EFFECTS OF OCCUPATIONAL HEALTH AND SAFETY MEASURES ON EMPLOYEES' PRODUCTIVITY IN MAIZE FLOUR PROCESSING COMPANIES IN NAKURU WEST SUB-COUNTY IN NAKURU COUNTY, KENYA

BY

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AUGUST, 2020

DECLARATION

This research dissertation is a product of my own work and is not the result of anything done in collaboration. It has not been previously presented to any other institution. I agree that this dissertation may be available for reference and photocopying at the discretion of the University.

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DEDICATION

This dissertation is dedicated to my family members, Charity, Ziporah, Mirriam, Joyce, Alice, Samuel and my friend Kinyanjui who supported and prayed for me throughout the whole course. Keep on enjoying God's blessings.

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ABSTRACT

Human beings are the most valuable assets in an Organization and at the same time they are social creatures. Health and safety regulations are vital to the well-being of the worker and the employer. Health and safety risks are present in contemporary work environments. It is the duty of Organization's management to keep their workers safe from work related risks. Globally, health and safety issues have been of great concern in Organizations. The International Labor Organization concern itself with 80% of health and safety issues at workplace. In most Sub-Sahara Africa, Occupational health and safety is an element that is crucial in maintaining conducive working conditions and strong preventive safety culture that is suitable. In Kenya, 36,000 employees work on harsh conditions. This issue has affected employees' productivity in different industries. This study was carried out in order to add to the existing body of literature and to create awareness to the policy makers who are concerned with the issue of health and safety of employees in relation to employees' productivity. The dissertation aimed at investigating the effects of workplace health and safety issues on employees' productivity in maize flour processing companies in Nakuru West Sub County in Nakuru County, Kenya. The specific objectives of the study were to examine the effects of health and safety, test the effects of work-related stress and asses the effects of ergonomics determinants on employees' productivity in maize flour processing companies. The study population was 204 employees of C01 and C02 maize flour companies in Nakuru West Sub-County in Nakuru County, Kenya. The descriptive research design was suitable for the study. Stratified sampling technique was employed to obtain the respondents that represented the population. Naissuma formula for sample size determination was used to select a sample size of 67 employees from the selected companies for the study with a total population of 204 employees. The research instruments was questionnaire and interview guide. The study used qualitative and quantitative methods of data gathering. The questionnaires were supervised as the study progressed and interview guide responses were documented. The respondents were educated about the ethical considerations prior to the questionnaires distribution. Pilot study was carried out among 10 management staff in C03 maize flour processing company in Nakuru East Sub-County, Nakuru County, Kenya. The collected data was analyzed by the use of descriptive Statistics aided by package for social sciences (SPSS) software. The analysis of the qualitative response was put into category of themes, patterns and sub-topics. The study found that occupational health and safety affected the employees' productivity due to a correlation of coefficient of 0.496. The study also found that work-related stress affected the productivity of employees with increase in work-related stress leading to reduced employees' productivity due to a correlation coefficient of -01521. The study further established that ergonomic aspects of workplace affected the productivity of employees due to a correlation of 0.379. The study concluded that work-related stress had the greatest effect on employees' productivity, followed by occupational health and safety and lastly ergonomic aspects of workplace.

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ABBREVIATION AND ACRONYMS

CTDs	Cumulative Trauma Disorders
HR	Human Resource
IEA	International Ergonomic Association
ILO	International Labor Organization
Ltd	Limited
MSDs	Musculoskeletal Disorders
NACOSTI	National Commission for Science, Technology and Innovation
NKR	Nakuru
OHS	Occupational Health and Safety
OSH	Occupational Safety and Health
SPSS	Statistical Package for Social Sciences
WHO	World Health Organization

CHAPTER ONE: INTRODUCTION

1.1 Chapter Overview

Employees' productivity is considered as the main machinery to increase success in an organization. Knowing the health and safety precautions that affect employees' productivity in maize flour processing companies is important to ensure their long term performance. The section below discussed the background of the study, the problem statement, the purpose of the study, research objectives, research questions, scope and justification, limitations and assumptions of the study.

1.2 Background of the Study

Organizations are formed by individuals who are conformed to one another and share a common goal. Health and safety regulations are vital to the well-being of the worker and the employer. Health and safety risks are present in contemporary work environments. It is the duty of Organization management to keep their workers safe from work related risks. Health and safety in work place is one of the most important features of human concern. It aims an adaptation of working environment to workers for the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations.

