N. E. (2000). *How to Design and Evaluate Research in Education*. McGraw Hill. London.
- Frick, K., Jensen, P. L., Quinlan, M. & Wilthagen, T. (2000). '*Systematic Occupational Safety and Health Management: An Introduction to A New Strategy for Occupational Safety, Health and Well-Being.* , Bingley: Emerald Group Publishing limited.
- Frick, K., Jensen, P. L., Quinlan, M.,& Wilthagen, T. (eds) (2000). *Systematic Occupational Safety and Health Management: Perspectives on an International Development*. Bingley: Emerald Group Publishing limited.
- Frick, K.,& Wren, J. (2000). '*Reviewing Occupational Safety and Health Management: Multiple Roots, Diverse Perspectives and Ambiguous Outcomes*', Emerald Group Publishing limited, Bingley.
- Free online English dictionary. Retrieved 10/05/2012
- Fuess, S. M., & Lowenstein, M A. (1990). Further Analysis of the Theory of Economic regulation: *The Case of the 1969 Coal Mine Health and Safety Act*, 28 *Economic Inquiry*, 354-389.
- Fujita, Y. (1991). What Shapes Operator Performance? *JAERI Human Factors Meeting*, Tokyo.

- Gary, T. (2009). *How to Do your Research Project*. London: SAGE Publications.
- Gay, R. (2005). *Some Exact Conditional Tests of Independence for Rxc Cross Classification Tables*, Psychometrik.nuttingham; Open University press.
- Ghasemi, A., & Zahediasi, S. (2012). Normality Tests for Statistical Analysis: A Guide for Non-Statisticians. *International Journal*, 10(2), 486–489. Doi: 10.5812/Item3505
- Gilkey, D.P., Keefe, T.J., Hautaluoma, J.E., Bigelow, P.L., Herron, R.E. & Stanley, S.A. (2003). *Management Commitment To Safety And Health In Residential Construction: Home Safe Spending Trends 1991–1999*. *Work*. 20: 35-44.
- GOK. (2007). *Occupation Health and Safety Act, 2007*. Nairobi: Government Printer
- GOK (2007). *Workers Benefits Act*. Nairobi Government printers
- GOK, (2011). Available at, <http://www.workcover.nsw.gov.au/healthsafety/Pages/Dutyofcare.aspx>, accessed on 8/6/11
- Gray, W.B., Scholz, J.T. (1993). Does regulatory enforcement work? A panel analysis of OSHA enforcement. *Law Soc Rev*. 27(1):177–213.
- Greene, W.H. (2002). *Econometric analysis*, 5th edition, New York university.
- Gujarati, N. (2002). *Basic Econometrics (4th Ed.)*. London: Macgraw Hill.
- Hackett, P. (1999). *Success in Management; Personnel*. London: John Murray Ltd
- Hale A. R., & Glendon A. I. (1987). *Individual Behaviour in the Control of Danger*. Amsterdam: Elsevier.
- Hatch, M. J. & Cunliffe, A. L. (2006). *Organization Theory (2nd ed.)*. Oxford: Oxford University Press.
- Havlovic, J., & McShane, S. L. (2000). The effectiveness of joint health and safety Committees (JHSCs) and reducing fatalities and injuries in British Columbia forest product mills. *Workplace gazette*, 3, 94–114.
- Heinrich, H.W., Petersen, D. & Roos, N. (1980). *Industrial Accident Prevention: A Safety management Approach*. New York :McGraw Hill
- Heinrich, H.W. (1999). *Industrial Accident Prevention: A Scientific Approach (4th ed.)*. McGraw-Hill. quoted in Grimaldi, John V.; Simonds, Rollin H. (1973). *Safety management*. Homewood, Ill: R. D. Irwin. p. 211. ISBN 0-256-01564-3.

