EFFECTS OF OCCUPATION SAFETY AND HEALTH MANAGEMENT PRACTICES ON EMPLOYEE PRODUCTIVITY: A CASE OF NAKURU WATER AND SANITATION COMPANY

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DECLARATION AND RECOMMENDATON

This research project is my original work and has not been presented for the Award in any other University for the purpose of examination

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DEDICATION

I sincerely dedicate this work to my late father Getanda Sunda and mother Esther Kemunto who brought me up to be respective and hardworking person not forgetting my late loving sister Rachael who succeeded my parents and made my dreams a reality by financing this project. I dedicate this research to my loving husband Nyagaka for moral support. My special dedication goes to my son Nelson and daughters Esther and Rebecca for their tolerance, patience and moral support during the period of study away from home. Finally I thank all my brothers for their inspiration, encouragement and financial support.

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May God bless each and every one of you abundantly.

ABSTRACT

The International Labour Organization estimates that, globally, about 2.2 million people die annually from occupational accidents and diseases another 270 million suffer from serious non-fatal injuries while 160 million fall ill for shorter or longer periods from work-related causes. The estimated costs of occupational accidents and occupational diseases amount to approximately 4 percent of the world's gross domestic product. This implies a considerable loss resulting to negative impact on economic growth and which puts a burden to the society. Thus preventing occupational accidents and diseases should make economic sense for society as well as being good business practice for companies. Nakuru Water and Sanitation Services Company is one of the institutions within Nakuru County involved in dangerous activities. However, the health and safety practices in place and how they affect employee productivity is not clear. The general objective of the study therefore was to assess the effects of safety and health management on employee productivity at Nakuru Water and Sanitation Services Company. Specific objectives of the study were: to establish the effects of management commitment to safety and health affects employee productivity, to assess how job risk and hazard assessment affects employee productivity, to establish how provision of personal protective equipment affects the productivity of employees and to assess the effects of safety trainings on productivity of employees at Nakuru Water and Sanitation Services Company. The study adopted a descriptive survey research design. Target population comprised all the technical staff of Nakuru Water and Sanitation Services Company in water treatment and distribution, there is 335 staff in field offices dealing with water distribution that formed the target population. These include plumbers, technicians, engineers and chemists. A sample of 77 technical staff was selected using stratified random sampling technique. Primary data was collected using self administered questionnaires while in the analysis, descriptive statistics were obtained for all objectives which include the mean, standard deviation, frequencies and percentages. Relationship between occupational safety and health management and employee productivity was obtained using a regression analysis. The study found out that Management commitment to implementation of occupation safety and health has the highest effect on employee productivity followed by provision of personal protective equipment and safety trainings. Less emphasis was placed on job risk and hazard assessment which was also found not to have a significant direct effect on employee productivity. The study therefore recommended that management commitment should be emphasized in implementation of occupational safety and health across all industries as it creates a social bond with the employees which translate to improvement in productivity. Further, Nakuru Water and Sanitation Company should place greater emphasis and enhance proactive job risk and hazard assessment for both routine and new projects.

Key words: Occupational,Safety Health management, Employee productivity, Job Hazard ,Accident

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LIST OF ABBREVIATIONS

DOSH - Directorate of Occupational Safety and Health

GDP - Gross Domestic Product

GOK – Government of Kenya

ILO - International Labour Organisation

JHA – Job Hazard Analysis

KWS-Kenya Wildlife Services

NAWASSCO – Nakuru Water and Sanitation Services Company

NPC - National Pharmaceutical Council

NSC - National Safety Council

OSH - Occupational Safety and Health

OSHA – Occupational Safety and Health Act

POS - Perceived Organizational Support

PPE - Personal Protective Equipment

RVWSB - Rift Valley Water Service Board

SHRM - Society of Human Resource Management

SPA - Service Provision Agreement

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Occupational health and safety (OHS) management is the identification, evaluation, and control of hazards associated with the work environment. These hazards range from chemical, biological, and physical agents to psychosocial disorders such as stress. Workplace illness, injury and death impose large costs on economies. These costs accrue to individual workers who suffer, their families, the businesses that employ them, and society at large due to the costs associated with health care and treatment (Gahan, 2014). The International Labour Organization (ILO, 2006) has estimated that the costs associated with workplace death, injury and illness is approximately 4 percent of annual global gross domestic product. Other research suggests that workplace health and safety may have more far-reaching macroeconomic consequences.

The ILO (2012), for example, found a strong correlation between national workplace fatality rates and the WEF Global Competitive Index, suggesting that inadequate occupational health and safety practices placed a heavy burden on national economic growth. In a study investigating the relationship between reported levels of work stress and economic performance in 31 European economies, Dollard and Neser (2013) found that after controlling for a range of other determinants, worker health accounted for 13 percent of the variance in gross domestic product (GDP) across their sample of countries. The forgoing discussions therefore show that there is a close relationship between occupational safety and health management and labor productivity both at institutional level, industry level and economy.

At organizational level, poor occupational safety and health (OSH) has been linked to lower levels of workplace productivity and profitability. A number of studies have sought to identify positive linkages between OSH performance and firm performance. Yeow and Sen (2003) examine the development of a participatory ergonomic intervention designed to improve workstations. Similarly, in a study of OSH intervention in wood-processing and automotive plants in the United States, Lahiri, Gold and Levenstein (2004) reported

significant improvements in workplace productivity following the implementation of occupational safety and health programs. De Greef and Van den Broek (2004) demonstrate that health and safety measures have a positive impact not only on safety and health performance, but also on company productivity.

To ensure safety and health in work places in Kenya, the Occupational Safety and Health Act (OSHA), (2007) was developed. The act sought to specifically regulate the implementation of safety activities in all workplaces, to secure the safety, health and welfare of persons at work; and to 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 (GOK, 2007). The safety function by the Government of Kenya is implemented by the Directorate of Occupational Safety and Health (DOSH). Every workplace in Kenya must be registered with DOH in line with the provisions of the OSHA 2007. DOSH on the other hand performs periodic assessments of workplaces to establish their compliance with the provisions of the OSHA. The primary responsibility of ensuring safe working environment, providing safety training and personal protective equipments for employees involved in dangerous operations is vested in the hands of the employer. Failure to comply attracts closure of the activity perceived to compromise safety and health of workers.

NAWASSCO is one of the 62 Kenyan Water Service Providers (WSPs) and is fourth largest service provider in the country. The company was contracted to provide water and sanitation services to the Municipal Council of Nakuru by the Rift Valley Water Service Board (RVWSB) through a Service Provision Agreement (SPA) signed on the 31st of May 2004. The key contractual obligation of NAWASSCO, as spelled out in the SPA, is to provide water and sanitation services to the people of Nakuru Town and its environs in an efficient, effective and economical manner. As a result, the activities of NAWASSCO involve water treatment, piping and distribution of safe drinking water as well as treatment and management of sewage waste. These two activities involve the use of dangerous chemicals such as chlorine that is carcinogenic and equipments such as heavy water pumps and exhausters that have the ability to cause injuries. Extraction, treatment and disposal of sewage waste exposes staff to the danger of chemical poisoning as well as

contracting dangerous diseases. An evaluation on the performance of the organization revealed challenges in performance of the field staff in ensuring proper treatment and distribution of clean water.

1.2 Statement of the Problem

The International Labor Organization (ILO) estimated that, globally, about 2.2 million people die every year from occupational accidents and diseases, while some 270 million suffer serious non-fatal injuries and another 160 million fall ill for shorter or longer periods from work-related causes. Further the ILO estimates that the total costs of such accidents and ill health amount to approximately 4 percent of the world's GDP (ILO, 2006). These figures represent a considerable loss that has a significant negative impact on economic growth and puts a burden on society.

Safe working environment is a fundamental right of employees and implementing OSH has been found to have a significant effect on performance of economies (ILO, 2012; Dollard and Nese, 2013), organizations and individual employees (Yeow and Sen, 2003; Lahiri, Gold and Levenstein, 2004). In Kenya, OSH Act 2007 vests this responsibility in the hands of the employer. NAWASCO is one of the main water and sewage service providers and employer in Kenya, operating in a 270km^2 area. Efficiency in provision of these services is paramount in ensuring the health of residents of Nakuru County. However, this job involves the use of dangerous water and sewage treatment chemicals, distribution and water supply equipments.

In such an environment, provision of OSH services is paramount in ensuring the safe and healthy work force. In the past few years, several incidences have been reported indicating a compromise on employee safety and health. The number of safety related cases in NAWASSCO however indicate a gap in OSH management in the company. In 2009, an employee fell inside a sedge hole and sustained severe injuries due to lack of proper precautions of working in confined space. A similar accident was also reported in 2013. In the same year, an employee fell on a slippery office floor and sustained broken limbs. In 2011 an employee fell from first floor of a storey building while fixing a water meter and sustained severe head injuries and broken limbs. Investigation on the matter revealed lack of proper PPEs, unsafe work procedures and failure to observe precautions

for working at height. In 2014, an employee was involved in a road accident while driving unroadworthy motor vehicle. Between 2009 to date, the company has sofar paid workmanship compensation of one million shillings for accidents that were avoidable through proper health and safety management (HR NAWASSCO, 2015).

Studies such as (Smallman and John, 2001; Baxter et al., 2014; Uegaki et al., 2010) have shown a close link between safety and health of work force and productivity in other industries. However, studies on the safety and health management and its impact on employee performance in water treatment and distribution companies such as NAWASSCO remain scanty. The current study therefore sought to assess how management of safety and health affects productivity of staff in NAWASSCO.

1.3 Objectives of the Study

1.3.1 General objective

The general objective of the study was to assess the effects of safety and health management on employee productivity at NAWASSCO.

1.3.2 Specific Objectives

The study was guided by the following specific objectives:

i. To establish the effects of management commitment to safety and health on employee productivity at NAWASSCO
ii. To assess how job risk and hazard assessment affects employee productivity at NAWASSCO
iii. To establish how provision of personal protective equipment affects productivity of employees at NAWASSCO
iv. To assess the role of safety trainings on productivity of employees at NAWASSCO

1.4 Research Questions

The study sought to test the following questions:

i. What are the effects of management commitment to safety and health on employee productivity at NAWASSCO?
ii. How does job risk and hazard assessment affect employee productivity at NAWASSCO?
iii. Does provision of personal protective equipment affect productivity of employees at NAWASSCO?
iv. What is the role of safety trainings on productivity of employees at NAWASSCO?

1.5 Significance of the Study

This study was conducted in the wake of increasing employee safety concerns in various sectors of the economy such as transport and other work places. Therefore it would complement the government's efforts of ensuring safety of its citizens in the working environment. The findings would be important to the ministry of water in that it would provide insight on the level of implementation of OSHA 2007 water companies. The findings of this study would also be useful to NAWASSCO in understanding how the company safety and health management practices affect the performance of individual employees in treatment, and distribution of water and sewage services. The findings if implemented would translate to improvement in employee productivity in the provision of water and sewage services therefore has a trickle down effects to the residents of Nakuru Town.

1.6 Justification of the Study

This study was conducted at a time when occupational accidents and diseases have become a major concern the national and international economies. The level of loss experienced as a proportion of the global Gross domestic product are alarming. Locally in Kenya, the concerns have sparked the institution of the OSHA, 2007 to help address the challenge. However, little achievement has been realized in the fight against occupational diseases and injuries. The study would contribute to the existing empirical evidence that would help in addressing the challenge of OSH and productivity.

1.7 Limitations and delimitations of the Study

The study was limited by the lack of theories developed to link OSH and labour productivity. Therefore it relied heavily on existing theories on productivity but coined to explain the OSH factor. Similarly, there was limited local empirical studied on OSH in relation to labor productivity. The study therefore adapted literature from developed economies where the concept of OSH has been widely implemented and researched. The respondents had some fear to release right information because they protected their company on issues concerning health and safety. The researcher gave them an assurance that the information gathered would be treated with confidentiality.

1.8 Scope of the Study

Geographically, the study was conducted in NAWASSCO in Nakuru Town among the staff involved in treatment and distribution of sewage. The focus of the study was in assessing the organizational commitment to OSH, job risk hazard assessment, use of PPE and safety training on employee productivity. The study was conducted in the months of April and September 2015.

1.9 Operational definitional of terms

Accident An unplanned event that results in harm to people, damage to property or loss to process (IAPA, 2006).

Employee productivity Refers to the efficiency of a worker or group of workers (Ducker, 2005). In this study it refers to the efficiency of technical staff of NAWASSCO

Job Hazard Analysis According to NISP (2004), a job hazard analysis is a structured review instrument used in identifying, the risks and controls required.

Occupational Safety Is concerned with protecting the safety, health and welfare of people engaged in work or employment

Productivity This is the balance between all factors of production that will give the greatest output at the smallest effort (Ducker, 2005)

Safety The maintenance of a work environment that is relatively free from actual or potential hazards that can injure employees (IAPA, 2006).

Safety climate The tangible output of an organization's health and safety culture as perceived by individuals or workgroups at a point in time (HSE, 2001)

Safety Culture The product of individual and group values, attitudes, perceptions, competencies and patterns of behaviour that determine the commitment to, and the style and proficiency of an organization's health and safety management (HSC, 1993)

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

The chapter discusses the literature review of the study. Focus has been given on the theoretical literature review, empirical literature review, critique and a highlight of the research gaps that will be filled in the current study. Further, a conceptual framework showing the variables to be used and their relationships.

2.2 Theoretical Review

This study was guided by the motivation reward satisfaction model, theory of economic effects of job hazard analysis compliance at the company level and the perceived organizational support theory.

2.2.1 Motivation Reward Satisfaction Model

This theory of accident causation builds on Dr. Willard Kerr's Goals Freedom Alertness Theory and Herzberg's Hygienic Management Theory. The theory states that ''freedom to set reasonably attainable goals is typically accompanied by higher-quality work performance'' (Heinrich, Petersen, and Roos, 1980). If an accident occurs, it is due to a lull in alertness. Safety performance depends on degree of motivation and capability to work; factors affecting these variables will either promote or prevent accidents.