Globally, the most valuable assets in an organization are Human Resource (HR). Due to high human resource work performance, the efficient utilization of human resource foresees any company at the uppermost level and hence it is important for companies to make sure that they have a healthy and secure workplace for employees. A safe and healthy work atmosphere promotes work productivity and is a key element of worker human dignity (ILO, 2010).

Investing in health and safety at work has to be looked upon as an investment rather than a cost. The grade to which the company cares for the employee by the means of health and safety in the workplace impacts their work relationships (Dowing, 2015). However, in many companies within Kenya, there have been instances of lack of measures that are put in place concerning health and safety in the workplace which has left employees exposed to health hazards of various categories. Ojiemo, (2012) reports that such a scenario has resulted to a competitive disadvantage, damaging the companies' ranking amongst investors. Regardless of these observations, it is not known how influential health and safety has been in enhancing employees' workplace productivity. He adds that few empirical studies have

interrogated the effects of workplace health and safety on productivity of employees that is characterized by improved efficiency, meeting of deadlines and enhanced performance.

Globally, nationally and locally, a workforce that is healthy is paramount for sustainable social and economic development (Pandya & Ghumra, 2016). The employers are supposed to understand that the employees are productive depending on the standard that they set on the issues of safety and health. By way of providing health and safety measures companies will yield many benefits. During the time when an organization wants to implement changes and come up with new ideas and creativity, it works better when employees' relationships are compatible. The way all customers, suppliers, and key stakeholders are handled, is an indicator of a companies' success. When working environment is conducive, then the employees enjoy doing their work and they do it in an effective way which brings about the growth of the organization as well as economic advancement. Employees will not suffer from stress, worry, frustration and anxiety if the goal of the organization is to be purposive in creating a good working climate. Employees' productivity can be maximized when all issues concerning health and safety are minimized. A charming and capable worker is a vital wealth of any organization.

Employee productivity is the value employees produce on an individual level every hour they work. When employers provide favorable work place environment employees performance is enhanced (WHO, 2005). Unstable machines, poor lighting, unbearable noise and ventilation are some of the variables that could cause a lot of distress to the employee. The features that the company has determine employees' productivity. Work and health are related to the work environmental factors. According to Dembe (2001) employees work is impacted by the factors of their working environment. Therefore, indirectly or directly, the workplace environment factors have a very strong relationship towards the employees' health, safety and performance. It can cause physiological and mental reactions which can be a long term problem on the employees' performance.

Ricardo (2017) found that "workload is the most pervasive factor connected to work-related stress." He added that bullying, change, work shift and long working hours are causes of stress in workplace. Further more employees experience work- related stress due to lack of support from the supervisors, unbearable noise and work related broken relationships.

Factory physical setting poses different features compared to other workplaces. Mendis (2016) point out that the goal for the design of workstations is to plan for as many people as possible and to have an acceptance of the Ergonomic standards of posture and movement which perform a major role in the establishment of a healthy, safe and relaxed work environment. “Posture and movement at work is dictated by the task and the workplace design, the body’s muscles, ligaments and joints are involved in adopting posture, carrying out a movement and applying a force”. The force that is needed to make movement or adopt a posture is provided by the muscles. Therefore ergonomics at workplace is very important in relation to employees productivity .

Maize flour is a staple food in different parts of the world. Therefore the aim of all maize flour industries is to make sure that they achieve productivity that is on the higher side from their employees. However, there are a number of workplace health and safety issues that cause distractions to the employees leading to low productivity. The more employees remain in an unsuitable working environment, the more their health is affected and this reduces their performance. Some of the activities that are done manually are so tasking which leads to injuries and infections. Most of the working areas in maize flour industries are slippery, noisy, dusty, dark and hot. In many occasions, the employees are absent and sick due to lack of proper safety and health practices in their work setting.

The welfare of workers and employers is determined by their workplace health and safety precautions. This entails the constant consideration of health and safety needs to be developed and continued. For an Organization to improve its health and safety there is need to have organizational procedures on a regular basis that create awareness of leading indicators of health and safety issues (Alberta, 2015). There is no Organization that can flourish without being healthy, secure, and capable and having a favorable work environment. A study carried out in Southwest Nigeria among 177 library personnel revealed that even in a library employees experience backache, muscles strain, eye problems and respiratory sicknesses (Ifijeh et al, 2014). Productivity of employees is a fundamental factor in production performance of corporations. Health distresses, clearly, are a huge drain on a worker’s capability to be productive .When the business is prolific it is able to exploit the ability of the staff that are working there and at the same time expand its boundaries.