- Heron, R.J.L. (1999). Audit and responsible care in the chemical industry. *Journal of Occupational Medicine* 49(6): 407-410
- Hinze, J. (2006). *The Distraction Theory of Accident Causation*. Procurement, International Conference on Implementation of Safety and Health on Construction Sites, CIB Working Commission W99: Safety and Health on construction Sites,
- Holmes, N., Lingard, H., Yesilyurt Z. & DeMunk, F. (1999). An exploratory study of Meanings of risk control for long term and acute effect occupational health and safety risks in small business construction firms, *Journal of Safety Research*, 30, 251-261.
- Hooper, D., Coughian, J., & Mullen M. (2008). Structural Equation Modelling: Guidance for Determining Model Fit. *Journal of business research method*, 6(1),53-60
- Horswill, M.S., & McKenna, F.P., (1999). The effect of perceived control on risk Taking. *Journal of Applied Social Psychology*, 29, 377-391.
- http://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/@publ/documents/cms_publ_9221116344_en.pdf ilo(2001). "Guidelines on occupational safety and health management systems Retrieved 2013-02-15.
- Hughes, J. S., Magat, W. A., & Ricks, W. E. (1986). The economic consequences of the OSHA cotton dust standards: an analysis of stock price behavior', *Journal of Law and economics*, 29-59.
- Hutcheson, G., & Sofroniou, N. (1999). *The Multivariate Social Scientist*. London: Sage
- Igor, L. J., & Cameron, T.W. (2010). Obtaining compliance with occupational health and safety regulations International. *Journal of Environmental Health Research Vol.20, No. 4, august 2010, 271–287.*
- International Labour Organization. (1991). *Encyclopedia of Occupational Health and Safety*. (4th ed.). Geneva,
- International Labour Organization. (2001). *Encyclopedia of Occupational Health and Safety*. Geneva
- International Labour Organization. (2005). *Safe Work, Global Estimates of Occupational Accidents*. Geneva.

- International Labour Organization.(2006). Global estimates of occupational accidents. Switzerland
- International Labour Organization. (2006). *Promotional Framework for Occupational Safety and Health Convention, 2006* (No. 187) convention 155
- International. Labor Organization, (2009). Accident Prevention: Geneva.*
- International Labour Organization. (2013).*Occupational Health Services And Practice". Ilo.org. Retrieved 2013-02-15.*
- International Labour Organization. (2013). *National Profile on Occupational Safety and Health – Kenya'*
- Israel (1992). *Determining Sample Size. Programme Evaluation and Organizational Development.*IFAS PEOD-6, University of Florida
- Jackson, S. (2009). *Research Methods and Statistics: A critical Thinking Approach.* (3rd ed.). New York: Waldsworth Cengage Learning.
- Jan, H., Terje, L., Jan, E.K. & Bodil, A. (2008). A study of occupational health and safety management in the Norwegian oil and gas industry. *Safety Science* 46: 493-509.*Journal of construction engineering and management* © ASCE / July 2008 / 817
- Jaselskis, E. J., Anderson, S. D., and Jeffrey, S. R. (1996). "Strategies for Achieving Excellence in construction Safety Performance." *Journal of Construction Engineering Management.*, 122-124, 61–70.
- Jill C., & Roger H. (2009). *Business Research: A Practical Guide for Undergraduate & Post Graduate Students.* London: Palgrave Macmillan.
- Kaiser, H.F. (1974). *The Application of Electronic Computers to Factor Analysis.**Educational and Psychological Measurement, 20, 141-151.*
- Kariuki,M.(2011).[http://www.kmco.co.ke/attachments/article/85/Realising.Occupational Safety and Health Fundamental Human Right in Kenya.pdf](http://www.kmco.co.ke/attachments/article/85/Realising.Occupational%20Safety%20and%20Health%20Fundamental%20Human%20Right%20in%20Kenya.pdf) extracted on 5/6/2011
- Kazutaka, K. (1997). Emerging issues in occupational and environmental health *Journal of Environmental Management and Health Volume: 8 Issue: 5 1997*
- Kenei, L.B. (1995). An Investigation of the probable factors contributing to industrial accidents among manufacturing firms in Kenya: *an Empirical Study; Unpublished MBA Project, University of Nairobi.*

- Kent, R. (2001). *Data Construction and Data Analysis for Survey Research*. London: palgrave.
- Association of Manufacturers Directory. (2013). *Over 50 years of Manufacturing excellence*.
- Kenya investment authority. (2013). *Promoting investment in Kenya*.
<http://www.investmentkenya.com/opportunities/manufacturing>
- Kitumbo, H. I. (2009). Accident prevention: a safe workplace. *African Newsletter on Occupational Health and Safety*. 2009; 19:14S:
- Komaki, J., Barwick, K. D., & Scott, L. R. (1998). A behavioral approach to occupational safety: pinpointing and reinforcing safe performance in a food manufacturing plant. *Journal of applied Psychology*, 63, 434-445.
- Kothari, C.R. (2004). *Research Methodology: Methods and Techniques*. New Delhi,
- Kothari, C. R. (1990). *Research methodology: methods and techniques*. New Delhi :New Age International.
- Kreitner, R. (2007). *Management* (10th ed.). Boston: Houghton Mifflin company, (chapter 23).
- Ladd, J. (1987). *Bhopal: An Essay on Moral Responsibility and Civic Virtue*, Department of philosophy, Brown University, Rhode Island, January.
- Lanoie, P. (1992). The impact of occupational safety and health regulation on the risk of workplace accidents: Quebec, 1983–87. *Journal of Human Resources*. 27(4):643–660.
- Laukkanen, T., (1999), Construction work and education: occupational health and safety reviewed. *Journal of Construction Management and Economics*, 17, 53-62.
- Ledesma, L.R.D. & Valero- Mora, p.(2007). *Determining the number of factors to retain in EFA. Practical Assessment Research & Evaluation*, 12(2).
- Levine, D.M., Fustephan, D., Krehbiel, T.C., Berenson, M.L. (2004). *Statistics for Managers Using Microsoft Excel* (6th ed.). London: Pearson Education
- Levitt, R., & Samelson, N. M. (2005).The effect of top management on safety in Construction. *Technical Report No. 196, The Construction Institute, Stanford University, Calif.*