According to Petersen (2001), rewards strongly affect performance. They originate from a variety of sources and can be physical and/or psychological. Money or praise is not considered to be the primary motivation factor. Rewards, including doing a good job, learning new skills, expanding personal knowledge, and participating on a successful team, are some of the numerous intrinsic reinforcements associated with enriched jobs. If employees see the rewards from their work as equitable, they are more likely to be motivated and, in turn, produce positive safety results. This shows a close association between safety and job motivation while motivation is closely related to employee productivity.

2.2.2 Perceived Organizational Support

To better understand how management commitment to safety affects employee outcomes, the study bases on Eisenberger and colleagues' (1986) organizational support theory. Organizational support theory is a contemporary social exchange theory assuming that employees will exhibit positive work-related outcomes in reciprocation for valued resources such as pay, training and socio emotional support received from the employer (Aselage & Eisenberger, 2003). The theory further assumes that employees form beliefs regarding how much the employer values them and their personal well-being. The combination of these intangible benefits forms an attitude in the minds of employees that is known as perceived organizational support (POS).

Following the norm of reciprocity, increases in POS motivate employees to work harder and exhibit attitudes that are congruent with the organization's goals and objectives. When extended into the realm of safety, a production employee would consider safety as a key component their own personal well-being, such that perceived management commitment to safety will be positively related to desirable organizational outcomes such as improved productivity. A meta-analysis survey of the POS literature by (Rhoades & Eisenberger, 2002) highlighted the consequences of perceived organizational support, and found strong support for the effects of POS on a variety of employee outcomes. For instance, perceived organizational support was positively associated with outcomes such as affective commitment, job satisfaction, making suggestions, and organizational citizenship behaviors, and negatively associated with turnover intentions and withdrawal behaviors (e.g., Eisenberger, Fasolo, & Davis-LaMastro 1990; Eisenberger et al., 2001; Wayne, Shore, & Liden, 1997). Research has examined perceived organizational support in the context of safety-related behavior, but only as it relates to safety communication, safety commitment, and accidents (Hofinann & Morgeson, 1999).

Perceived organizational support also has a positive relationship with employee performance. Relationships have been shown with POS and various performance measures among manufacturing employees (Witt, 1991), police officers (Armeli, Eisenberger, Fasolo, & Lynch, 1998), and steel workers (Eisenberger et al., 1990). It is noteworthy that POS can be enhanced both by supervisors as well as upper management

(Rhoades & Eisenberger, 2002). Perceived organizational support is particularly enhanced when employees believe that their employer has engaged in discretionary actions favorable to the employee (Eisenberger, Cummings, Anneli & Lynch, 1997; Rhoades et al., 2001). In the eyes of hourly employees both upper management and supervisory personnel would embody the "employer." From a safety perspective, a company that shows its commitment to safety by voluntarily enacting suggestions to improve plant floor safety should therefore enjoy higher levels of desired employee attitudes. This would not necessarily be the case if, for example, it installed new machine guards in response to an OSHA audit. Similarly, literature on the effects of transformational leadership has suggested that safety climate will be improved if employees perceive that management acts based on a commitment to their safety as opposed to reacting to regulatory demands (Barling, Loughlin, & Kelloway, 2002).

2.2.3 Theory of economic effects of job hazard analysis compliance at the company level

Mossink and De Greef (2002), theory of economic effects of job hazard analysis compliance at the company level: that JHA compliance of industrial organizations have influence on safety performance as well as on corporate performance/productivity, JHA compliance has positive effects on corporate performance and adds to the initial effects of the safety measures. This theory is illustrated diagrammatically below.

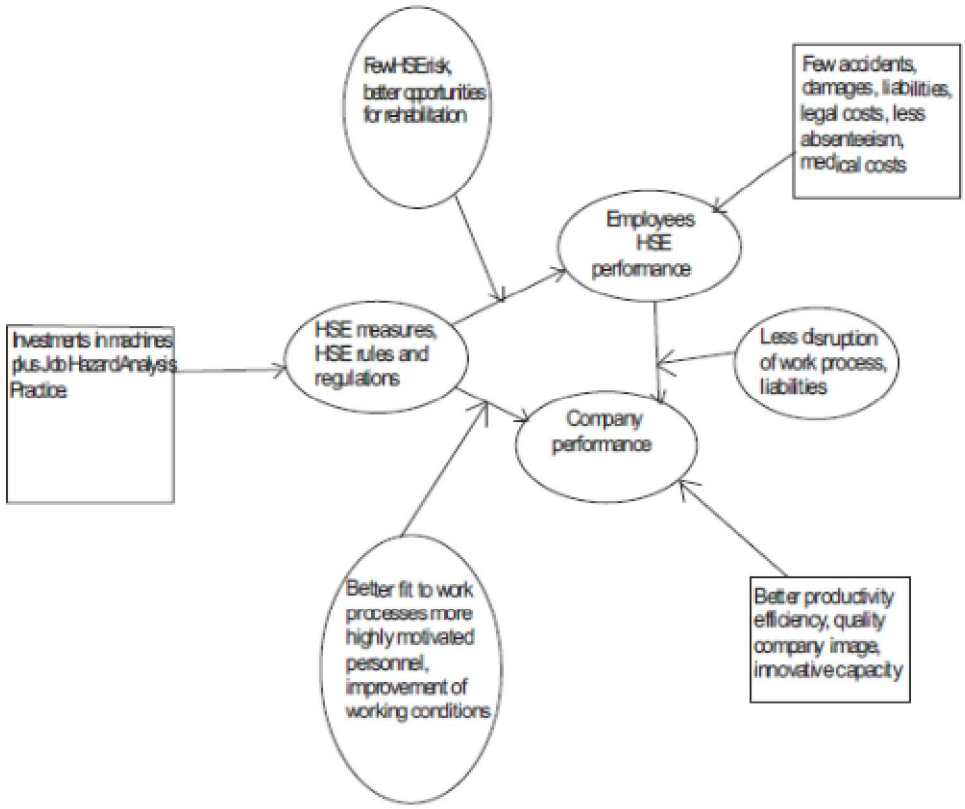

Figure 2.1: Economic Effects of JHA compliance at company level

Source: Mossink & De Greef (2002)

According to the diagram on Figure 2.1, if a company incorporates JHA into its investment in machines and technology (socio-technical investments) through better man/machine design (ergonomics), safety training and management commitment, this situation will lead to employees' obedience to safety rules and regulations since the awareness has been created through training and management commitment. The employees and management obedience to safety rules and regulations will make for better safety measures; this will result to better safety performance for employees, the management and the company as a whole. The better performance of employees will lead to fewer accidents, damages, liabilities, legal costs, medical costs etc, through reduction of safety risks and creation of better opportunities and rehabilitation for employees after injury. The better safety performance of the company will bring about better productivity, efficiency, quality, corporate image and innovative capacity due to improved employees

skills via training, motivation and ergonomy hence there will be less disruption of work process and less liabilities.

2.3 Empirical Review

Providing a healthy and safe working environment has the potential to increase labour productivity and in turn increase business profits. Lamm et al (2006) also refer to the argument of some commentators that productivity gains are often at the expense of workers' health and safety. Businesses typically strive to become more productive and in doing so are driving their workers to work longer, harder and with higher utilization often in extremely hazardous conditions, and only implement health and safety measures to keep compensation costs down (Massey and Perry, 2006; Mayhew and Quinlan, 1999; Dorman 2000). As noted by Lamm et al (2006), James (2006) observes that while exposure to risks associated with machinery and manual labour are being reduced, other risks related to the increase in labour productivity are on the rise. Lamm et al (2006) also suggest efforts to increase productivity through occupational safety and health can have contradictory results and point out the gaps in literature that while there is evidence that occupational injuries and illnesses impact on productivity losses, it is not clear whether or not reducing injuries and illnesses will automatically influence productivity gains.

Findings of another study (De Greef and Van den Broek, 2004a) demonstrate that health and safety measures have a positive impact not only on safety and health performance, but also on company productivity. However, identifying and quantifying these effects is not always straightforward. In addition, although experience shows that in many cases proof of profitability can be given, it might be rather difficult in a certain number of cases to develop solid evidence. The authors also state although the literature survey was fairly limited, research findings support the existence of an important link between a good working environment and the performance of a company. Thus, the quality of a working environment has a strong influence on productivity and profitability. The study also suggests that poor OSH performance can lead to a competitive disadvantage impairing the firm's status among stakeholders. This is a motivating factor to company management to invest in OSH. The findings of the literature survey (De Greef and Van den Broek, 2004a) were also supported by the collection of case studies. By making the

link between health and safety and the performance of the company, the case studies demonstrate that OSH should no longer be seen as purely a cost, but also as an instrument to improve the overall performance of a company, meaning that OSH should be an integral parameter in general management. Therefore, investment in OSH becomes profitable. Investment of 1 euro in well-being at work produces 3 - 7 euros return (Yrjänheikki, 2011).

These observations are of particular concern because of the consequences for any advice provided to businesses concerning the economic merits of investing in WHS interventions (Uegaki et al. 2010). In one of the most recent – and most rigorous – of these review studies, Baxter, Sanderson, Venn, Blizzard, and Palmer (2014) provide a detailed econometric assessment of prior studies reporting cost-benefit analyses of workplace health promotion programs implemented in workplaces spanning nine industries across 12 countries. They provide an assessment of the return on investment in workplace health programs weighted by two independent measures of study quality. Whilst their analysis confirmed an overall net benefit associated with programs examined, the general conclusion across all studies is that the rate of return was reported to be significantly higher in studies assessed to be of a lower quality. That is, studies utilizing more rigorous methodological measurement techniques were associated with less significant ROI findings.

Muchemedzi and Charamba (2006) explain that accidents do not arise from a single cause but from a combination of factors which act simultaneously. A potentially unsafe situation does not cause an accident until someone is exposed to it. Accidents are caused by the result of unsafe acts or practices (the human element that results from poor attitudes, physical conditions and lack of knowledge or skills to enable one to work safely). They are also caused by the result of unsafe conditions of equipment or materials.

Koopman (2001) states that accidents bring pain and suffering to the worker and his family. When it results in permanent disability, the consequences are disastrous for both the victim and the company. The victim loses his earning capacity and ability to enjoy a normal active life, and the society and company are deprived of his/her skill and contribution to production.

Studies examining the costs associated with WHS failure on a less catastrophic scale have focused particular attention on the direct costs associated with compensation claims and rising insurance premiums (Rikhardsson and Impgaard, 2004), and the indirect costs associated with employee responses (absenteeism, 'presenteeism' and turnover). A report released by The Work Foundation in 2010 found poor WHS performance to be a significant predictor of low levels of employee engagement. Right Management (2009) also report that when organizations fail to manage health and wellness well, they are four times more likely to lose talent within the next twelve months. The loss of key personnel in a business also brings into focus the indirect costs associated with both productivity loss and the expenses associated with finding and training a suitable replacement.

Independent reports released by the European Agency for Safety and Health at Work (2009), the Work Foundation (2010) and the National Pharmaceutical Council (2011) have sought to identify a number of indirect costs associated with WHS failure, including: production delays and lost time; litigation expenses and fines; additional wage costs, sick pay and temporary labour replacement costs; and repairs to plant and equipment.

Research exploring the link between WHS performance and organizational value in terms of customer sentiment concludes that while non-compliance with WHS standards is likely to be highly visible amongst consumers, 'super-compliance' or initiatives beyond the limit of what the law strictly requires is often less likely to attract consumer attention or enhance reputation (Smallman and John 2001). Nevertheless, poor WHS practices are widely considered as a driver of competitive disadvantage, reduced status in the eyes of stakeholders, and potential profit and reputational losses (Smallman and John 2001).

Recent research has begun to explore the ways in which voluntary WHS investment beyond legal compliance might be used as a business strategy to enhance organizational reputation, profitability and customer satisfaction. Just as green businesses have differentiated themselves in the marketplace through sustainable environmental production practices. It has been suggested that products and services made under favourable WHS conditions could be similarly utilized as a means to position a business in competitive markets, with businesses tapping into the ethical consumerism movement

and promoting themselves as an 'ergo-brand' (Neumann, Dixon and Nordvall, 2014). Initial research testing the 'ergo-brand' proposition has found some support for the suggestion that consumers prefer goods made by organizations committed to good working conditions. A study of the electric utility industry by Willis, Brown and Prussia (2012) found that WHS performance is linked to customer satisfaction. Recent research by Rechenthin (2014) has concluded that organizations with successful safety programs within high-risk industries, such as construction, can promote safety alongside other performance records as a sustainable competitive advantage. Notwithstanding these findings, Neumann et al. (2014) also report that this preference for 'ergo-brands' does not necessarily serve to overcome consumer considerations of quality and cost in their purchasing decisions (Neumann et al, 2014).

In most cases, occupational health safety (OHS) is largely measured by negative outcomes such as workplace injury and illness but these measures have a shortfall, for instance, a low incidence of injury does not necessarily mean that adequate safety systems and controls are in place (Health and Safety Executives, 2006). A workstation change can increase productivity; however, it is misleading to conclude that this change results in the improvement of OHS standards. New machinery can also be hazardous to health. For instance, a noisy machine may be replaced by a new machine that is more efficient but produces dust. This shows a mere shift from one hazard to another. A workstation change can cause increased efficiency and productivity leading to an ignorance of the resultant OHS implications. It is therefore misleading to conclude that a workstation change improves OHS standards in light of the increased productivity.

2.3.1 Management Commitment to Safety and Health

In order to manage health and safety of employees, an employer needs to establish and maintain an occupational health and safety program at the workplace, and review it where necessary and revise the occupational health and safety program at least every three years. Health and Safety policies offer employers an opportunity to be proactive rather than reactive (Eaton, Adrienne and Nocerino, 2000). Precautions to manage health and safety in the workplace could involve activities like; develop training programmes that emphasize health and safety, employers making sure that workers know about hazards in

the workplace, and are trained to work in a way that ensures their health and safety, establishing safety and health committees, designing safer systems of work, exhibiting commitment to health and safety, establishing procedures and controls, and monitoring the health and safety policies (Reill P ci, and Holl, 1995).