Most companies that are productive have employees who are healthy and happy, which is the basis of an organization that is successful (Pandya & Ghumra, 2016).

Today, the meaning of the word productivity does not mean abundant extra work rather it means the state of being productive. Mabuza, (2018) found that labor and relations have been changed over the years and the organizations have started to comprehend that health and safety is integrated in the quality of human life thus cannot be detached, and these indirectly affect human productivity performance.

According to Katsuro & Gadzirayi, (2010) more than five employees in food companies were given sick off leaves that took more than 2 working days. The study shows that 330 minutes of production time was lost in one of the food factories. This happened after employees who were deployed in the production department were given sick leave days that added up to 11 working days in the month of February 2008. In the month of March in the same year, another food factory of 7 employees lost 15 production days as a result of having 5 of the employees out of duty due to work related injuries. In the same factory 6 employees fell sick as they attended medical clinic, there was a loss of 690 minutes of production after these sick employees were advised by the medical doctor to rest for 10 working days. According to this study the factory lost double the employee's production time each month consequently due to absenteeism. The factory incurred losses after it was presented with a very high medical invoice from the medical facilities for payment. The medical cost in one food factory's amounted to 15% of the company's earnings.

In Kenya the health and safety issues can be traced back to 1951's Factories' Ordnance Act, which later became the Factories Act Cap 514 laws of Kenya. 36,000 employees work on harsh conditions. According to Muchiri (2008) the number of accidents at workplace has continued to rise despite the fact that the Government has put in place laws to protect health and safety of employees. Muchiri reports that 12,941 work days were lost due to 1,035 accidents between 2001 and 2007 in Nairobi, Kenya. This high number of accidents and the attendant losses was attributed to failure to control workplaces hazards.

The status of health and safety conditions in the workplace has been a progressing significant concern in Kenya overtime. Despite different food manufacturing companies in Kenya, the existing literature relating to the effects of health and safety on employees'

productivity is inadequate thus there was a need to carry out this research in maize flour processing companies.

1.3 Problem Statement

Many companies within Kenya lack health and safety measures in the work place which has left employees exposed to health hazards of various categories. Employees experience a lot of pain, misery, injury and death caused by workplace accidents and diseases . Muchiri, (2008) established that the number of accidents at workplace has continued to rise despite the fact that the government has put in place laws to protect health and safety of employees. This high number of accidents and loss of working hours is attributed to failure to control workplaces hazards. Unstable machines, poor lighting, unbearable noise and ventilation, lack of training on workplace health and safety are some of the variables that could cause a lot of distress to the employees. Otisyulah (2016) study on effects of occupational health and safety in Mumias sugar company in Kenya, revealed that after training employees on health and safety practices in the year 2005, 72% of employees said that the company realized the highest profit in the year 2006 while 18% said the year 2007. The study concluded that generally organizations need to make sure that their employees are working in a safe environment so as to realize best output (Otisyulah, 2016). Therefore, it is essential for employees to understand their right to health and safety in an organization. Indirectly or directly, the workplace environment factors can also cause physiological and mental reactions which can be a long term problem on the employees' performance. The existing body of knowledge points out that it has been a common practice in high-risk manufacturing companies to measure health and safety issues using foremost pointers. Studies such as (Muchiri (2008); Stavroula,(2010),Sarode & Shirsath (2015); Choi et al(2015); Esi,(2012); (2011); Yorio et al (2014)) reveal that employees are exposed to risks which are related to machinery, disease, permanent disabilities due to accidents and even death thus decrease on employees' productivity. These studies have all been conducted in high risk industries and none of them have been carried out in maize flour processing sector in Kenya. Therefore, opening a research gap which the current study sought to fill. The study hypothesizes that employees' productivity can be maximized when all issues concerning health and safety are minimized hence contributing to sustainability and organizational development. Therefore this study, sought to investigate the effects of occupatinal health and safety issues on

employees' productivity in maize flour processing companies in Nakuru West Sub-County in Nakuru County, Kenya.

1.4 Objectives of the Study

1.4 .1 General Research Objective

The general objective of this study was to investigate the effects of occupational health and safety measures on employees' productivity in maize flour processing companies in Nakuru West Sub-County in Nakuru County, Kenya.