- Lewchuk, W., Shannon, H. S., Walters, V., Richardson, J., Moran, L. A., Haines, T. & Verma, D. (1996). Workplace organisational correlates of lost-time accident rates in manufacturing. *American journal of Industrial Medicine*, 29, 258–268.
- Lilis, S. (2012). Management practices and OSH implementation in SMES in Malaysia. *Journal of Occupational Accidents*.
- Lin, J. & Mills, A. (2001). *Measuring the occupational health and safety performance of construction companies in Australia*.
- Lindoe, P. H., & Olsen, O. E. (2004). Implementing quality and health/safety systems in the hospitality industry. A comparison with the aluminium industry in Norway. *Scandinavian Journal of Hospitality and Tourism*. 4: 154-172.
- Lingard, H., & Rowlinson, S. (1994). Construction site safety in Hong Kong. *Journal of Construction Management and Economics*. 12:501-511.
- Lowe, G.S. (2003). Healthy workplaces and productivity: a discussion paper prepared for the Economic Analysis and Evaluation Division, Health Canada, *Minister of Public Works and Government Services*,
- Machida, S. (2009). System for collection and analysis of occupational accidents data *African Newsletter on Occupational Health and Safety 2009*; 19:14S,
- Magd, H.A. E. (2008). ISO9001; 2000 in the Egyptian manufacturing sector: perceptions and perspectives. *International Journal of Quality and Reliability Management*, 25(2), 173-
- Maina, B. (2006). Kenya Association of Manufacturers < <http://www.kam.co.ke>>
- Makori, E. M., Nandi, O. M. J., Thuo, J. K., Wanyonyi, K. W. (2012). Influence of occupational health and safety programmers on performance of manufacturing firms in Western Province, Kenya. *African Journal of History and Culture (AJHC)*, Vol. 4(4), 46-58.
- Mamoria, C.B., & Gankar S.V. (2008), *Personnel Management*. New Delhi, Himalaya publishing house.
- MattHenn, M. W., & Nick, F. (2009). *A Critical Introduction to Social Research* (2nd ed.). London: Sage Publications Ltd
- Mattila, M., Hyttinen, M., & Rantanen, E. (1994). Effective supervisory behavior and safety at the building site. *International Journal of Industrial Ergonomics*, 13, 85-93.

- Mberia, A.M. (2001). A Survey of the Occupational Health and Safety Programmes Adopted by the banking Industry in Kenya. *An Empirical Study; Unpublished MBA Project; University Of Nairobi.*
- Mbwesa, J. K. (2006). *Introduction to Management Research.* Nairobi: Basic modern Management consultants
- McClay, R. E. (1989). Toward a more universal model of loss incident causation. *Professional Safety, January, 15–20.*
- McGarity, T. O. & Shapiro, S. A. (1996). OSHA's critics and regulatory Reform. *31 Wake Forest Law Review, 587-646*
- McQuiston, T.H. (2000). Empowerment evaluation of worker safety and health education programs, *American Journal of Industrial Medicine, 38, 584-597.*
- Mearns, K., Whitaker, S. M., & Flin, R. (2003). Safety climate, safety management practice and safety performance in off shore environments. *Journal of Safety Science, 41, 641–680*
- Menard, S. (1995). *Applied Logistic Regression Analysis.* Sage university paper series on quantative applications in the social sciences, 07-106. Thousand oaks, CA : Sage.
- Mendeloff, J. M. (1988). *The Dilemma of Toxic Substance Regulation: How Overregulation causes Underregulation at OSHA,* Cambridge, MA, MIT Press, 321 p.
- Micheli, G. J. L., & Cagno, E. (2010). Dealing with SMEs as a whole in OSH issues:Warnings from empirical evidence. *Journal of Safety Science, 48, 729–733*
- Miles M.B. & Huberman M.(1994). *Qualitative Data Analysis: an expanded source Book.* California and London: Sage Publications.
- Miller, J. C.(1984). Is Organized Labor Rational in Supporting OSHA. *Journal of Occupational Psychology.*
- Mohamed, S. (2002). Safety climate in construction site environments. *Journal of Construction Engineering Management.128~5, 375–384.*
- Molenaar, K., Brown, H., Caile, S., & Smith, R. (2002). Corporate culture: A study of firms with outstanding construction safety. *Journal of Professional Safety, July, 18–27.*
- Mondy, R. W. (2008). *Human Resource Management (10th ed.).* London: Pearson Education inc/Pearson prentice hall