Ver Meulen (1998) believed that the best way to reduce workers' compensation costs are to ensure all incidents and associated costs are tracked and trended. He argued that there are two aspects to reducing workers' compensation costs; one is loss control. Once an injury occurs, controlling the costs associated with that injury is necessary. The other is loss prevention. This is done through incident and near-miss investigation, taking a look at the root cause of incidents and implementing steps to prevent them from recurring

Management commitment to implementing safety in an organization affects both safety and non safety outcomes. According to Judd, et al., (2005), non-safety employee outcomes include work-related attitudes such as commitment and behaviors such as withdrawal such as absenteeism, daydreaming and on-the job performance. One of the reasons that employees will exhibit such outcomes is to reciprocate favorable treatment by their employer (Gouldner, 1960; Rhoades, Eisenberger, & Armeli, 2001), with the theoretical explanation for this reciprocity found in social exchange (Blau, 1964, 1977) and organizational support theories (Eisenberger, Huntington, Hutchinson, & Sowa, 1986).

Employee perceptions of this "favorable treatment" are formed from general beliefs concerning how much the organization values their contributions and cares about their well-being" (Eisenberger, Armeli, Rexwinkel, Lynch, & Rhoades, 2001). Therefore, organizations whose representatives exhibit a strong degree of caring for employees should have those actions reciprocated by employees in the form of desired work-related attitudes and behaviors. Social exchange and organizational support have recently been applied to safety topics with considerable success. For example, Hofmann and Morgeson (1999) suggested that the nature of these exchanges can help to explain incidents and safety-related behaviors. Another form of social exchange (i.e., leader-member exchange) has been used to examine relationships between leadership, safety climate, and subordinates' safety performance (Hofinann, Morgeson, & Gerras, 2003).

Judd, et al., (2005) conducted a study to establish how management commitment to safety as organizational support affected non-safety outcomes in wood manufacturing companies in Pennsylvania State in the USA. The study collected data from production employees of three large wood products manufacturing companies. The findings of their study revealed that increasing employee perceptions of management's personal concern for employee wellbeing through a dedication to safety resulted in positive outcomes beyond improved safety performance. As a result on the management commitment, there was a type of social exchange between employees and management that influenced employees' commitment to the organizational activity therefore translating to better organizational support.

The Society of Human Resource Management (SHRM) (2012) conducted another study in among 600 employees across the USA through an online survey on job satisfaction and engagement survey. The findings revealed that, while at work, employees expected their organizations to take measures that ensure their safety. Further, it was revealed that about one half of employees felt that safety in the work environment was very important to their job satisfaction which was closely related to their productivity. The survey covered employees across different sectors.

According to the National Safety Council (NSC), (2009) the most important way an organization can show management commitment is to have top management show strong leadership skills. Various actions have been identified as necessary in providing leadership on occupation and safety in organizations which include: playing a strong and visible role in driving the safety and health management system, establishing an occupational safety and health policy that is visible throughout the organization. This includes that posting of the safety policy everywhere in the organization including the general work area, lunch and break rooms, rest rooms, and meeting rooms. Secondly, organizations commitment to safety includes ensuring that the top management lead by example (NSC, 2009). Managers who do what they are asking employees to do set a good example, and employees are more likely to follow. The top management should also set safety and health goals for the entire organization and to ensure that safety and health responsibilities are properly distributed and carried out these also provide the

space for feedback on improvements and concerns. Further in enhancing commitment, the management should hold meetings where employees are encouraged to share their safety and health ideas on organizations weaknesses and areas for improvement. The management also has a role to provide leadership in annual process of evaluating the safety and health management systems in place (NSC, 2009).

2.3.2 Job Risk and Hazard Assessment and Employee Productivity

According to NISP (2004), a job hazard analysis is a structured review instrument used in identifying, the risks and controls required. A job hazard analysis is simply a documentary analysis of the various task steps, associated hazards, typical threats; risk assessment, control and recovery measures associated with different construction activities. It is the bedrock of the Hazards and Effects management process, which is a subsystem of the corporate HSEMS. The preparation and implementation of a broad based JHA will go a long way in identifying construction hazards, promotion of work planning, safety consciousness, and management of risk and reduction of accidents / incidents.

According to Carter and Smith (2005), association of hazards with tasks is important to both managing safety and communicating safety and hazard awareness down to the people who are actually exposed to the hazards. This is because hazard identification is fundamental to safety from statistical, legislative and risk management perspectives. The influence of job hazard analysis on organizational productivity and loss cannot be over emphasized, especially in the areas of setting minimum health/safety management standards, safe work procedures and environmental management standards. It is assumed that job hazard analysis have a direct relationship with employees' productivity in view of the fact that assigned tasks can only be safe accomplished when workers are in a good state of health and the work environment is safe and conducive for the execution of the assigned duties, be it construction, manufacturing or servicing, thus, any phenomenon that affects human production capacity will invariably affect organizational productivity hence improving workers wellbeing offers a company the opportunity of enhancing its performance (Galliker,2000). For instance, the consequences of construction incidents (accidents, ill-health and environmental pollution) on workers' productivity are so grave

that construction companies should be legally, morally and socially compelled to incorporate job hazard analysis as one of their production inputs in taming the tide of this ugly incidents.

According to Goetzel (1999), improving employees HSE practice at work, is directly related to their productivity and profitability of organizations. Agwu (2012) assessed the impact of job hazard analysis (JHA) on organizational performance in Shell Bonny Terminal Integrated Project in Nigeria and established that, good JHA practice led to better performance of employees, management and the company as a whole resulting in less disruption of work process and less liabilities. In addition, better company performance lead to better productivity, profitability, efficiency, quality, corporate image and innovative capacity through improvement of employees' skills via training, motivation and ergonomic.

According to Katsuro (2010) Workers commonly refuse to work because of the health risk involved in their work and this can be used as an indicator of poor OHS in the workplace. He termed this situation "stop-work". In most developing countries, workers rarely consider safety of their jobs due to the high levels of unemployment in such countries. Since income is hard to earn and there are no efficient economic security social nets, a worker opts to work in any environment that is risky than losing a precious job.

2.3.3 Personal Protective Equipment and Employee Productivity

Hazards exist in every workplace in many different forms and in the security jobs workers are exposed to the risk of injuries from armed robbers in addition to the working conditions. Controlling a hazard at its source is the best way to protect employees (OSHA, 2003). Depending on the hazard or workplace conditions, OSHA recommends the use of engineering or work practice controls to manage or eliminate hazards to the greatest extent possible. When work practice and administrative controls are not feasible or do not provide sufficient protection, employers must provide personal protective equipment (PPE) to their employees and ensure its use. To ensure the greatest possible protection for employees in the workplace, the cooperative efforts of both employers and

employees will help in establishing and maintaining a safe and healthful work environment.

All PPE clothing and equipment should be of safe design and construction, and should be maintained in a clean and reliable fashion. Employers should take the fit and comfort of PPE into consideration when selecting appropriate items for their workplace. PPE that fits well and is comfortable to wear will encourage employee use of PPE. Most protective devices are available in multiple sizes and care should be taken to select the proper size for each employee. If several different types of PPE are worn together, make sure they are compatible (OSHA, 2003).

Employees' perception of their treatment by their employer influences their behavior and attitudes to work. Where employees feel that they are treated favourably by their organization, they will in turn 'reciprocate' with more positive work behaviors and attitudes. Perceived organizational support has been found to have a positive influence on safety attitudes and behaviors (Hofmann and Morgenson, 2003). Morrow & Crum (1998) study found that management commitment to safety was related to a number of employee attitudes, including job satisfaction, organizational commitment and intention to quit. Other work has considered how safety climate perceptions are linked to employee outcomes, including organizational commitment, intention to quit and job involvement

As a finding of a study (Lamm, Massey, Perry, 2006) there is increasing and compelling evidence that providing a healthy and safe working environment has the potential to increase labour productivity and in turn increase business profits. Lamm et al (2006) also refer to the argument of some commentators that productivity gains are often at the expense of workers' health and safety. Businesses typically strive to become more productive and in doing so are driving their workers to work longer, harder and with higher utilization.

Lamm et al (2006) also suggest efforts to increase productivity through occupational safety and health can have contradictory results and point out the gaps in literature that while there is evidence that occupational injuries and illnesses impact on productivity losses, it is not clear whether or not reducing injuries and illnesses will automatically

influence productivity gains. Findings of another study (De Greef and Van den Broek, 2004) demonstrate that health and safety measures have a positive impact not only on safety and health performance, but also on company productivity.

Goetzel and Ozminskowski (2008) state that many employers associate poor health with reduced employee performance, safety, and morale. The organizational costs of workers in poor health, and those with behavioral risk factors, include high medical, disability, and workers' compensation expenses; elevated absenteeism and employee turnover; and decreased productivity at work often referred to as presenteeism. In addition, one worker's poor health may negatively affect the performance of others who work with him or her.

Motivation strategies aim to create a working environment and to develop policies and practices that will provide for higher levels of performance from employees (Armstrong, 2009). An enabling, supportive and inspirational work environment creates experiences that impact on engagement by influencing how people regard their roles and carry them out (ibid). Managers motivate by providing an environment that induces organization members to contribute (Weihrich & Koontz, 2001).

A study conducted by Katsuro, Gadzirayi, Taruwona, and Mupararano (2010) to assess the Impact of occupational health and safety on worker productivity: A case of Zimbabwe food industry found out from observations and interviews that protective clothing was used as forefront protection of workers from hazards. Protection of the worker was on the workers themselves and not on the sources of the hazards. Workers had dust masks that let fine particles of dust into their noses and throats. Contract workers wear old tattered clothing. The study revealed that workers are given the reason of lack of money when they ask the management about protective clothing and equipment.

Armstrong (2009) observes that an enabling environment will create the conditions that encourage high performance and effective discretionary behavior. This is generally concerned with developing a culture that encourages positive attitudes to work, promoting interest and excitement in the jobs people do and reducing stress. Lukoko, Chege and Musiega (2014) in their study in Mumias Sugar Company in Kenya found out

that non provision of PPE had a significant negative correlation with the impact on employee performance.

Based on the forgoing discussions, the provision of conducive work environments with proper personal work and protective equipments for security guards may improve their morale and productivity. This study therefore seeks to establish whether provision of right personal protection equipments for security guards in Nakuru Town affected their motivation and job productivity.

2.3.4 Safety Trainings on Employee Productivity

The main object of every organization is to improve its performance but it can never be possible without the efficient performance of employees. Therefore, the performance management system came into effect as a management reform to address and redress concerns, organizations had about performance (Sharif, 2002). The main objective of human resource development is to create learning environment in the organization so that each member of the organization continuously learns and acquires new competencies". Employees have been told by the top officials how much output should be produced. Staff training is an indispensable strategy for motivating workers (Tripathi, 2002).

Training and Development basically deals with the acquisition of understanding, know-how, techniques and practices. In fact, training and development is one of the imperatives of human resource management as it can improve performance at individual, collegial and organizational levels. As the process of 'increasing one's capacity to take action, organizations are now increasingly becoming particular with organizational learning and therefore collective development. Organizational learning, on the other hand, refers to the "efficient procedure to process, interpret and respond to both internal and external information of a predominantly explicit nature. According to Easterby-Smith (1999), the emergence of the concept of organizational learning is central on the hitherto idea that prior advocacies of learning are tended to its commercial significance and are lacking of empirical information on learning processes.

Employees must be told how much amount of output to be prepared and what are the ways and procedures to be followed in achieving the same. Employees expect their skills

to be elicited completely during their tenure in the organization. It has two factors such as physical abilities, and intellectual abilities. When these two abilities are properly utilized by the organization, employees feel satisfied about their job. Employees are the valuable resources that may contribute in the several different ways to a company's activities, provided that the company gives them an appropriate chance (Morgan, 1997).

There is a significant body of scholarly literature relating to the impact of training on organizational outcomes. Reciprocity essentially states that an employee will help the company because the company helped them. This parallels the notion of the employee having a sense of debt toward the organization. Research on this element of commitment indicates that training can play an integral role in building a sense of debt to the company. Training that achieves reciprocity in the employee will foster an individual's commitment to the organization.

Many scholars agree that organizations that train their employees consistently have better outcomes than those that do not. When business environments change quickly and abruptly, it is typically the companies with the best trained employees that adapt and adjust most efficiently. Glance, Hogg, and Huberman (1997) determined these statements to be accurate in their study that looked at training and turnover from the perspective of evolving organizations. The researchers affirmed that training encourages "spontaneous cooperation" in many large companies.

The study by Katsuro, et al., (2010) in the Zimbabwe food industry revealed that induction training on occupational health safety (OHS) was found to differ according to employment status of workers. It was found that most food factories do not carry out proper OHS induction training. Most of the employees who are not yet permanent, divulged that induction training on OHS was very low for them. Two contract workers claimed to have been inducted on OHS, while ten fixed contract workers out of thirty claimed to have been trained on OHS upon employment.

2.4 Conceptual Framework

The constructs of occupational safety and management in relation employee productivity can be summarized into the following conceptual framework in Figure 2.2.