1.4 .2 Specific Objectives

i. To examine the effects of occupational health and safety on employees' productivity in maize flour processing companies in Nakuru West Sub-County, Nakuru County, Kenya.
ii. To establish the effects of work-related stress on employees' productivity in maize flour processing companies in Nakuru West Sub-County, Nakuru County, Kenya.
iii. To assess the effects of Ergonomics on employees' productivity in maize flour processing companies in Nakuru West Sub-County, Nakuru County, Kenya.

1.5 Research Questions

i. What are the effects of Occupational health and safety on employees' productivity in maize flour processing companies in Nakuru West sub-county, Nakuru County, Kenya?
ii. What are the effects of work-related stress on employees' productivity in maize flour processing companies in Nakuru West Sub-County, Nakuru County, Kenya?
iii. What are the effects of Ergonomics on employees' productivity in maize flour processing companies in Nakuru West Sub-County, Nakuru County, Kenya.

1.6 Justification of the Study

Health and Safety in Workplace does influence employees' productivity. The Study has been conducted for a number of years, however, the majority researchers only covered high risk industries in general and thus there was need to carry out more research on the effects of workplace health and safety in maize flour processing companies. This study may enable academicians in future to understand better the health and safety factors that influence

employees' productivity. This will improve further research on the same subject area by scholars.

The study made available more understanding to the current body of literature in terms of the stock of books and work already written on the effects of health and safety on the employees' productivity. It is worth noting that the government has been concerned with issues of health and safety of employees at work place in relation to productivity. The results of the study would benefit policy makers in facilitating policy debate and dialogue on the subject of the study. The knowledge could also be used to proposing best practices on the issues of health and safety across the country hence increasing the level of health and safety thus increased maize flour across the country.

The social economic growth in maize flour processing industries was revealed by this study and that made it a very important study. By understanding how different factors influence employee productivity, flour milling companies adopted the best approaches for enhancing health and safety at work place environment. This leads to an overall increase in the productivity of the maize flour processing companies hence contributing positively to the growth and development of the industry. The employment that was offered to many people was included in the social economic factors in the study.

The study would provide knowledge to maize flour processing companies so that they are able to put measures in place in their milling companies so as to make sure employees remain healthy and safe thus increased production. The study would benefit the civil society organizations involved in labor and human right as they embark on advocating for employees on health and safety issues. On the other hand, the government would benefit from the study in relation to the labor law 2007 in ensuring employers adhere to the regulations put in place so as to keep its people healthy and safe. The study would create awareness on the health and safety issues to be considered before starting a maize flour processing company. Therefore this study was very crucial in this error and age.

1.7 Scope of the Study

This study focused on two maize flour processing companies Coded C01 and C02 located in Nakuru West Sub-County, Nakuru County, Kenya. The study selected 61 respondents using simple random sampling. Respondents were from the 3 employee levels within the companies namely, Management level, senior level and junior level with a total population

of 204 employees. The independent variables of the study included, occupational health and safety, workplace related stress and ergonomics while dependent variable was employee's productivity. The study focused on three theories: Employee productivity model, occupational health and safety (Domino theory) and Ergonomic theory. The study commenced on February 2020 and continued until August 2020. Complete questionnaires were coded and entered into Statistical Package for Social Sciences (SPSS) software version 24. From the quantitative analysis, both descriptive and inferential statistics were used.

1.8 Limitations of the Study

Information was solicited from specific departments within the companies which needed much explanation on why the study thus, time consuming. To do well on this, the importance of the study was explained to the employees during tea and lunch hour breaks. Some respondents who worked in the junior level did not know how to read or write. To overcome this challenge the content in the questionnaire was explain to them in a language that they understood and at the same time assisted to fill the questionnaire. The study was carried out during the Covid -19 pandemic thus to succeed, all the protocols put in place were observed. Each questionnaire was placed in an envelope for each respondent and method of drop and pick later after 5 days was used. The respondents did not provide all the information that the study needed. To address this concern information gap was sought from and provided by the key informants. The respondents were given an assurance that the information material gathered was purely for academic reasons. Furthermore, due to extensive work, some respondents did not have extra time to fill the questionnaires during the break as they were tired and wanted to nourish their bodies therefore to overcome the challenge, research assistance visited them in their homes during the weekend and a method of drop and pick later after 5 days in order to enhance questionnaire return rate was used. Some questionnaires were not returned and some were incomplete and therefore some information might have been missed. To overcome this, more questionnaires were administered. The results were from the employees' perceptions and hence subject to possible biases. For instance, respondents who work in management level feel safer in terms of accidents and injuries than those in the junior level. A lot of money was used for transport to and from the study sites and on printing and photocopying the research materials thus this study was financially draining.