- Moss, S. (2009). *Fit Indices for Structural Equation Modeling*. Retrieved August 20, 2014 from psychlopedia:https://www.psych-it.com.au/Psychlopedia/article.asp?id=277.
- Mugenda, O.M. & Mugenda, A. G. (1999). *Research methods: quantitative and Qualitative approaches*. Nairobi: African Centre for Technology Studies
- Mugenda, O.M. & Mugenda, A. G. (2003). *Research methods: quantitative and Qualitative approaches*. Nairobi: African Centre for Technology Studies.
- Mugenda, A.G. (2008). *Social Science Research Theory and Principles*. Nairobi: Applied Research and Training Services.
- Mukherjee, S., Overman, L., Leviton, L. & Hilyer, B., (2000). Evaluation of worker safety and health training. *American Journal of Industrial Medicine*, 38, 155-163.
- Mutai, B. K.(2000). *How to write a quality research proposal*. New Delhi: Thelly Publications.
- Myers, R. (1990). *Classical and Modern Regression with Applications* (2nd ed.). Boston, MA: Duxbury.
- Myoung, P.H. (2008). *Univariate analysis and Normality test using SAS, Stata and Spss*. Working paper. The university information technology services (UITS) center for statistical and Mathematical computing, Indiana University.
- Nadine, M. & Jennifer, W. (2013). Enablers and challenges in implementing a comprehensive workplace health and well-being approach. *International Journal of Workplace Health Management Vol. 6 No. 2, 2013 pp. 129-142*
- Nassiuma, D. K. (2000). *Survey Sampling Theory and Methods*. Nairobi: Nairobi University Press
- National safety council (1995). *Supervisor's safety manual* (6th ed.). Chicago: National Safety Council.
- Nayanthara D., & Wimalaratne, P.L.I.(2012). OSH management framework for workers at construction sites in Sri Lanka. *Journal of Engineering, Construction and Architectural Management Vol. 19 No. 4, 2012 pp.369-392*
- Neuman W. L. (2000). *Social Research Methods: Quantitative And Qualitative Approaches*. Boston: Allyn and Bacon Publishers.
- Nyakang'o, J. B. (2005). *Status of occupational health and safety in Kenya: Workshop on the IUPAC-UNESCO-UNIDO Safety Training Program, part of the IUPAC Congress in Beijing*

- Oak Ridge. (2009). National Lab Safety Document <http://www.ornl.gov>
Occupational Safety and Health, 5th ed. Presented by: Alma Maria Jennifer Gutierrez
- O'Dea, A. & Flin, R. (2001). Site managers and safety leadership in the off shore oil and gas industry. *Journal of Safety Science*, 37, 39–57.
- Orotho, J.A. (2004). *Techniques of Writing Research Proposals And Reports In Education And Social Sciences* (1st ed.). Nairobi: Masola Publishers.
- Osano, E., Kiuluku, P., Njuguna, H., Taruka, L.(2008).Round Table presentation on the manufacturing industry in Kenya.
- Osman, J.K. (1984). *The essentials of Research Methodology for Nigerian Educators*. Ibadan: University Press Limited.
- Perrow, C., (1994). *Normal Accidents: Living with High-Risk Technology*. New York: Basic Books, Inc.
- Pigors, P. & Myers, C. (1981). *Personnel Administration: A point of view and a Method* (9th ed.). Tokyo: McGraw – Hill.
- Pike, A. (2000). Tough Targets and Heavy Penalties: *Financial Times: Business Health and Safety*.
- Pratt K.J. & Bennett S.G. (1985). *Elements of Personnel Management*. England: Vannostrand Reinhold Co. ltd
- Price water house Coopers, (2013).Industrial manufacturing in Kenya
<http://www.pwc.com/ke/en/industries/industrial-manufacturing.jhtml>
- Rahim, M. A., & Magner, N.R. (2005). Confirmatory Factor Analysis of the styles of handling interpersonal conflict: Factor Model and its Intervariance across groups. *Journal of Applied Psychology* .80, 122-132
- Rantanen, J., Warshaw, L.J. (2011). Occupational Health Services in Small Scale Enterprises. *International Labor Organization, Geneva*.
- Rao, V.S.P. (2005). Human Resource Management (2nd ed.). New Delhi: Excel books.
- Rao, P. S. (2008). *Essentials of Human Resource Management and Industrial Relations* (3rd ed.). Mumbai:Himalaya Publishing House