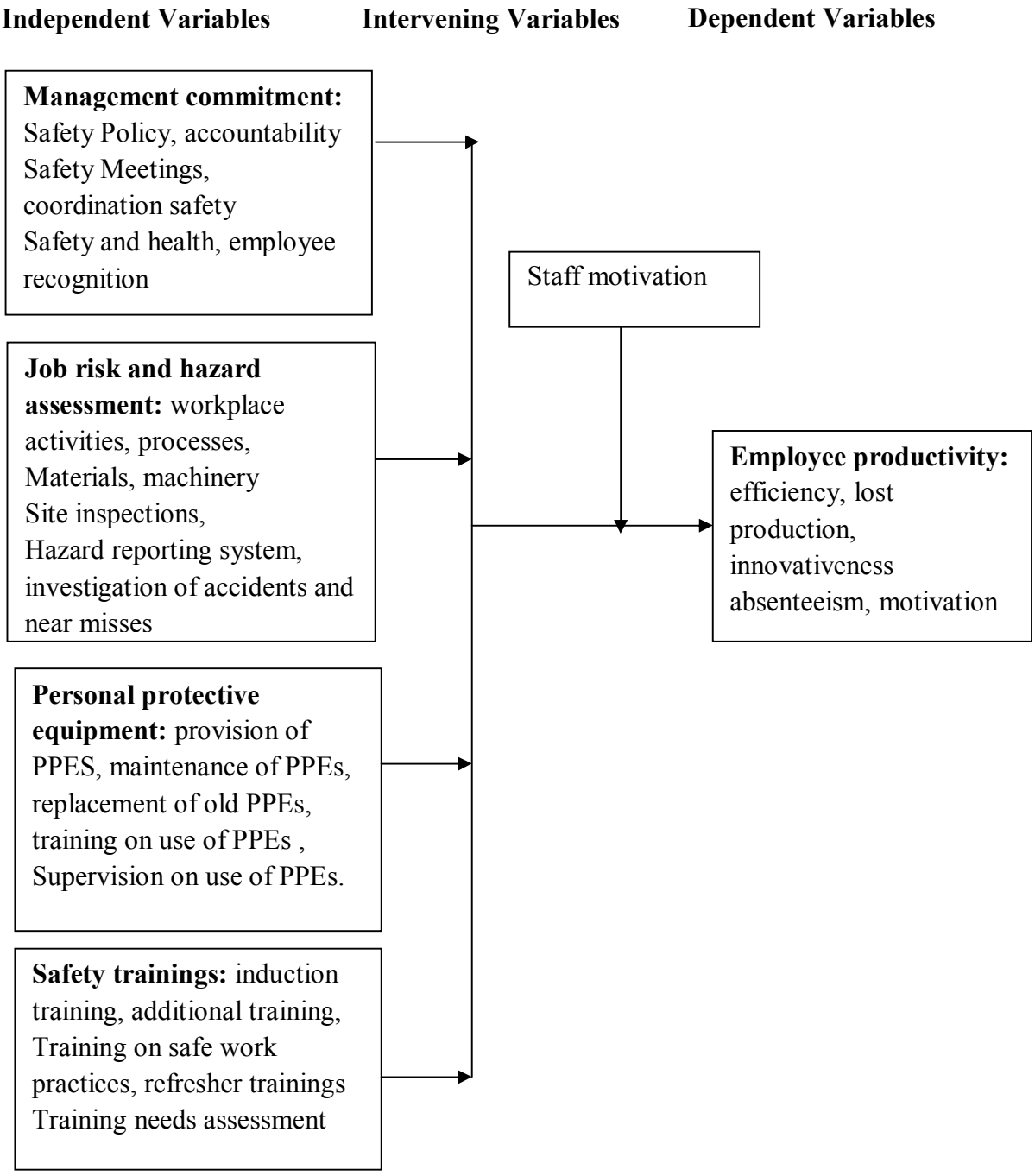

Figure 2.2: Conceptual Framework

Source: Author (2015)

The conceptual framework on Figure 2.2 illustrates the effects of health and safety management on productivity of NAWASSCO. The framework holds that management commitment to implementation of safety and health among its staff plays a significant role in the motivation of employees. An employer who is committed to ensuring the safety of staff would influence their job commitment to better productivity. Further, job risk and hazard assessment which is a critical aspect of safety management would ensure that staffs are aware of the existing risks in performing specific tasks, and that the risks are controlled to the minimum.

Work environment with eminent hazards and risks would result to injuries that affect individuals' productivity. Provision of personal protective equipment would also contribute to enhancing safety at work place this would in turn to reduced injuries, and less worries in performance of jobs therefore improving employee productivity. Finally the study hypothesizes that safety training among staff help in equipping them on the best work practices that enhance safety. This also translates to minimum accidents less time lost due to injuries therefore enhanced productivity.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Study Design

The study adopted a descriptive survey research design. Descriptive survey research design according to Kombo & Tromp (2006) is used in collecting information by administering questionnaires to a sample of individuals and is suitable when collecting information on people's attitudes, opinions, habits or any variety of educational or social issues. Mugenda and Mugenda (2003) also points out that descriptive research designs are appropriate in determining and reporting the way things are. This study sought to assess the management of safety in NAWASSCO in relation to employee productivity. This was achieved by seeking opinions from a cross-section of the staff of NAWASSCO

3.3 Study Location

The study was carried out in NAWASSCO in Nakuru County Kenya. NAWASSCO is the sole provider of water treatment and distribution at Nakuru County therefore staff of NAWASSCO are involved in a wide range of activities that expose them to occupational hazards ranging from chemicals, machinery, accidents among others. Therefore this formed a suitable study sample.

3.4 Target Population

The target population for the study is defined by Best and Kahn (1998) as all individuals bearing similar characteristics of interest to the researcher. The study targeted all the staff of NAWASSCO in water treatment and distribution. Currently there are 335 staff in field offices dealing with water distribution and treatment in NAWASSCO. These included plumbers, technicians, engineers and chemists.

Target population distribution is shown on Table 3.1.

Table 3.1: Distribution of Target Population

Staff Category	Number of staff	Percentage
Engineers	8	2.4
Technicians	23	6.8
Plumbers	295	88.1
Chemists	9	2.7
Total	**335**	**100.0**

Source: NAWASCO HR Office (2015)

3.5 Sampling and Sample Size

To obtain the desired sample size for the study, Nassiuma (2002) formula was used as shown below:

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

Where:

n= Sample size

N= Population

C_v = Coefficient of variation (take 0.5)

e= Tolerance at desired level of confidence, take 0.05 at 95% confidence level

Therefore:

$$n = \frac{335 * 0.5^2}{0.5^2 + (335-1)0.05^2}$$

n = 77

Therefore the sample size was comprised of 77 technical staff of NAWASSCO who were involved in water treatment and distribution. This sample was selected using the stratified random sampling technique where:

$$n_i = (\frac{N_i}{N})n$$

Where:

$n_{i=}$Sample of strata i

$N_{i=}$Population of Strata i

Table 3.2: Sample Distribution

Staff Category	**Number of staff**	**Sample size** $n_i = (\frac{N_i}{N})n$
Engineers	8	2
Technicians	23	5
Plumbers	295	68
Chemists	9	2
Total	**335**	**77**

3.5 Data Collection Instruments

Primary data was elicited using questionnaires prepared by the researcher. Questionnaires allowed collection of data from a large number of subjects simultaneously and provided for investigation with an ease of accumulation of data Graveter & Forzano (2003). The questionnaires were carefully designed with four sections; Section A: sought general information about staff; Section B sought information on staff perceptions on management commitment to employee safety and health; Section C sought information on hazard assessment, reporting and management in construction and water treatment sites. Sections D elicited data on the company's practices in provision of personal protective clothing and equipments while Section E sought information on safety

trainings among the field staff of NAWASSCO. Finally the last section F sought to assess the staff productivity.

3.6 Validity and Reliability of Instruments

Adams, Jackson, & Marshall (2007) defines validity as the strength of conclusions and inferences of a research, which is dependent on the degree of accuracy in measuring what is intended in the research. To ensure internal, external and construct validity of the research instruments, the study relied on expert advice and judgment. This was provided by research supervisors and lecturers of Kabarak University. Consultations was also done in all stages of the study.

Reliability according to Mugenda and Mugenda (2003), is a measure of the degree to which research instruments yield consistent results or data after repeated trials. To improve on reliability in this study, piloting of the questionnaires was done on selected staff among NAWASSCO field staff, however, those who took part in the pilot study were not be part of the sample selected for the actual study. Items in the piloting questionnaires were analyzed using Cronbach's reliability coefficient in the statistical package for social scientists (SPSS, 19.0). An alpha reliability coefficient of 0.78 was obtained for the questionnaire. According to Fraenkel & Wallen (2000) an alpha value of 0.7 and above is considered suitable to make group inferences that are accurate enough thus the reliability coefficient of 0.78 implied that the instruments were reliable.

3.7 Data Collection Procedure

To facilitate the data collection, an introductory letter was obtained from the Kabarak University, school of post graduate studies to enable the researcher obtain permission to conduct the study at NAWASSCO. At the company, permission to conduct the study was obtained from the Human Resource Manager. The target respondents will then be contacted and arrangements to drop and collect questionnaires be made. The study by taking into consideration the busy schedules of the technical staff administered the questionnaires using drop and pick later method.

3.8 Data Analysis Procedure

This study sought for opinions on safety management from the technical staff of NAWASSCO in relation to their productivity. Based on the research objectives, the research was mainly quantitative where data was generated from rating the opinions by staff. In analyzing the data, first descriptive statistics were obtained for all objectives which include the mean, standard deviation, frequencies and percentages. Relationship between occupational safety and health management and employee productivity was then computed using a regression analysis.

The following regression model was used:

$y_i = \beta_{0+}\beta_1 x_1 + \beta_2 x_2 + \beta_3 x_{3+} \beta_4 x_4 + \varepsilon$

Where:

y = is the dependent variable (Employee productivity)

β_0 = Constant

x_1 – Management commitment

x_2 – Hazard assessment

x_3 – Provision of PPE

x_4 – Safety training

ε – Error Term

$\beta_1, \beta_2, \beta_3, \beta_4$ - are coefficients.

CHAPTER FOUR
DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

The study sought to assess the effects of occupation safety and health management practices on employee productivity at the NAWASSCO by seeking opinions from the technical staff involved in the treatment and distribution of water in the company. This chapter presents the results of the study and the analysis of findings. Further, the findings are discussed.

4.1.1 Response Rate

The study issued a total of 77 questionnaires to the technical staff of NAWASSCO. Of the total questionnaires 74 were successfully filled and returned, thus the return rate for the study was 96.10%. This was achieved through continuous efforts by the researcher to follow with the selected respondents to ensure that they filled and returned the questionnaires.

4.2 General Information of Respondents

The study sought some general information about the respondents which included: their gender, age, highest education attained, their experience in the company, their job category and the nature of their contract. Findings on these parameters are discussed in the following sections.

4.2.1 Gender

The gender of respondents was the first parameter to be determined in this study. Gender was categorized into two as either male or female, the finding were then presented on Figure 4.1.

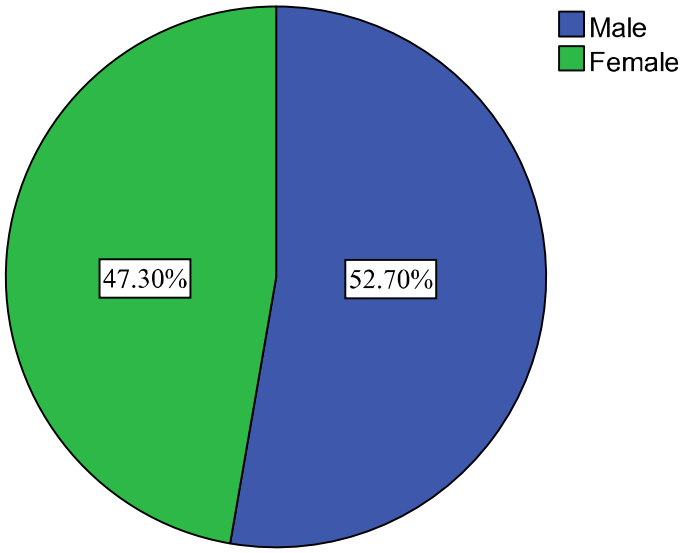

Figure 4.1: Gender

Source: Survey Data (2015)

The findings on Figure 4.2 revealed that majority of the technical staff in NAWASSCO (52.70%) were of the male gender while 47.30% were of the female gender. This shows that the company had observed gender equity in recruitment as none of the two gender had more than the two thirds majority prescribed in the Kenyan Constitution of 2010.

4.2.2 Age

The respondents' age was the second parameter of interest to the researcher. This was determined by grouping the ages into five cohorts as shown on the findings in Figure 4.2.

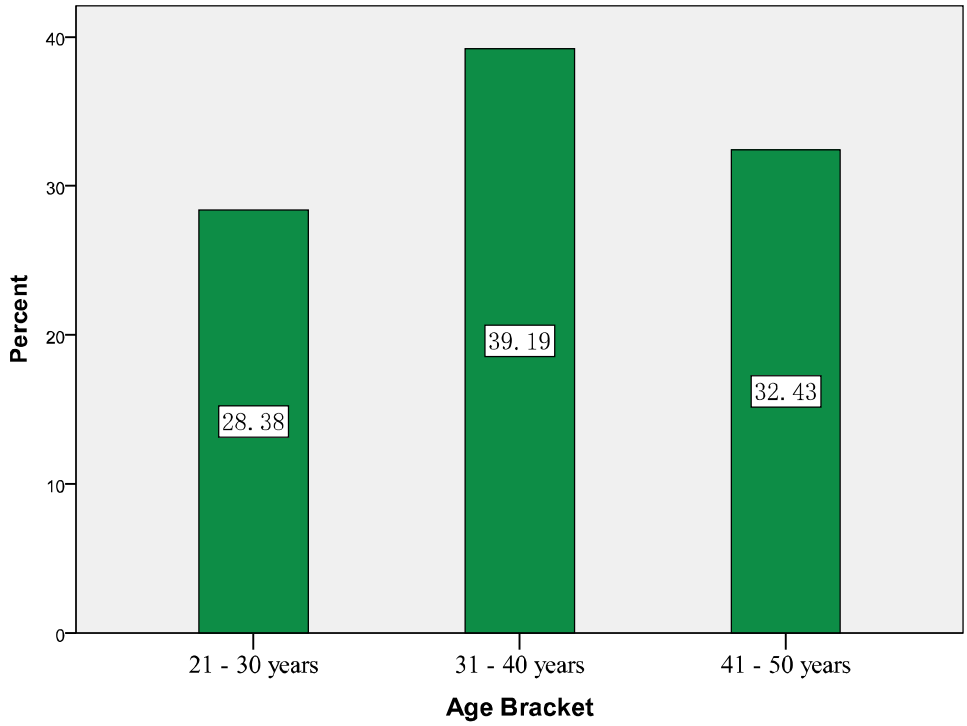

Figure 4.2: Age Group

Source: Survey Data (2015)

Out of the five age cohorts, it was found out that 31 – 40 years formed the largest group constituting 39.19% of the technical staff followed by the group of 41 – 50 years with 32.43%. A further, 28.38% were aged between 21 – 30 years. None of the technical staff who responded were aged above 50 years. This shows that population of technical staff of NAWASSCO was relatively young, therefore energetic. From the findings, it can be seen that the younger population of between 21 – 30 years was less which implies that the Younger cohorts that enter NAWASSCO was getting smaller. This scenario was consistent to most industrialized countries where the average age of the workforce has been growing rapidly. Toosi (2007) argues that this trend is likely to continue. Literature points to the relationship between age of workforce and the competitiveness of establishments. Göbel and Zwick (2011) revealed that, although the age productivity tradeoff varies across different economies, there is significant evidence that productivity decreases with old age. Therefore although the age of workforce may be insignificant now, in the future, age may be a key determinant of productivity at NAWASSCO.