1.9 Assumptions of the Study

The Study assumed that the respondents did not comprehend the importance of safety and health in a flour processing work place. It also assumed that the respondents had encountered different challenges related to health and safety in work place environment and they were willing to share their stories. The study assumed that the company did not provide health and safety protective equipment to their employees. It further assumed that employees were absent due to injuries thus production hours lost.

1.10 Definition of Key Terms

Employees' productivity: Employee productivity is an assessment of the efficiency of a worker or group of workers. Employee productivity is based on the amount of time that an employee is physically present at his/ her job, besides the extent to which he/ she is "mentally present" or efficiently working during the presence at the job (Sharma and Sharma, 2014). In this study employees' productivity is a measure which directly affects the profit of maize flour processing companies (Sels et al., 2006). Productivity may be evaluated in terms of the output of an employee in a specific period of time

Revenue: Profit of an organization depending on the employees' output per hour. In this study it means the profit that maize flour processing companies receives depending on employees' output per hour

Quality: Quality refers to the degree to which a product or service meets customers' specifications and needs. In this study quality means the degree in which maize flour meets the needs and specification of consumers.

Occupational Health and Safety: "Occupational health is the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations by preventing departures from health, controlling risks and the adaptation of work to people, and people to their jobs" (Tendesse& Admasuu, 2006). In this study it is protection and promotion of the health of workers by eliminating occupational factors and conditions hazardous to health and safety of employees in maize flour processing companies.

Occupational Health and Training: mean to deliver advice on matters of health, safety and the environment to the employees of maize flour processing companies and get feedback (Alli, 2008).

Occupational Health and Safety Performance: measuring occupational health and safety performance over time in order to check that there is a continuous improvement in eliminating occupational injuries and illness in maize flour processing companies (Alli, 2008).

Hazard assessment: In this study is to uncover and identify hazards that exist in the maize flour processing companies (NHS, 2018).

Work-related Stress: is the "nonspecific response of the body to any demand on it but with severe effects including, physical, emotional and behavioral disorders" (Jaroslav & Miroslv (2015). "Stress can be broadly defined as the negative reaction people have to aspects of their environment as they perceive it. Stress is therefore a response to a stimulus and involves a sense of an inability to cope." In this study work-related stress is defined as negative reactions of employees in maize flour processing companies towards the aspects of their workplace environment as they perceive it.

Noise: unwarranted disturbance within a useful frequency band in workplace (WHO, 2004) In this study noise is related to the repetitive vibration of exhaust fans, continuous running of maize four grinding machines and electrical noise from motors and generators.

Working Relationships: " effective communication and team working – a model known as relational co-ordination" (Gitell, et al., 2008). In this study it is the communication between supervisors and employees, communication among workers and delegation of tasks.

Accidents: "The occurrence of an accident is an evidence of something wrong or miscalculation". In this study accidents are such as falls, muscle strains, collision, cuts and inhale of dust.

Ergonomics: " The scientific discipline concerned with the understanding of interactions among humans and other elements of a system in order to optimize human well-being and overall system performance" (IEA,2012) In this study the ergonomics refers to the workplace design in relation to work done by employees.

Working Tools: Devices which are held by hands and used to do a particular kind of work in a maize flour milling company such as

Machines: Any mechanical or electrical device designed to perform a specific work. In this study it means the electrical grinding machine that grind maize grain into maize flour.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The study section provide the literature review from past studies in reference to the study topic, the section include; theoretical framework, employee's productivity model, distraction theory, occupational safety and health theory, and Ergonomic theory. The empirical review include; occupational health and safety, psychological stress and Ergonomics in workplace. The section also contains the conceptual framework, summary and gap to be filled.