- Rasmussen, J. & Reason (1990). Human error and the problem of causality in analysis of accidents in: D.E.Broadbent, D.E., Reason, J., Baddeley A. (Eds.). *Human Factors in Hazardous Situations, Pages 1–12, Clarendon Press, Oxford.*29
- Rasmussen, J. & Reason (1997). Risk Management in a Dynamic Society: A Modelling Problem. *Journal of Safety Science, Vol. 27, No. 2/3, Elsevier Science Ltd., Pages 183–213. New York.*
- Rea, S. A. (1981). Workmen's Compensation and Occupational Safety Under Imperfect information. *71 American Economic Review, 80-93.*
- Rigby, L. (1990). The nature of human error. Annual Technical Conference *Transactions of the American Society for Quality Control, 475–566.*
- Robbins, S. P., & Judge, T. A. (2007). *Organizational Behavior* (12th ed.). New Jersey: Pearson prentice – Hall,(chapter 6).
- Report of the Committee on Safety and Health at Work-London. Robens. England
- Robson, L. S., Clarke, J. A., Cullen, K., Bielecky, A., Severin, C., Bigelow, P. L., Irvin, E., Culyer, A. & Mahood, Q. (2007), 'The effectiveness of occupational safety and health management system interventions: A systematic review', *Safety Science, 45, 329–353. Rochester (NY): University Of Rochester Press. p. 233–254. 286 I. Burstyn et al.*
- ROSPA-Royal society for prevention of accidents, (2005).*Safety at work: A guide for Management .England: publication number IS/006.*
- Saari J. (1988). Successful accident prevention: An intervention study in the Nordic Countries Scandinavian. *Journal of Work Environment and Health, 14, 121-123.*
- Saari, J. (1996). Characteristics of tasks associated with the occurrence of accidents. *Journal of Occupational Accidents, 1, 273-279.*
- Sagimo, S.O. (2002). *Management Dynamics: Towards Efficiency, Effectiveness, Competence and Productivity.* Dar es Salaam: Ujuzi Educational Publishers Limited.
- Saksvik, P. O. & Quinlan, M. (2003).Regulating Systematic Occupational Health and Safety management:Comparing the Norwegian and Australian experience', *Relations industrielles/Industrial relations, 58, 33–59.*
- Sarter, N.N., & Woods, D.D. (1995). *How In The World Did I Ever Get Into That Mode?:Mode Error And Awareness In Supervisory Control, Human Factors, 37, 5–19.*

- Sarter, N. N., Woods, D.D., Billings, C.E.(1997). Automation Surprises, In:
- Salvendy, G. (Ed.) *Handbook of Human Factors/Ergonomics* (2nd ed.). New York: Wiley,.
- Saunders, R.(1992). *The Safety Audit*. London: Pitman.
- Saunders, M., Phillip, L., & Thornhill A. (2003). *Research Methods for Business Students* (3rd ed.). Prentice Hall, Harlow
- Saunders, M., Lewis, P., & Thornhill, A. (2007). *Research Methods for Business Students* (4th ed.). Harlow: Prentice Hall Financial Times.
- Sekaran, U. (2003). *Research Methods for Business. A Skill Building Approach*. New York: John Westly & sons.
- Sekaran, U. (2008). *Research Methods for Business. A Skill Building Approach*. New York: John Westly & sons.
- Shafai-Sahrai, Y. (2001). An inquiry into factors that might explain differences in Occupational accident experience of similar size firms in the same industry. *Division of Research, Graduate School of Business Administration, Michigan State University, East Lansing, Michigan. Cited in Cohen, A. (1977).*
- Shamsuddin, S., Othman, J., Shahadan, M.A., & Zakaria, Z. (2012). The Dimensions of corporate entrepreneurship and the performance of established organization. *Journal of Entrepreneurship Perspectives*.
- Shannon, H.S., Walters, V., Lewchuk, W., Richardson, J., Moran, L.A., Haines, T.A., & Verma, D. (1996). Workplace organizational correlates of lost time accident rates in manufacturing. *American Journal of Industrial Medicine*, 29, 258-268.
- Shannon, H. S., Mayr, J. & Haines, T. (1997). Overview of the relationship between organizational and workplace factors and injury rates', *Journal of Safety Science*, 26, 201–217.
- Shapiro, S. A., & McGarity, T. O. (1991). Not So Paradoxical: The Rationale For technology-Based Regulation', *Duke Law Journal*, 729-752.
- Shapiro, S. A. & McGarity, T O. (1993). *Workers at Risk: The Failed Promise of the Occupational Safety and Health Administration*, Westport, Conn., Praeger, 362p.
- Shenoy, M. & Madan, P. (1994). *Statistical Methods in Business and Social Sciences*. Macmillan India: New Delhi.