4.2.3 Highest Education Level

The education level of technical team was determined based on the highest level achieved. The categorization was based on the levels of education in the Kenyan Curriculum as shown on Figure 4.3.

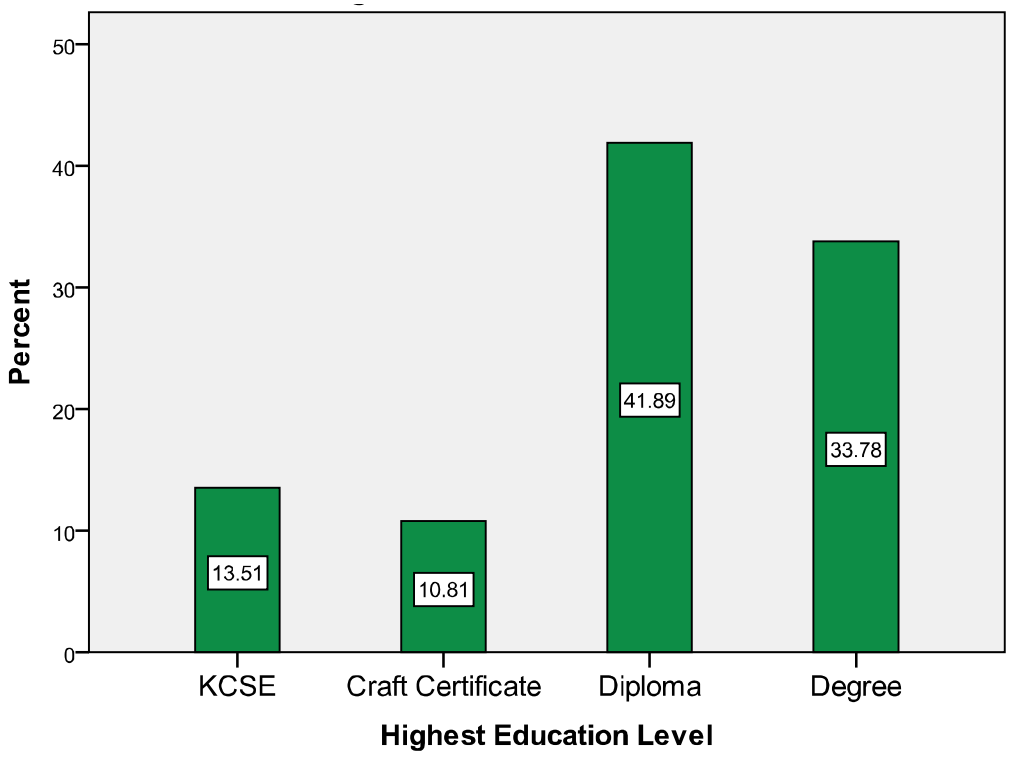

Figure 4.3: Highest Education Level

Source: Survey Data (2015)

According to the findings on Figure 4.3, the largest population of the technical staff of NAWASSCO had diploma (41.89%) or degree (333.78%) education; a few had craft certificates (10.81%) while 13.51% had KCSE. This findings imply that majority of the staff had formal education except the KCSE holder who learn by apprenticeship. This category therefore may not have the basic know how on occupational safety and health therefore may require proper training and supervision on OSH.

4.2.4 Experience in NAWASSCO

Experience of the staff in the company was considered based on the years that they worked in the company and presented on Figure 4.4.

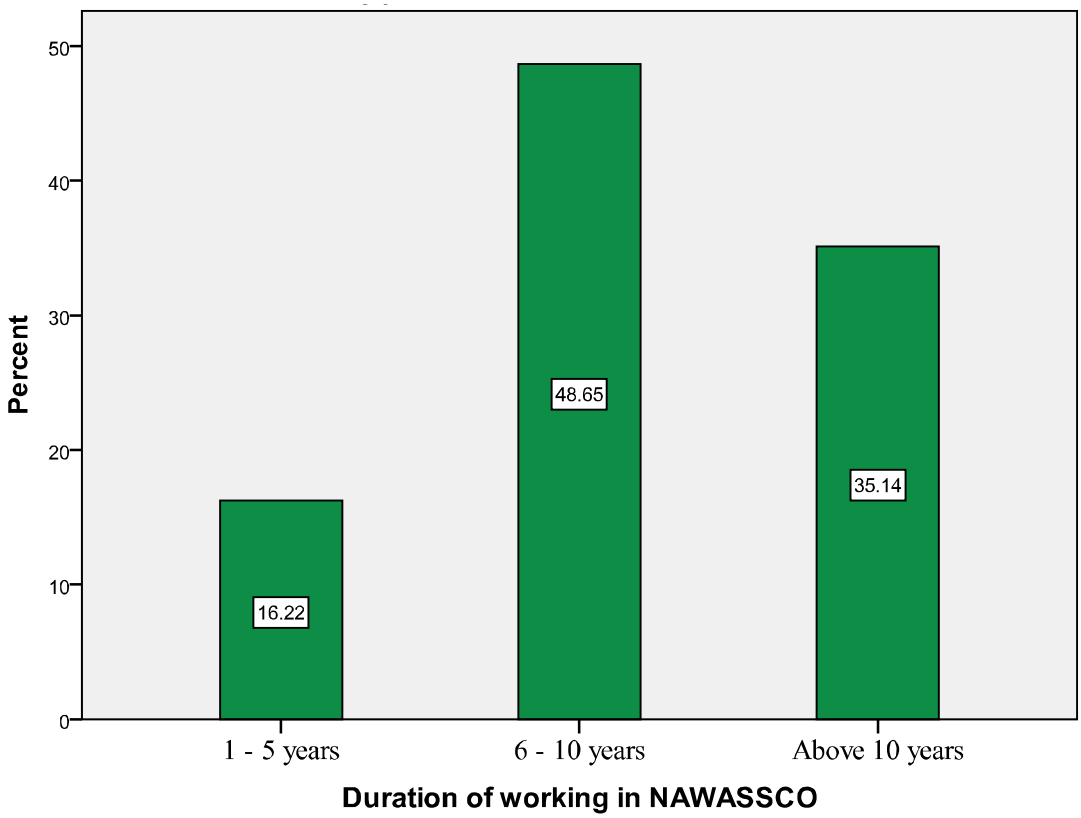

Figure 4.4: Experience in NAWASSCO

Source: Survey Data (2015)

The findings on Figure 4.4 show that 48.65% of the technical staff who participated in this study had worked for NAWASSCO for 6 – 10 years while 35.14% worked for more than 10 years. A few 16.22% had worked for a period between 1 – 5 years. This shows that majority of the respondents for the study were experienced in the company operations for more than 5 years therefore had the relevant understanding on the OSH issues.

4.2.5 Job Category

Job category referred to the position held in the organization based on the staffs' job description. In this study, job category was identified as either: Engineer, Technician, Plumber or chemist.

Table 4.1: Job Category

			Highest Education Level				
			KCSE	Craft Certificate	Diploma	Degree	Total
Current Job position	Engineer	Count	0	0	0	8	8
		% within Highest Education Level	0.0%	0.0%	0.0%	32.0%	10.8%
	Technician	Count	6	4	13	17	40
		% within Highest Education Level	60.0%	50.0%	41.9%	68.0%	54.1%
	Plumber	Count	4	3	0	0	7
		% within Highest Education Level	40.0%	37.5%	0.0%	0.0%	9.5%
	Chemist	Count	0	1	18	0	19
		% within Highest Education Level	0.0%	12.5%	58.1%	0.0%	25.7%
Total		Count	10	8	31	25	74
		% within Highest Education Level	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Survey Data (2015)

The finding on the cross tabulation Table 4.1 shows that 54.1% of the technical staff were employed as Technicians while 25.7% were chemists. Engineers formed 10.8% while plumbers were the least forming 9.5% of the technical staff. Further assessment on the education level of the staff revealed that all the engineers had degree education qualification while majority of the technicians were either degree or diploma holders.

However, one of the chemists was identified to have craft certificate as their highest education qualification.

4.2.6 Nature of Contract

The nature of contract of the technical staff was assessed to determine their terms of engagement with the company. Terms were categorized as either daily casuals or casuals hired on weekly basis and casuals who have worked there for a long duration of time.

Table 4. 2: Nature of Contract

			Current Job position				
			Engineer	**Technician**	**Plumber**	**Chemist**	**Total**
Nature of contract	Weekly Casual	Count	0	2	0	0	2
		% within Current Job position	0.0%	5.0%	0.0%	0.0%	2.7%
	Permanent Casual	Count	8	24	3	11	46
		% within Current Job position	100.0%	60.0%	42.9%	57.9%	62.2%
	Permanent Contract	Count	0	14	4	8	26
		% within Current Job position	0.0%	35.0%	57.1%	42.1%	35.1%
Total		Count	8	40	7	19	74
		% within Current Job position	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Survey Data (2015)

The findings revealed that majority of the technical staff (62.2%) were casuals waiting to be confirmed permanent owing to the long duration served in the organization, 35.1% were on permanent contract while 2.7% were casuals hired on weekly basis. However,

the most outstanding factors was that all the 8 engineers who took part in the study were not on permanent contract yet and so was 60.0% of the technicians and 57.9% of the chemists.

4.2.7 Whether Staff Had Experienced Occupational Accident or Incident

Further on the general information, the study sought to determine whether participants in the study had experienced occupational accidents or incidences.

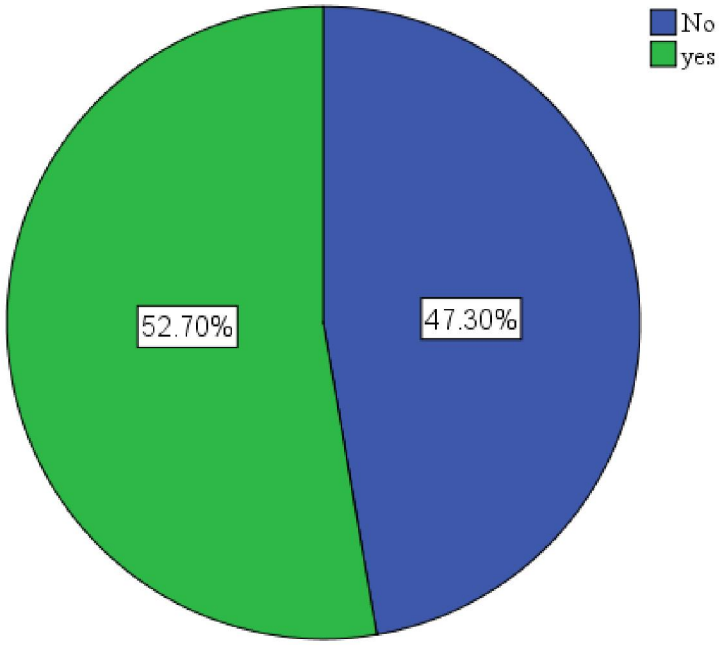

Figure 4.5: Whether Staff Had Experienced Occupational Accident or Incident

Source: Survey Data (2015)

The findings on Figure 4.5 revealed that a majority 52.70% had experienced occupational accidents or incidences. This indicates that technical staff in NAWASSCO were prone to accidents and incidents thus there was dire need for measures to be put in place to control and manage occupational safety and health of technical staff.

4.2.8 Whether Staffs were Satisfied with the OSH Management in the Company

Further, the study sought to know whether staffs were satisfied with the company's efforts in OSH management.