2.2 Theoretical Frameworks

2.2.1 Employee Productivity Model

Employee productivity model was created at the Engineering Institute of the National Autonomous University of Mexico. Its goals were to attain a clear contributing model that recognizes in a simple way how unquestionable factors that relate to a productivity level. To have an ideal that can be used to act out the reaction of the productivity of a worker to diverse actions. (Lopez-Ortega & Saloma-Velazquez, 2002)

A similar model was established by James C. Hershauer and William in 1978 that demonstrate the manner in which certain issues interrelate to attain the worker productivity level. This model was well thought-out as innovative and was quoted in various published works about productivity. Lopez-Ortega & Saloma – Velazquez cited Hershauer and Ruch by saying that this model was used when the administrators were trained at the manufacturing lines in Lincoln Electric as a training tool. The model proved to be valuable in explaining the complexity of the relations that lead to the level of productivity of a worker. This concept was not used for replication neither was it interpreted into a program. The scholars deliberated on the impossibility of promoting an emulator by the way of measuring the factors of human conduct and business management.

According to the model, there are four levels that influence the productivity of an employee, which are taken into consideration. These levels consist of, personal aspects, work team issues, technological factors and organizational factors. The skills that are posed by the worker to learn and to put into practice in order to perform the responsibilities assigned to be carried out by the employer is known as learning capacity as this model suggest. It is associated with the education level and with the employees' productivity.

A new model was proposed that considers ten factors that influence the productivity of a worker. The key variances between this new model and the Hershauer and Ruch model was as follows: The new model presents the 10 productivity factors clustered in fourth levels. This detail aids the comprehension of the model. The Hershauer and Ruch model was only a conceptual model. It was not encoded as a dynamic model. The new model was established and programmed in Powersim software and that makes it qualify to be tried and adjusted with enterprises results related to work productivity enhancements. At present, the new model is being tried by two initiatives (Eugenio Lopez-Ortega, 2016). This productivity model anchored to the dependent variable in the study for it discussed the concerns that lead to employees' productivity when dealt with in an organization.

2.2.2 Occupational Health and safety (Domino theory)

Occupational health and safety (Domino theory) was established by Heinrich in 1929. This theory was unique and clear in accident processes definition though its application was affected by some of its weaknesses. This theory emphasized blame on individuals and the belief about single cause where there may be multiple causes. The theory failed to address the short coming of management and organization as a potential cause. These faults lead to its modification that was done by Bird and Loftus in 1976 when the role of management was included. It was later revised by Vincoli in 1994. This theory was anchored on the first objective concerning the effects of health and safety precautions on employees' productivity.

Mwangi & Waiganjo (2017) in their study quotes Heinrich saying that "in a workplace, for every accident that causes a major injury, there are 29 accidents that cause minor injuries and 300 accidents that cause no injuries". In the meantime, common root causes are shared by many accidents therefore dealing with accidents that are common at workplace that bring about no injuries can evade accidents that bring about injuries. This theory embraces that actions that are unsafe are the causes of as many as 95 percent of all workplace accidents. This scholar wrote that, it was after reviewing thousands of accident reports that were completed by supervisors who in general accused workers for causing accidents without conducting detailed investigations in to the root causes Heinrich came to this conclusion. Heinrich did safety work across many industries that have available data that is published. His work provides guidelines of how to scale up from near failure and incidents to a good

estimate of the possibility of real accidents. (Kassu, 2016) report that the reason of using this theory is based on the fact that occupational injuries are as a result of societal relations at workplace created mistakes, which bring about work-related injuries, increased auto control of workers and organization participation in safety as means of preventing job-related injuries.

2.2.3 Ergonomic theory

According to International Ergonomics Association Executive Council, (2000) this theory was coined by Hugh Murrell at a British Admiraly meeting in 12th July 1949. In 1950 the name 'Ergonomics' was officially accepted. The name Ergonomics was derived from the Greek words: Ergon - work; Nomos - natural law. The work that was done by Prof. Wojciech Jastrzebowski in Poland in 1857 indicated the name of this theory. Ergonomics is also known as human factors and it is the scientific discipline that is concerned with the consideration of the exchanges among human and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance.

The term Ergonomic as suggested by Occupational Safety and Health Academy (OSHA) comprises the practices at the workplace, a work stations design and work structure for the good of the employees' capabilities (OSHA, 2017). This theory also involves a design that is applied to reduce work related injuries and illnesses and risk factors. After employees have worked for a period of time they start experiencing common health and safety issues. The design of work spaces or room that make employees to work in body postures that are uncomfortable or being in the same position all the working hours may possibly result in effort that is excess, weariness and uneasiness of the employee (Wilson, 2014).