- Sherri, L.J. (2009). *Research Methods and Statistics: A Critical Thinking Approach* (3rd ed.). Belmont: Macmillan Publishing Solutions.
- Shill, N.J., Carruthers, J. & Krisjanous, J. (2006). The effect of management Commitment to service quality on frontline employees' affective and performance outcome: an empirical investigation of the new Zealand public healthcare sector. *International Journal of Nonprofit and Voluntary Sector Marketing*. 11: 271-287.
- Silverman, D. (2006). *Interpreting Qualitative data* (3rd ed.). London :SAGE Publications LTD.
- Sindiswa ,E.T. (2003). An evaluation of the preventive and control measures for lead dust exposure in one of the South Africa foundries: an empirical study; *Unpublished Master's Thesis; Lulea University of Technology*.
- Snelgar, R., Kemp R., & Brace N. (2012). *SPSS for Psychologists* (5th Ed.). London: Rutledge Academic Publication.
- Stewart, P., & Kamins, S. (2005). *Research Methods in the Social Sciences*. London: Sage Publications.
- Suphi, U. & Sitki D. (2007). Evaluation of occupational safety and health in surface Mines. *Journal of safety Science* 46: 1016-1024
- Tabachnic, B.G. & Fidell, L.S.(2001). *Using multivariate Statistics* (4th ed.). New York: Harper Collins College Publishers.
- Tabachnick, B.G., & Fidell, L.S. (2013). *Using multivariate statistics* (6th ed.). Boston:Pearson
- Taylor, C.A. (1991). The corporate response to rising health care costs. *The Conference Board of Canada, Ottawa, ON*.
- Terhi, S., Kerttu ,T ., Hannele, T. & Paula Naumanen(2006). Development of occupational wellbeing in the Finnish EuropeanNetwork of Health Promoting Schools. *Journal of Health Education Volume: 106 Issue: 2 2006*
- Thomas. E., & Jan R.(1998). Promoting the health of construction workers. *Journal of Engineering, Construction and Architectural Management Volume: 5 Issue: 3 1998*
- Travers, M. (2001). *Qualitative Research through Case Studies*. London: Sage.
- United nations centre for regional development, (2004)..*Research Design, Data Collection and Analysis: A training manual*

- U.S. department of Labor <http://www.bls.gov/iag/tgs/iag06.htm>). Retrieved April 11, 2015.
- Uwe, F. (2007). *Designing Qualitative Research*; London: Sage publications.
- Veltri, A., Pagell, M., Behm, M., & Das, A. (2007). A Data-Based Evaluation of the Relationship between occupational Safety and Operating Performance. *Journal of SH&E Research, Vol. 4, Num.1 (2007)*.
- Vicente, K.J. (1995). A Field Study of Operator Cognitive Monitoring at Pickering Nuclear generating Station. *Technical Report CEL 9504, Cognitive Engineering Laboratory, University of Toronto*.
- Vicente, K.J. (1999). Cognitive Work Analysis: Toward Safe, Productive, and Healthy Computer-based Work. *Erlbaum Associates*.
- Viscusi, W.K. (1986). The impact of occupational safety and health regulations. *Journal of Safety Research, 17, 1973–1983*.
- Vojtecky, M.A. & Schmitz M.F. (2006). Program evaluation and health and safety training. *Journal of Safety Research, 17, 57-63*.
- Walters, D. (ed.) (2002c). Regulating Health and Safety Management in the European Union — A study of the Dynamics of Change. *Presses Interuniversitaires European, Brussels*.
- Wayne, F. C. (1995). *Managing Human Resources* (International ed.). New York: McGraw – Hill, Inc
- Wayne, F. C. (2006). *Managing Human Resources, Productivity, Quality of Work Life, Profits*; New York :McGraw-Hill
- Weinstein, N.D. (1980). Unrealistic optimism about future life events, *Journal of Personality and Social Psychology, 39, 806-820*.
- Weinstein, M., Henn, M., Foard, N. (2009). *A Critical Introduction to Social Research*, California: SAGE Publications.
- WHO, (2011). http://www.searo.who.int/en/Section23/Section1214/Section119_11049.htm, accessed on 30/06/2011. < *Regional Strategy on Occupational Health and Safety in SEAR countries*>
- Wiersma, W. (1986). *Research Methods in Education; An introduction* (4th ed.). USA, Massachusetts Ellyn and Bacon .