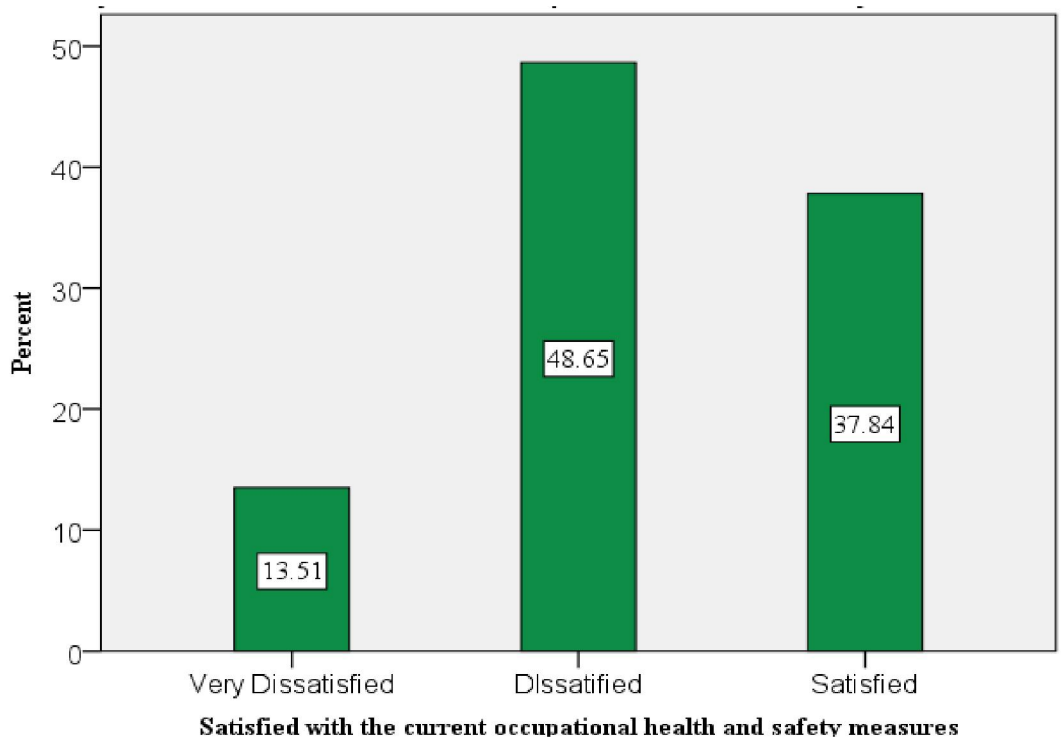

Figure 4.6: Staff Satisfaction with the OSH Management in the Company

Source: Survey Data (2015)

According to the findings on Figure 4.6, a high majority (62.16%) of the technical staff at NAWASSCO were not satisfied with the way in which the company was handling OSH issues. The remaining 37.84% were however satisfied. Results of meta analysis studies by Petty et al (1984) and Muchinsky (1985) revealed a positive though moderate correlation between job satisfaction and job performance. This implies that staff satisfaction with the management of OSH in NAWASSCO could have an effect on their productivity. The high level of dissatisfaction raises concern since according to (Furnham 1992) job satisfaction is susceptible to the influence of others in the work place. People are inclined to observe and copy the attitudes and behaviors of colleagues with similar jobs and interests. This implies that even those who argue to be satisfied with the OSH

management in the company are susceptible to negative influence from those who are dissatisfied.

4.3 Management Commitment in OSH Management

The first objective of the study was to assess management commitment in relation to productivity of the technical staff of NAWASSCO. The staffs opinion on the management commitment in ensuring good occupational safety and health was assessed on a scale of 1- 5 and the mean scores computed on Table 4.3.

Table 4.3: Management Commitment in Management of OSH

	SA f (%)	A f (%)	ND f (%)	D f (%)	SD f (%)	χ^2	Sign
The company has a well developed safety and health policy in place that is properly communicated	9(12.2)	46(62.2)	1(1.4)	12(16.2)	6(8.1)	207.02	0.00
The management is commitment to instilling accountability for safety and health	0(0.0)	46(62.2)	9(12.2)	19(25.7)	0(0.0)	90.05	0.05
There are regular safety and health meetings involving employees, managers and supervisors	17(23.0)	22(29.7)	10(13.5)	23(31.1)	2(2.7)	204.79	0.00
There are staff assigned to coordinate safety and health activities	17(23.0)	46(62.2)	11(14.9)	0(0.0%)	0(0.0)	100.85	0.04
The organization puts safety and health first in all business practices	8(10.8)	41(55.4)	11(14.9)	10(13.5)	4(5.4)	203.42	0.00
Employees are involved in safety and health related activities such as self-inspections, accident investigations and developing safe practices	18(24.3)	51(68.9)	3(4.1)	0(0.0)	2(2.7)	141.37	0.03
The company recognizes employees for safe and healthful work practices	15(20.3)	43(58.1)	6(8.1)	0(0.0)	10(13.5)	134.25	0.02

Source: Survey Data (2015)

The findings on Table 4.3 shows that management commitment in implementing OSH in NAWASSCO was moderately scored. Majority of the staff 62.2% agreed and 12.2% strongly agreed that the company has a well developed safety and health policy in place that is properly communicated those of the contrary opinion included 16.2% who disagreed and 8.1% who strongly agreed. A chi square analysis further showed a strong association ($\chi^2 = 207.02$, $p < 0.05$) between the presence of OSH policy and employee productivity meaning that having an OSH policy that is well communicated had a significant effects on employee productivity at NAWASSCO. Majority of the technical staff agreed that the management was commitment to instilling accountability for safety and health in the company as opposed to 25.7% who disagreed and 12.2% who were not sure. A chi square analysis between management commitment to accountability and employee productivity revealed a strong association between the two variables ($\chi^2 = 90.05$, $p < 0.05$). Thus management commitment to accountability in Osh contributed in enhancing employee productivity.

Concerning the frequency in which safety and health meetings were held between the management and employees, 23.0% strongly agreed while 29.7% strongly agreed that meetings were held very frequently, while on the contrary 31.1% disagreed. However, 31.1% disagreed and 2.7% strongly disagreed that the management had regular meetings. A chi square analysis revealed that ($\chi^2 = 204.79$, $p < 0.05$) which implied a strong and significant association between frequency of meetings and employee productivity. OSH supervision was also common since majority of the staff (62.2%) agreed and 23.0% strongly agreed that there were staff assigned to coordinate safety and health activities. The contribution of safety supervision in employee productivity was significant as revealed by the results of a chi square analysis ($\chi^2 = 100.85$, $p < 0.05$).

The prioritization of safety in the organizations activities was observed by majority 55.4% of the staff who agreed and 10.8% who agreed. A small proportion of 13.5% disagreed while 5.4% strongly disagreed that the organization puts safety and health first in all business practices. Results of chi square analysis however showed a strong

association between prioritization of safety and employee productivity ($\chi^2 = 203.42$, $p < 0.05$). As to whether employees were involved in safety and health related activities such as self-inspections, accident investigations and developing safe practices, a high majority of 68.9% agreed while 24.3% strongly agreed, a few 2.7% disagreed. Employee involvement on OSH activities was found to significantly affect employee productivity following the strong and significant association between the two variables ($\chi^2 = 141.37$, $p < 0.05$). Employee recognition was also practiced to some extent in NAWASSCO since 58.1% of the staff agreed while 20.3% strongly agreed, only 13.5% disagreed that the practice was common in NAWASSCO. Its impact on employee productivity was also proven bay the strong association between the variables ($\chi^2 = 134.25$, $p < 0.05$).

The above findings imply that staffs view on organizational commitment to ensuring the safety and health of its workforces was slightly above average. Based on the principles of perceived organizational support that employees form beliefs regarding how much the employer values them and their personal well-being (Aselage & Eisenberger, 2003) it can be argued that this moderate view on management commitment could have had an impact on the employee commitment to the work thus contribute towards employee productivity

4.4 Job Risk Hazard Assessment

The second objective for the study sought to determine the Job Risk Hazard assessment practices by the company and how this contributed to employee productivity. Table 4.4 presents a summary of the findings on the Job Risk Hazard assessment practices.

Table 4.4: Job Risk Hazard Assessment Practices

	SA f (%)	A f (%)	ND f (%)	D f (%)	SD f (%)	χ^2	Sig
All workplace activities and processes are evaluated for hazards regularly	0(0.0)	40(54.1)	0(0.0)	25(33.8)	9(12.2)	78.49	0.05
Whenever processes, materials or machinery change, the organization reevaluates the workplace risks and hazards	0(0.0)	46(62.2)	11(14.9)	9(12.2)	8(10.8)	118.11	0.02
Safety officers conduct on-site inspections to identify hazards and prescribe corrective actions.	15(20.3)	41(55.4)	9(12.2)	9(12.2)	0(0.0)	156.13	0.01
There is a hazard reporting system for employees to report unsafe conditions	3(4.1)	41(55.4)	28(37.8)	2(2.7%)	0(0.0)	135.00	0.04
All accidents and near misses are investigated to determine their root causes	3(4.1)	28(37.8)	17(23.0)	16(21.6)	10(13.5)	193.60	0.02
The company has invested in elimination and control of workplace hazards through engineering controls, workstation design	8(10.8)	44(59.5)	7(9.5)	9(12.2)	6(8.1)	145.72	0.00
There is a well established preventive maintenance program for safety	2(2.7)	37(50.0)	22(29.7)	12(29.7)	1(1.4)	204.96	0.00
The company keeps employees informed of safety and health	9(12.2)	50(67.6)	0(0.0)	13(17.6)	2(2.7)	131.86	0.01
The company maintains records and analyzes occupational injuries	23(31.1)	42(56.7)	9(12.2)	0(0.0)	0(0.0)	104.48	0.00

Source: Survey Data (2015)

The findings of Table 4.4 on the job risk assessment practices shows that to some extent, all workplace activities and processes are evaluated for hazards regularly since majority of the respondents (54.1%) subscribed to this view. However 33.8% disagreed while 12.2% strongly disagreed. A chi square analysis revealed a strong association between

the variables (χ^2 = 78.49, $p < 0.05$) implying that evaluation of work place hazards contributed to enhancing employee productivity. In was also a common practice that whenever processes, materials or machinery changed, the organization reevaluated the workplace risks and hazards as cited by 62.2% of the staff who agreed, a small proportion of 12.2% disagreed while 10.8% strongly disagreed. Association between revaluation of workplace hazards and employee productivity was strong and significant (χ^2 = 118.11, $p < 0.05$) implying that they affected one another.

It was also common for safety officers conduct on-site inspections to identify hazards and prescribe corrective actions at NAWASSCO. This view was upheld by 75.8% of the respondents who agreed or strongly agreed as opposed to 12.2% who disagreed. However, 12.2% were not sure whether this was practiced. Overall, site inspections by safety officers were found to have a significant association with employee productivity (χ^2 = 156.13, $p < 0.05$) thus it influenced employee productivity. The provisions for employees to report hazards through reporting system was present as identified by 55.4% of the staff who agreed and 4.1% who strongly agreed. This was found to a have a close association with employee productivity (135.00, $p < 0.05$). As to whether all accidents and near misses were reported, there were mixed opinions since 41.9% agreed while 35.1% disagreed and 23.0% were not decided a chi square analysis however revealed a strong association between accident reporting to establish root causes and prescribe a solution and employee productivity (χ^2 = 193.60, $p < 0.05$)at NAWASSCO.

The company's efforts to invest in elimination and control of workplace hazards was observed from 70.3% of respondents who agreed as opposed to 20.3% who disagreed. This was found to have a strong and significant association with employee productivity (χ^2 = 145.72, $p < 0.05$) therefore the company's efforts in elimination and control of workplace hazards through engineering controls, workstation design contributed to employee productivity. On the existence of a programs for prevention of OSH incidences, 52.7% of the employee agreed while 31.1% disagreed. On the other hand 17.6% were not sure which implied a mixed opinion. However, OSH preventive maintenance programs were found to have a significant impact on employee productivity (χ^2 = 204.96, $p < 0.05$).

Majority of the staff (67.6%) agreed while 12.2% strongly agreed that the company made efforts to ensure that employees were informed of safety and health issues in various job activities. Those with contrary opinion formed a smaller group with 17.6% disagreeing and 2.7% strongly disagreeing. Keeping staff informed on OSH issues contributed in enhancing their productivity ($\chi^2 = 104.96$, $p < 0.05$). Management of records regarding occupational safety and health injuries were highly practices as seen from 87.8% of the staff who agreed, a few 12.2% were not decided. A chi square analysis revealed ($\chi^2 = 104.96$, $p < 0.05$) which shows that the two variables were closely associated. Proper management of OSH records translated into better employee productivity owing to the use of the records in mitigating dangerous situations and in enhancing the work environment.

The above findings on job hazard analysis means that there was some modest agreement that the company put in some efforts to enhance risk and hazard assessment in their activities and processes. The company's efforts to conduct job risk and hazard assessment has been cited by scholars to guarantee safety of the activities thus a healthy and efficient work force. Carter and Smith (2005), indicated that hazard identification was critical in setting minimum health/safety management standards, establishing safe work procedures and environmental management standards which are closely associated with employees' productivity in view of the fact that assigned tasks can only be safe accomplished when workers are in a good state of health and the work environment is safe and conducive for the execution of the assigned duties. On this account therefore the moderate efforts by NAWASSCO to conduct job risk and hazard assessment could be closely associated with its staff productivity.

4.5 Occupational Safety and Health Training Practices

The third objective for the study sought to assess the safety training practices by NAWASSCO and how it affected the productivity of its technical staff. Table 4.5 presents the findings.

Table 4.5: Occupational Safety and Health Training Practices

	SA f (%)	A f (%)	ND f (%)	D f (%)	SD f (%)	χ^2	Sign
The company provides a comprehensive induction training to new staff on safe work practices before an employee begins work	1(1.4)	27(36.5)	1(1.4)	37(50.0)	8(10.8)	138.56	0.01
The company provides additional training to all staff on safety practices for new work processes	1(1.4)	41(55.4)	7(9.5)	17(23.0)	8(10.8)	159.62	0.00
When accidents and near misses occur the company provides training on safe work practices to avoid such accidents	13(17.6)	45(60.8)	10(13.5)	6(8.1)	0(0.0)	176.14	0.00
There are routine work place safety and health refresher trainings in the company	0(0.0)	32(43.2)	8(10.8)	20(27.0)	14(18.9)	154.61	0.00
The company allocates sufficient budget for safety training for staff of all levels	0(0.0)	26(35.1)	19(25.7)	25(33.8)	4(5.4)	125.17	0.04
Employee safety training are performed by competent safety officers	13(17.6)	46(62.2)	9(12.2)	6(8.1)	0(0.0)	158.21	0.02
The company performs regular safety training needs assessment to determine the gaps in knowledge on safety among staff	0(0.0)	39(52.6)	11(14.9)	19(25.7)	5(6.8)	130.31	0.03

Source: Survey Data (2015)

The findings on Table 4.5 revealed the various OSH training practices in NAWASSCO according to the opinions of the Technical staff. According to the staff, induction training was poorly practiced since majority 60.8% disagreed that the company provided a comprehensive induction training to new staff on safe work practices before an employee begins duties. Only 37.9% agreed to have received induction training on occupational safety and health. However, induction training was found to have a significant effects on employee productivity based on the closes association between the variables ($\chi^2 = 138.56$, $p < 0.05$) as those who had received induction training recorded higher productivity.