This concept that was articulated by the International Ergonomic Association (IEA) demonstrate that ergonomic is a discipline related to science that concerns itself with the consideration of interaction among individuals and other essentials of a system and the line of work that concerns itself with theory, philosophies, statistics and procedures to plan a workplace. It was implemented by an author namely Green. A breakdown of this concept displays one of the central intentions of ergonomics which is to develop employee

productivity (Pandre, 2016). The ergonomic theory anchored to the third objective in the study.

2.3 Empirical Review

2.3.1 Occupational Health and Safety and Employee Productivity

There are various research studies that have been carried out on safety and occupational health measures in many sectors in different parts of the universe. Stavroula et al, (2010) points out that work gives financial gains, though the employees are unprotected from many health condition risks. These risks can be physical, chemical and psychological equally depending on the type of labor. Furthermore, employees' health is affected by workplace environment. Mabuza (2018) asserts that safety of employees is very important and employers need to provide protective gears for employees while working so that the employees are able to protect themselves from hazards. According to Stavroula et al, (2010) studies conducted in several countries such as Finland, Turkey, the USA, China, and Korea revealed that due to poor health and safety performance in workplace, the rate of deadly occasions and fatalities at workplace amounted to approximately 13 persons per 100,000.

Zhen et al (2018) assert that although China is expanding construction business in developing countries it is not exempted from facing challenges with regard to occupational health and safety (OHS) management. These health and safety management issues include lack of training, poor safety awareness, limited resource input and reckless operation. By using the questionnaire survey, respondents' qualitative perception of occupational health and safety performance was quantified with differing levels. According to Kar & Mishra, (2016) the organization expenditures are minimized when there are measures in place concerning health and safety on employees. The investigation of the work and its magnitudes ought to approach the worker holistically, creating philosophies that affect the relationship between the settings and organization of labor and demonstrations spoken, such as indirect exhaustion, wear, distress, illness or disease. It is therefore essential for companies to prioritize and capitalize on safety and health at the workplaces and look at it as an investment rather than a cost. The measures of health and safety at work have failed to be observed in many companies leaving the employees exposed to health hazards that vary. Sarode & Shirsath, (2015) established that productivity increase is affected by other related risks that are on the rise although there have been reducing measures of the exposure to the

risks that are related to machinery and work that is done manually. This has negative influence on employees' health hence affecting their capability. (Kar & Mishra, 2016; Kaynak et al., 2016; Mabuza, 2018; Okeke et al., 2016; Rafique et al., 2017; Saha, 2016) noted that disparities in the way safety measures were taken into considerations in diverse sectors of employment indicated that much interventions were needed to improve the occupation health and safety of employees.

In the United Kingdom, Black & Lynch, (2000) study argues that in response to the changes in technology, political, social and economic, the latitude of occupational health and safety has progressed steadily and unceasingly. The study suggested that employees productivity decrease as a result of health hazards at workplace. This could be ascribed to excessive noise or vibrations that could cause problems of the breathing organs and headache which can cause more health problems in the long run. This means that developing a healthy and safe workplace would bring benefits to the employer due to increased employees' performance. Okech & Njururi, (2016) found most of the jobs that require manual workforce and especially heavy physical tasks employ younger individuals who are still energetic therefore there is need to put health and safety measures in place at workplace in order to retain a strong healthy working team. Yang et al., (2015) noted that employees were given welfare facilities by the company they worked for in order to motivate them to be productive and avoid high employee turnover.

According to Choi et al, (2015) at the present time, existence of hazards at the place of work is really shared in all sectors. Shannon et al, (2001) point out that health and safety plays an important role at workplace and contributes to the employees' right to a healthy, safe and approved workplace station. Employees in healthy and protected workplace are mentally resilient which assist them to increase job performance and efficiency. According to a study conducted in the United States by Shannon et al, (2001) several features that are mostly thought to likely affect health and safety include safety hazards, workplace itself and health hazards. The study noted that threats related to workplace can threaten the employee health and safety which could result to influence that is negative on the employees' well-being. Similarly, if measures of good health and safety are considered to be put in place at the work place it will in a good way affect the health and safety of employee.

Bertera (2003) indicated that, it is no concurrence that the safeguarding of employees against sickness, disease and injury related to the working environment is paramount. Shannon et al, (2001) argues that the strategy that is most effective in order to make health and safety be realized at workplace through management is the one that incorporates occupational health and safety in the plan of the institution. According to Dewe et al, (2012) despite the many benefits of workplace such as economic benefits, there are wide range of workplace hazards and risks that affect the safety and health of workers. These hazards include physical factors, psychosocial risk factors, allergies, biological, ergonomic conditions and many more.