- Williams, G.C., Rodin, G.C., Ryan, R.M., Grolnick, W.S., & Deci, E.L. (1998). Autonomous regulation and adherence to long-term medical regimens in adult outpatients. *Journal of Health Psychology*. 17:269–276.
- Wisker, G. (2001). *The Postgraduate Research Handbook*. Newyork: Palgrave
- Woods, D.D. (1984). Some results on operator performance in emergency events, In:Whitfield,D. (Ed.), Ergonomic Problems in Process Operations, *Institute of Chemical Engineering Symposium, Ser. 90*.
- World Bank report, (2004). *SME's role in economic growth of African countries*.
- Zohar, D. (1980). Safety climate in industrial organizations - theoretical and applied applications, *Journal of Applied Psychology*, 65, 96-102.
- Zohar, D. (2000). A group-level model of safety climate: Testing the effect of group Climate on micro accidents in manufacturing jobs. *Journal of Applied Psychology*. 85(4):587–596

APPENDIX II: QUESTIONNAIRE

SECTION A: BACKGROUND INFORMATION

Please put a tick (✓) in the closed brackets next to the right response

1. Age in years
 1. Below 25 years ()
 2. 26-35 years ()
 3. 36-45 years ()
 4. 46-55 years ()
 5. 56 and above ()
2. Gender
 1. Male ()
 2. Female ()
3. Education qualification
 1. Degree ()
 2. Diploma ()
 3. Certificate ()
 4. Secondary ()
 5. Any other

SECTION B: MANAGEMENT SUPPORT

1. Use a tick (✓) to indicate the extent to which you agree with each of the following statements?

5-Strongly agree; 4- Agree; 3-Neutral; 2- Disagree -; 1- Strongly Disagree

	Statements	5	4	3	2	1
1	The management is totally committed to health and safety.					
2	The management always provide all the necessary safety equipments					
3	We have a company policy on occupational health and safety					
4	Management allocates funds for occupational health and safety					
5	The management often organize internal safety audits and inspections					
6	The management has constituted a health and safety committee					
7	Management takes responsibility for injuries at work					
8	Occupational health and Safety is always an agenda in meetings					

2. Using a tick (✓) indicate the extent to which management support influence the implementation of occupational health and safety Programmes.
1. Not at all. ()
 2. Small extent. ()
 3. Moderate extent. ()
 4. Large extent. ()
 5. Very large extent. ()

SECTION C: TRAINING

1. Use a tick (✓) to indicate the extent to which you agree with each of the following statements.

5-Strongly agree; 4- Agree; 3-Neutral; 2- Disagree -; 1- Strongly Disagree

	Statements	5	4	3	2	1
1	Health and safety awareness is part of employees' induction process					
2	Employees are sponsored for OSH training outside the organization					
3	Employees take OSH training very seriously					
4	Employees are provided with Materials containing OSH information					
5	Funds are allocated for OSH training					
6	OSH training is part and parcel of OSH policy					

2. Using a tick (✓) indicate the frequency of OSH training in your organization.
1. Weekly ()
 2. Fortnightly ()
 3. Monthly ()
 4. Yearly ()
 5. Never ()
3. Highlight the occupational health and safety issues covered during the training
1. Knowledge of hazards ()
 2. Job safety procedures ()
 3. Safety rules ()
 4. Proper personal protective behavior ()
 5. Response to work accidents and injuries ()
 6. Response to fires ()
 7. Use of safety equipments ()
 8. Others.....

4. Which of the following indicates how information on occupational health and safety is disseminated (you can tick more than one)
1. Signs and warnings
 2. Films
 3. Safety policy document
 4. Posters
 5. Safety awareness and campaign weeks
 6. Bulletins
 7. Workshops and seminars
 8. Others (specify.....)
5. Using a tick (✓) indicate the extent to which training influence the implementation of occupational health and safety Programmes.
1. Not at all.
 2. Small extent.
 3. Moderate extent.
 4. Large extent.
 5. Very large extent.

SECTION D: LEGAL FRAMEWORK

1. Using a tick (✓) indicate the extent to which the following areas related to legal framework affect implementation of occupational health and safety.