Retraining of staff on changes in the system was also observed to a moderate extent since 56.8% of the staff agreed that the company provided additional training to all staff on safety practices for new work processes. However a substantial number was of a contrary opinion where 33.8% disagreed. This implies that although retaining was practiced, it may not have been uniformly applied in all cadres of staff. However, there was a significant association between retraining on changes in systems and processes and employees productivity ($\chi^2 = 159.62$, $p < 0.05$) which implies that Osh training on new systems and procedures improved employee productivity.

When accidents and near misses occur the company provides training on safe work practices to avoid such accidents recurring in the future. This view was upheld by 78.4% of the technical staff who participated in this study, 13.5% were not sure while only 8.1% disagreed. This practice had a significant impact in improving employee productivity ($\chi^2 = 176.14$, $p < 0.05$). The company not rated highly in holding routine work place safety and health refresher trainings since its existence was supported by 43.2% of the staff while 47.9% were of the contrary opinion, 10.8% were not sure whether routine training took place or not which implies that these training were not held for all staff. Routine OSH trainings were however found to have a significant effect on employee productivity ($\chi^2 = 154.61$, $p < 0.05$). Training budgets were poorly rated since only 35.1% of the staff cited that the company's training budgets were sufficient, 25.7% were not sure while 39.1% disagreed. This shows that OSH training budgets varied in different categories of staff. Adequacy of OSH training budget was found to have a significant association with employee productivity ($\chi^2 = 125.17$, $p < 0.05$). This implies that having an adequate

training budget contributed in enhancing implementation of OSH trainings which translate to better employee productivity owing to reduced cases of injuries and loss of productivity as a result of the same.

During OSH trainings, it was observed that employees' safety training were performed by competent safety officers as identified by 79.8% of the staff who agreed. A few 8.1% were of the contrary opinion since they disagreed while 12.2% were not sure. Chi square test revealed ($\chi^2 = 158.21$, $p < 0.05$) meaning that there was a strong association between the competency of safety trainers and employee productivity of the trained staff. Trainings conducted by competent staff have a greater impact on employee performance as opposed to those by incompetent staff.

The company performs regular safety training needs assessment to determine the gaps in knowledge on safety among staff. This was reveled by 52.6% of the staff who agreed however, 32.5% disagreed while 14.9% were not sure. A further analysis using chi square texts revealed a significant association between performance of training needs assessment and employee productivity ($\chi^2 = 158.21$, $p < 0.05$). This shows that training needs assessment was key in aligning the training needs of the staff and the trainings to be provided thus addressing issues that enhance productivity.

4.6 Provision of PPEs

The fourth objective of the study sought to assess the staff provision of PPEs and how this affected the productivity of technical staff at the NAWASSCO. This was achieved by first assessing the company's practices in provision of PPEs. The findings are presented on Table 4.6.

Table 4.6: Provision of PPEs

	SA f (%)	A f (%)	ND f (%)	D f (%)	SD f (%)	χ^2	Sign
The company provides personal protective equipments to staff in water treatment and distribution jobs	10(13.5)	48(64.8)	7(9.5)	7(9.5)	2(2.7)	226.63	0.00
The personal protective equipments provided by the company are adequate	2(2.7)	27(36.5)	9(12.2)	36(48.6)	0(0.0)	107.81	0.04
The company takes the responsibility of maintenance of personal protective equipments seriously	8(10.8)	34(45.9)	4(5.4)	18(24.3)	10(13.5)	214.51	0.00
The company is prompt in the replacement of old personal protective equipments	13(17.6)	21(28.4)	6(8.0)	33(44.6)	1(1.4)	220.65	0.00
All staff are trained on the on the choice and use of personal protective equipments for maximum protection	8(10.8)	31(41.9)	14(18.9)	10(13.5)	11(14.9)	179.27	0.00
There is proper surveillance on sites to ensure that staff use personal protective equipments correctly	2(2.7)	51(68.8)	13(17.6)	7(9.5)	1(1.4)	198.29	0.01
The right personal protective equipments used are determined through a rigorous process to ensure maximum protection	2(2.7)	40(54.1)	10(13.5)	5(6.8)	17(23.0)	198.05	0.01

Source: Survey Data (2015)

The findings of Table 4.6 on the provision of PPEs revealed that the company provides personal protective equipments to staff in water treatment and distribution jobs. This opinion was shared by 78.3% of the technical staff, who participated in the study, 9.5% were not sure while 12.2% disagreed. This shows that those who agreed to the provision were more in the study. The provision of PPEs was found to have a significant effect on employee productivity following the results of chi square test ($\chi^2 = 226.63$, $p < 0.05$).

As to whether the PPEs provided were enough, 48.6% disagreed while 39.2% agreed; the remaining 12.2% were not decided that the personal protective equipments provided by the company were adequate. This shows that staff with the view that PPEs were inadequate outnumbered those with who perceived them to be adequate. Therefore it can be concluded that although the company provided PPEs they were not adequate. The provision of PPEs was found to have a significant effect on employee productivity since results of a chi square test showed a significant association ($\chi^2 = 107.81$, $p < 0.05$).

The company's role in maintenance of personal protective equipments was assumed seriously according to 56.7% of the staff who agreed, 37.8% were of a contrary opinion while 5.4% were not decided. Chi square test results revealed a significant association between maintenance of PPEs and employee productivity at NAWASSSCO ($\chi^2 = 214.51$, $p < 0.05$). The company's promptness in the replacement of old personal protective equipments was rated average since 46.0% disagreed that the company was prompt while a similar number of 46.0% agreed, only 8.0% were unsure. Results of a chi square test ($\chi^2 = 220.65$, $p < 0.05$) showed a significant association between the company's promptness in replacing PPEs and the employee productivity. This implies that provision and replacement of PPEs enhanced employee protection and also their motivation to perform their job better.

To some extent, staff were trained on the on the choice and use of personal protective equipments for maximum protection as seen from 52.7% of the staff who agreed, those with contrary opinion formed 28.4% while 18.9% were not decided. Training on proper used translated to improvement in employee productivity as seen from the chi square test results ($\chi^2 = 179.27$, $p < 0.05$). Surveillance on the proper use of PPEs was high as cited by 71.5% of the staff who agreed as opposed to 10.9% who disagreed that there was proper surveillance on sites to ensure that staff use personal protective equipments correctly.

Results of chi square tests ($\chi^2 = 179.27$, $p < 0.05$) showed a significant association between the surveillance on proper use of PPEs and employee productivity. On the choice of the PPEs, 56.8% of the staff agreed while 29.8% disagreed, 13.5% were not sure. Chi square results revealed a significant association between the choice of the right PPEs and employee productivity ($\chi^2 = 179.27$, $p < 0.05$).

The findings above reveled that the company made significant efforts in ensuring that employees were provided with the correct PPEs to perform their duties. Hands, (2010) argue that while PPE should be the last resort in the safety controls put in place by an employer it is on the other hand the first personal line of defense against the hazards, thus it should be highly emphasized. A study by Taylor, (2011) in the UK found that workers in construction sited continued to have a rather cavalier attitude towards protective clothing, but even more worryingly, that little was being done in terms of training or education to rectify this situation. This scenario somehow compares to the situation in NAWASSCO where staff indicated that though PPEs were provided, they were not adequate and that there was no due consideration of the specifications in relation to the conditions of use of the PPE.

4.7 Staff Productivity

The study was assessing the OSH management practices in relation to employee productivity at NAWASSCO thus the dependent variable for the study was the employee productivity. Productivity was assessed by assessing lost production due to injuries or working with injuries, absenteeism, lost production due to unfavorable working environment and delays occasioned by unclear safety and health guidelines. Staff responses were as shown on Table 4.7

Table 4.7: Staff Productivity

	Almost Always f (%)	often f (%)	Some times f (%)	Rarely f (%)	Never f (%)
You failed to go to work due to injuries sustained in work place	4(5.4)	20(27.0)	0(0.0)	31(41.9)	19(25.7)
You have you been forced to work with injuries	0(0.0)	4(5.4)	16(21.6)	30(40.5)	24(32.4)
You failed to turn for work in order to recover from illnesses contracted from your work place	4(5.4)	15(20.3)	10(13.5)	27(36.5)	18(24.3)
Have had to work for a colleague who has sustained injuries in the work place	32(43.2)	14(18.9)	4(5.4)	16(21.6)	8(10.8)
Failed to complete a job because of the unfavorable conditions in the place of work	0(0.0)	15(20.3)	13(17.6)	32(43.2)	14(18.9)
Forced to work in an hazardous environment without proper personal protective equipments	0(0.0)	24(32.4)	11(14.9)	32(43.2)	7(9.6)
Delayed in executing a job due to lack of clear guidelines on the safety implications	4(5.4)	40(54.1)	3(4.1)	18(24.3)	9(12.2)

Source: Survey Data (2015)

Findings on employee productivity on Table 4.7 revealed that, 27.0% of the staff often failed to report to their duties due to injuries while 5.4% almost always failed to report. This category that almost failed to report to duty always could represent the group with severe injuries that affect their job performance for the entire period of service. However, 41.9% cited that they rarely failed to report to work. Only 25.7% indicated that they have never failed to report to duty due to injuries. Further it was found that 5.4% of the staff often work for persons who have suffered occupational injuries or diseases while 21.6%

did it sometimes, 40.5% rarely filled in for injured colleagues while 32.4% have never. This implies that staff suffering occupational injuries would fail to report to duty and in exceptional circumstances other staff would fill in the gaps thus affecting productivity.

Further, it was found that 5.4% have failed to report to duty almost always to allow themselves time to recover while 20.3% often and 13.5% sometimes were absent. On the other hand, 36.5% rarely failed to report on duty to recover while 24.3% have never. 43.2% have almost always and 18.9% often been forced to work for a colleague who has sustained injuries in the work place while 21.6% rarely and 10.8% have never worked for an injured collegue.

Occupational injuries and diseases also affected employee productivity by failing to complete a job because of the unfavorable conditions in the place of work. This was cited by 20.3% to have happened often while 17.6% cited that they experienced it sometimes, 43.2% experienced it rarely. Only 18.9% of the staff indicted that they have never failed to complete tasks on time due to the work environment. An issue of concern on employee execution of their duties was the fact that 32.4% were often forced to work in hazardous conditions without proper PPEs, 14.9% did it sometimes while 43.2% rarely, only 9.6% have never. This not only affects the employee health but also their productivity in the future owing to the injuries or illnesses sustained by working in hazardous environment.

It was also observed that the company did not have proper guidelines in performing hazardous tasks since majority 54.1% indicated that they often delayed in executing a job due to lack of clear guidelines on the safety implications, this happened to 5.4% of the staff almost every time they executed hazardous tasks, 4.1% experienced it sometimes, 24.3% rarely experienced the delays while 12.2% have never experienced delays. This implies that indeed, management of OSH contributed to loss of productivity among the technical staff of NAWASSCO.

4.8 Relationship between OSH Management and Staff Productivity

The study general objective was to assess the effects of safety and health management on employee productivity at NAWASSCO. Thus four occupational safety and health management variables were assessed against the employee productivity.

According to Green & Salkind (2003) regression analysis is a statistics process of estimating the relationship between variables. Regression analysis helps in generating equation that describes the statistics relationship between one or more predictor variables and the response variable. In determining the relationship between OSH Management and employee performance at NAWASSCO multiple regression analysis was used. The regression model used was:

$y_i = \beta_{0+}\beta_1 x_1 + \beta_2 x_2 + \beta_3 x_{3+} \beta_4 x_4 + \varepsilon$

Where:

y = is the dependent variable (lost employee productivity)

β_0 = Constant

x_1 – Management commitment

x_2 – Hazard assessment

x_3 – Provision of PPE

x_4 – Safety training

ε – Error Term

$\beta_1, \beta_2, \beta_3, \beta_4$ - are coefficients

Results of the regression analysis are presented on Tables 4.9 to 4.11

Table 4.8 a: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.788[a]	0.621	.599	.51968

a. Predictors: (Constant), Provision of PPEs, Management Commitment, Safety trainings, Job Risk Assessment

Source: Survey Data (2015)

The coefficient of determination (R^2) explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable (employee productivity) that is explained by all four independent variables (management commitment, Job hazard and Risk Assessment, Provision of PPEs and OSH Trainings).The regression model summary on Table 4.9 shows an $R^2 = 0.621$ which implied that OSH Management Practices accounted for 62.1% of the variations in employee productivity at NAWASSCO.

Table 4.9 b: ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	30.519	4	7.630	28.252	.000[a]
	Residual	18.634	69	.270		
	Total	49.154	73			

a. Predictors: (Constant), Provision of PPEs, Management Commitment, Safety trainings, Job Risk Assessment

b. Dependent Variable: Staff Productivity

c. Critical value = 2.89, $\alpha = 0.05$

Source: Survey Data (2015)

The significance value obtained on Table 4.10 was 0.000 which is less than 0.05. Further, the F critical at 5% level of significance was 2.89. Since F calculated (28.252) is greater than the F critical (value = 2.89), this shows that the overall model was significant in explaining the relationship. Thus management commitment to implementing OSH, Provision of PPEs, Job Risk Assessment and OSH Training were important factors in explaining the employee productivity of the technical team of NAWASSCO. The study further ran the procedure of obtaining the regression coefficients and the results were as shown on the Table 4.20 below:

Table 4.10 c: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients			
		B	Std. Error	Beta	t	Sig.	VIF
1	(Constant)	6.003	.502		11.947	.000	
	Management Commitment	1.181	.191	.786	6.198	.000	2.930
	Job Risk Assessment	.458	.238	.242	1.922	.059	2.895
	Safety trainings	.484	.209	.289	2.314	.024	2.835
	Provision of PPEs	.649	.129	.535	5.046	.000	2.047

a. Dependent Variable: Staff Productivity

Source: Survey Data (2015)

The beta coefficients on Table 4.20 shows that management commitment to implementation of staff occupational safety and health played the most significant role in staff productivity ($\beta = 1.181$, $p < 0.05$). Similarly, provision of PPEs had a significant effect on individual productivity among technical staff of NAWASSCO ($\beta = 0.649$, $p < 0.05$) and so was safety trainings ($\beta = 0.484$, $p < 0.05$). Job Risk assessment did not have a significant effect on staff productivity ($\beta = 0.484$, $p > 0.05$), however, the relationship was significant at $P < 0.1$. These regression results imply that among all the four practices investigated, management commitment to implementation of OSH played the most significant role in influencing employee productivity. Provision of PPEs enhanced employee productivity as well as training. Job safety analysis also enhanced employee productivity although not significant at 0.05. Assessment of the individual practices using chi square tests showed a significant effect of job risk assessment on employee productivity at $p < 0.05$. However when combined through a regression test the calculated $p = 0.059$ which shows that although still job risk assessment was significant at 10% confidence level.