1=Not at all; 2=Small extent; 3=Moderate extent;4=Large extent;5=Very large extent

	Legislative areas	1	2	3	4	5
1	National policy on occupational health and safety					
2	Occupational health and safety Act					
3	Familiarity with occupational health and safety Act among workers					
4	Occupational health and safety inspections and audits by the government					
5	The ease of implementation of occupational health and safety Act					
6	Government support in the implementation of occupational health and safety act					
7	Implement ability of OSHA					

2. Using a tick (✓) indicate the extent to which legal framework influence the implementation of occupational health and safety Programmes.
1. Not at all.
 2. Small extent.
 3. Moderate extent.

4. Large extent. ()

5. Very large extent. ()

SECTION E: EMPLOYEE PARTICIPATION

1. Use a tick (✓) to indicate the extent to which you agree with the following statements.

5-Strongly agree; 4- Agree; 3-Neutral; 2- Disagree -; 1- Strongly Disagree

	STATEMENT	5	4	3	2	1
1	Employees have embraced a health and safety culture within the organization					
2	Employees feel employer is responsible for their health and safety and not them					
3	Employees always wear personal protective items provided to them					
4	The employees are represented in health and safety committee					
5	Employees' representative takes an active role in safety and health issues					
6	Employees do not comply with OSH rules and safe work procedures					
7	Employees always report hazardous condition to the supervisor					
8	Employees are given safety targets on which they are appraised					

2. Use a tick (✓) to indicate what is normally done to employees who do not comply with OSH rules.

1. Appraised Negatively ()

2. Denied promotions and other benefits ()

3. Trained on health and safety ()

4. Others

(specify).....

3. Using a tick (✓) indicate the extent to which employee participation influence the implementation of occupational health and safety Programmes.

1. Not at all. ()

2. Small extent. ()

3. Moderate extent. ()

4. Large extent. ()

5. Very large extent. ()

SECTION F: ORGANIZATION STRUCTURE

1. Indicate the number of employees in your organization

- 1. Below 50 ()
- 2. 50-100 ()
- 3. 100-200 ()
- 4. 200- above ()

2. Use a tick (✓) to indicate the extent to which you agree with each of the following statements?

5-Strongly agree; 4- Agree; 3-Neutral; 2- Disagree -; 1- Strongly Disagree

	STATEMENTS	5	4	3	2	1
1	Larger firms are more able cope with strict OSH regulations than small firms					
2	Larger firms have more resources to implement OSH programmes than small firms					
3	Large firms do not mind implementing OSH regulations because the gains of doing this exceed the costs of complying with OSH regulations					
4	The management of large and medium sized enterprises have greater commitment and invests more resources in OSH					
5	Small firms usually have little if any access to modern occupational health and safety services					
6	Larger firms can afford to engage an OSH officer as compared to small firms					

3. Using the guide below indicate who is in charge of OSH in your organization

- 1. Human resource manager ()
- 2. Occupational health and safety officer ()
- 3. Health and safety employee representative ()
- 4. Any other.....

4. Which of the following best describes the position of the person in charge of health and safety in your organization?

- 1. Managerial ()
- 2. Supervisory ()
- 3. Senior staff ()
- 4. Junior staff ()
- 5. Any other (specify)

5. Using a tick (✓) indicate the extent to which organizational structure (ie size and OSH officer position) affects management support, training, legal

framework and employee participation in implementation of OSH programmes

- 1. Not at all. ()
- 2. Small extent. ()
- 3. Moderate extent. ()
- 4. Large extent. ()
- 5. Very large extent. ()

SECTION G: IMPLEMENTATION OF OCCUPATIONAL HEALTH AND SAFETY PROGRAMMES

1. Use a tick (✓) to indicate the extent to which implementation of OSH Programmes has impacted on the following factors in your organization.

1=Not at all; 2=Small extent; 3=Moderate extent; 4=Large extent; 5=Very large extent

	OCCUPATIONAL HEALTH AND SAFETY FACTORS	1	2	3	4	5
1	Injury rates					
2	loss of working hours					
3	accident rates					
4	Insurance premiums and compensations					
5	absenteeism					
6	overall improvement in organizational productivity and profits					

2. Use a tick (✓) to indicate the extent to which the following factors determine the implementation of occupational health and safety programmes.

1=Not at all; 2=Small extent; 3=Moderate extent; 4=Large extent; 5=Very large extent

	FACTORS	1	2	3	4	5
1	Management commitment and support					
2	Health and safety training					
3	Legal framework					
4	Employee participation					
5	Size of the Organization					
6	Occupational health and safety officer position					

3. Does your organization face challenges in its efforts to implement occupational health and safety programmes?

Yes () No ()

4. Specify some of the challenges your organization experience in its effort to implement occupational health and safety Act.

.....
.....
.....
.....

THANK YOU FOR YOUR COOPERATION