According to the regression results, taking all factors into account (Management Commitment, Risk Assessment, Provision of PPEs, Safety trainings) constant at zero was 6.003. The data findings analyzed also shows that taking all other independent variables at zero, a unit increase in management commitment to implementation of OSH will lead to a 1.181 increase in employee productivity of the Technical team in NAWASSCO; a unit increase in Job risk assessment will lead to a 0.458 increase in productivity of technical staff while a unit increase in OSH training will result in 0.484 increase in productivity and a unit improvement in provision will translate into 0.649 improvement in employee productivity.

There was a moderate VIF = 2.047 – 2.930 therefore the relationship between independent variables and the dependent variables was not distorted by the other predictor variables although some correlation existed between them. According to Liao and Valliant (2012), VIF below 10.0 indicates no significant multi colinearity between independent variables. These findings agree with those of Judd, et al., (2005) in wood manufacturing companies in Pennsylvania State in the USA that increasing employee perceptions of management's personal concern for employee wellbeing through a dedication to safety resulted in positive outcomes beyond improved safety performance. The study attributed the outcomes to a social exchange between employees and management that influenced employees' commitment to the organizational activity.

Similarly, there is evidence that provision of PPEs contributed to productivity. Lamm, Massey, Perry, (2006) after a analyzing different studies also found a compelling evidence that providing a healthy and safe working environment has the potential to increase labour productivity and in turn increase business profits, claims that were upheld in Goetzel and Ozminskowski (2008) who associated poor health with reduced employee performance, safety, and morale. The findings also corroborate with that of Lukoko, Chege and Musiega (2014) in Mumias Sugar Company in Kenya which found out that non provision of PPE had a significant negative correlation with the impact on employee performance.

CHAPTER FIVE
SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMEDATIONS

5.1 Introduction

This chapter presents a summary of the research findings, conclusions and recommendations drawn from the findings based on the research objectives and questions.

5.2 Summary of Findings

The study sought to assess the effects of occupational safety and health management on employee productivity at NAWASSCO by investigating the management commitment, job risk and hazard assessment, occupational safety and health trainings and provision of personal protective equipments in relation to employee productivity. The summary of findings is presented based on the research objectives.

5.2.1 Management Commitment to Safety and Health on Employee Productivity

The findings on management commitment revealed that, to some extent the company had made efforts to ensure safety and health of its technical staff. Evidence of management commitment was observed in the involvement of employees in safety and health related activities such as self-inspections, accident investigations and developing safe practices and having in place a team of staff assigned to coordinate safety and health activities. The company also had in place an employee recognition scheme for staff who embrace safe and healthy work practices.

There was employee health and safety policy in place although it was not properly communicated and adhered to. The staff also demonstrated their company's efforts to prioritize of safety and health above all other business practices and a high frequency with which safety and health meetings were held between the employees, managers and supervisors and management commitment to instilling accountability in employee safety and health matters. Further analysis revealed that management commitment played a significant role in employee productivity and that a unit increase in management commitment translated to 1.181 times improvement in employee productivity.

5.2.2 Job Risk and Hazard Assessment and Employee Productivity

The second objective was investigating on the job risk assessment practices and hoe they affected employee productivity at NAWASSCO. The findings revealed various practices in relation to Job risk and hazard assessment in the company. That the most outstanding practice was the recording and analysis of the cases of occupational injuries and illnesses regularly that was highly rated which implied that, company relied more on historical data as opposed to the projected risk situation. Other risk and hazard assessment practices rated above average include that on-site inspections to identify hazards and prescribe corrective actions, keeping employees informed of safety and health activities and conditions and elimination and control of workplace hazards through engineering controls, workstation design and work practices

The study also found preventive maintenance program for safety in work places and some efforts to reevaluates the workplace activities for risks and hazards whenever processes, materials or machinery changed. There were minimum efforts to investigate accidents and near misses to determine their root causes and ways to mitigate them and to perform regular evaluation of workplace activities and processes for hazards. Overall, the company's hazard and risk assessment practices were rated above average. Risk and hazard assessment was not found to have significant effect employee productivity.

5.2.3 Safety Trainings on Productivity of Employees

In regard to safety OSH training practices at NAWASSCO, opinions of the Technical staff indicated that to some extent, the company used competent safety officers in training their staff and that Re-trainings were common especially when accidents and near misses occurred It was also revealed that the company provided additional training to all staff on safety practices for new work processes although this elicited mixed opinions.

The staffs were however not well satisfied with the budget for safety training, routine work place safety and health refresher trainings and the mode of induction training to new staff on safe work practices before an employee begins work. Overall though, the company's efforts to provide OSH training was rated slightly above average at Mean = 3.2, Sd = 0.49. Safety trainings significantly affected employee productivity where

holding all other factors at Zero, a unit improvement in safety training translated to 0.484 times improvement in productivity of the technical staff.

5.2.4 Personal Protective Equipment and Productivity of Employees

On the provision of PPEs at NAWASCO, there was agreement among staff that their company provided personal protective equipments, provided proper surveillance on sites to ensure that staff used personal protective equipments correctly and ensured that its staff were trained on the on the choice and use of personal protective equipments for maximum protection. The company also took the responsibility of maintenance of personal protective equipments seriously as well replacing old staff uniforms promptly

It was also revealed that the company's efforts to determine the right personal protective equipments based on the recommended standards was poor and that the personal protective equipments provided were not adequate. Overall provision of PPEs was rated average. The use of proper PPEs was found to have a significant effect on employee productivity where a unit improvement in provision of PPEs translated to 0.649 improvements in employee productivity holding all other factors at zero.

5.3 Conclusions

Management commitment to implementation of occupation safety and health at NAWASSCO was highly rated although not fully satisfactory to all the staff. It has the highest effect on employee productivity. The management commitment creates a social bond with the staff, improve motivation and staff commitment to organizational activities.

There were less emphasis placed on job risk and hazard assessment at NAWASSCO as evidenced by the little efforts to investigate accidents and near misses to determine their root causes and ways to mitigate them and to perform regular evaluation of workplace activities and processes for hazards. The company also relied heavily on historical data rather than proactive risk assessment to identify emerging risks and hazards.

Employee safety trainings had a significant impact on productivity of Technical Staff of NAWASSCO. However, there serious OSH training concerns especially the company's

induction strategies for new staff on matters of OSH as well as refresher training which could be associated with the safety training budgets.

The company made efforts to implement OSH trainings for its staff, provide proper surveillance and maintenance of personal protective equipments. However, the specifications of PPEs were not determined adequately thus they would not provide adequate protection against all the risks eminent. PPEs however had a significant effect on employee productivity.

5.4 Recommendations

Management commitment should be emphasized in implementation of OSH across all industries as it creates a social bond with the employees which translate to improvement in productivity.

The study recommends that NAWASSO should place greater emphasis on proactive job risk and hazard assessment for both routine and new projects. Although employees place less emphasis on it is a preliquisite for making informed decision and elimination of potential hazards.

The management of NAWASSCO should put emphasis on the OSH training for its staff owing to the role it plays in ensuring employee health and productivity. This is especially important for the technical staff

Companies providing PPEs should ensure that their specifications are determined according to standards so as to provide adequate protection against the risks and hazards in question.

5.5 Recommendations for Further Research

The study recommends further research on employee perceptions in relation to the utilization of OSH services provided by the employer. Further, a study should be advanced to assess the critical safety training components that provide maximum utilization of OSH services.

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APPENDICES

Appendix i: Questionnaires for Technical Staff

Section A: General Information

1. Kindly indicate your gender

   a. Male [ ]

   b. Female [ ]

2. Which of these best describes your Age?

   a. 21 – 30 years [ ]

   b. 31 – 40 years [ ]

   c. 41 – 50 years [ ]

   d. 51 – 60 years [ ]

   e. Above 60 years [ ]

3. Please indicate your highest education attainment.

   a. KCPE [ ]

   b. KCSE [ ]

   c. Craft Certificate [ ]

   d. Diploma [ ]

   e. Degree [ ]

   f. Advanced Degree [ ]

4. For how long have you worked with NAWASSCO

   a. Below 1 year [ ]

   b. 1 – 5 years [ ]

   c. 6 – 10 years [ ]

   d. Above 10 years [ ]

5. What is your current position in this organization?

   a. Engineer [ ]

   b. Technician [ ]

   c. Plumber [ ]

   d. Chemist [ ]

6. What is the nature of your contract?

Daily casual [ ] Weekly casual [ ] Permanent casual [ ] Permanent contract [ ]

7. Have you ever experienced cases of injuries of staff at work?

Yes [ ] No [ ]

8. Indicate how satisfied you are with the current occupational health and safety measures put in place in your company.

a) Very satisfied [ ] b) satisfied [ ] c) Dissatisfied [ ] d) Very Dissatisfied [ ]

Section B: Management commitment to safety and health

8. What is your view on the company's commitment to implementation of safety and health in the work place?

	Rating Scale
a. The company has a well developed safety and health policy in place that is properly communicated	**SA A ND D SD**
b. The management is commitment to instilling accountability for safety and health	**SA A ND D SD**
c. There are regular safety and health meetings involving employees, managers and supervisors	**SA A ND D SD**
d. There are staff assigned to coordinate safety and health activities	**SA A ND D SD**
e. The organization puts safety and health first in all business practices	**SA A ND D SD**
f. Employees are involved in safety and health related activities such as self-inspections, accident investigations and developing safe practices	SA A ND D SD
g. The company recognizes employees for safe and healthful work practices	**SA A ND D SD**

Key: SA=Strongly Agree A=Agree ND=Not Decided D=Disagree SD=Strongly Disagree

Section C: Job Risk and Hazard Assessment

8. What is your view on the job risk and hazard assessment practices by your company:

	Rating Scale
a. All workplace activities and processes are evaluated for hazards regularly	**SA A ND D SD**
b. Whenever processes, materials or machinery change, the organization reevaluates the workplace activities for risks and hazards	**SA A ND D SD**
c. Safety officers conduct on-site inspections to identify hazards and prescribe corrective actions.	**SA A ND D SD**
d. There is a hazard reporting system for employees to report unsafe and unhealthful conditions	**SA A ND D SD**
e. All accidents and near misses are investigated to determine their root causes and ways to mitigate them	**SA A ND D SD**
f. The company has invested in elimination and control of workplace hazards through engineering controls, workstation design and work practices	**SA A ND D SD**
g. There is a well established preventive maintenance program for safety in work places	**SA A ND D SD**
h. The company keeps employees informed of safety and health activities and conditions	**SA A ND D SD**
i. The company maintains records and analyzes occupational injuries and illnesses regularly	**SA A ND D SD**

Key: SA=Strongly Agree A=Agree ND=Not Decided D=Disagree SD= Strongly Disagree

Section D: Safety training

How would you rate your company on safety training practices?

	Rating Scale
a. The company provides a comprehensive induction training to new staff on safe work practices before an employee begins work	**SA A ND D SD**
b. The company provides additional training to all staff on safety practices for new work processes	**SA A ND D SD**
c. When accidents and near misses occur the company provides training on safe work practices to avoid such accidents	**SA A ND D SD**
d. There are routine work place safety and health refresher trainings in the company	**SA A ND D SD**
e. The company allocates sufficient budget for safety training for staff of all levels	**SA A ND D SD**
f. Employee safety training are performed by competent safety officers	**SA A ND D SD**
g. The company performs regular safety training needs assessment to determine the gaps in knowledge on safety among staff	**SA A ND D SD**

Key: SA = Strongly agree A=Agree ND=Not Decided D=Disagree SD=Strongly Disagree

Section E: Provision of PPEs

How would you rate your company on the provision of personal protective equipments for staff at work?

	Rating Scale
a. The company provides personal protective equipments to staff in water treatment and distribution jobs	**SA A ND D SD**
b. The personal protective equipments provided by the company are adequate	**SA A ND D SD**
c. The company takes the responsibility of maintenance of personal protective equipments seriously	**SA A ND D SD**
d. The company is prompt in the replacement of old personal protective equipments	**SA A ND D SD**
e. All staff are trained on the on the choice and use of personal protective equipments for maximum protection	**SA A ND D SD**
f. There is proper surveillance on sites to ensure that staff use personal protective equipments correctly	**SA A ND D SD**
g. The right personal protective equipments used are determined through a rigorous process to ensure maximum protection of staff	**SA A ND D SD**

Key: SA=Strongly Agree A=Agree ND=Not Decided D=Disagree SD=Strongly Disagree

Section F: Staff productivity

During the past three months indicate how many times you have experienced the following: use the scale:

1 – Never, 2 – Rarely, 3 - Some times, 4 - Often and 5 - Almost Always

	Rating Scale
a. You failed to go to work due to injuries sustained in work place	**1 2 3 4 5**
b. You have you been forced to work with injuries	**1 2 3 4 5**
c. You failed to turn for work in order to recover from illnesses contracted from your work place	**1 2 3 4 5**
d. Have had to work for a collegue who has sustained injuries in the work place	**1 2 3 4 5**
e. Failed to complete a job because of the unfavourable conditions in the place of work f.	**1 2 3 4 5**
g. Forced to work in an harzadous environment without proper personal protective equipments	**1 2 3 4 5**
h. Delayed in executing a job due to lack of clear guidelines on the safety implications	**1 2 3 4 5**

Thank You