Alli, (2000) points out that in most of sub –Sahara Africa, Occupational safety and health (OSH) is an element that is crucial in attaining favorable working condition and strong preventive safety cultures that are sustainable. Occupational health and safety measures are either partly or major concerns of International Labor Organization (ILO).The standards and instruments of ILO are concerned with approximately 80 per cent of health and safety related issues. Areas of ILO Activity that are of large number include an Occupational safety and health that are interrelated. Bertera, (2003) points out that these factors include safety, labor inspection, employment, gender mainstreaming, labor statistics, maritime safety, child labor and informal economy.

In Kenya a study that was conducted by Omusulah (2013) on the perceived influence of occupational health and safety practices on job satisfaction among employees in Chemelil sugar company limited, Kenya used only structured questionnaire where respondents were given a set of statements on occupational health and safety practices leaving out on structured interviews for data collection.

The ILO adopted conclusions defining the main elements of a global strategy to bring about quantifiable enhancements in safety and health in the world of work and recommending the development of a new instrument intended at establishing a promotional framework for occupational safety and health. Consequently, the ILO adopted at its 94th Session in June 2006, a Convention (No. 187) concerning the promotional framework for occupational safety and health and its accompanying recommendation (No. 197). The main purposes of the convention were to make sure that a higher priority is given to occupational safety and health in national agendas and to nurture political commitments in a tripartite context for the

improvement of occupational safety and health. According to Alberta, (2015) leading pointers are an indication of what is being done on an ongoing organization to prevent employee illness and injury. Organizational success largely depends on employees who are considered as one of the most important assets of any organization because they are capable of creating value and enable organizations have a sustainable competitive advantage.

Jelimo, (2013) conducted a research on the effects of occupational health and safety practices on employees' productivity. The study found out that when health and safety practices are considered to be of great benefit to the employee's productivity in relation to workplace and equipment design there is much growth in the Organization. Providing facilities that help the employee to be comfortable while working yield great results. The study concluded that employees' productivity improves when an organization fully implements occupational health and safety practices. Absence of these practices could result into injuries and frequent accidents, absenteeism, increase in medical bill, high employee turnover and insurance claim. The study endorsed unceasing progresses of occupational health and safety practices as it impacts employee satisfaction, productivity, commitment and performance in great measures.

Chemirmir, Nassiuma, and Musebe (2017) noted in their study that there was hardly any training on employees on how to take precautions and safety measures at the work place. The employee productivity can be negatively affected due to lack of health and safety measures in a company. Sharma & Sharma, (2014) points out that employee advanced productivity leads to satisfactory economic development, huge profitability and better social advancement in an organization. Taghipour, (2015) established that experience of employees is a metric of measuring the level of productivity and thus most employers and companies retain most experienced employees in the company even in major organizational transitions . Taylor, (2013) argues that there are other studies that focused on the idea of productivity by saying that productivity depends on the excellence of leadership style. In Ghana a study was conducted by Esi, (2012) to evaluate the effect of health and safety standards of employees on productivity. The study was carried out by the use of questionnaires and arranged interviews. The study revealed that employees' productivity in Ghana Rubber Estates Limited was influenced negatively by poor management of safety

practices and safety programs, bad management attitude towards health and safety, and training of employees on safety standards in the organization**.**

A study that was carried out by Cudjoe, (2011) on an assessment of occupational health and safety practices on job performance at the Tetteh Quarshie Memorial hospital included employees from 32 departments having the concept that these employees were homogenious. The study revealed that contemporary occupational health and safety applications in the health center are insufficient, and that the employees, administration, the sick and other stakeholders were unprotected from several health hazards and risks. The study concluded that if the employers and the employees do not perform their respective accountabilities then effective occupational health and safety practices cannot be achieved. Miller & Whilker (2017) assert that there are many different ways to measure safety culture, but one of the most effective, fastest and easiest ways is through safety surveys. Ways surveys are also useful include discovering the strengths and weaknesses of an organization's safety process as well as differences in perception of safety between management and employees. Subramaniam (2017) noted that sometimes employers provided protective gears such as aprons and masks as well as helmet depending on workplace setting. Saha (2016) established that there was a significant relationship between occupational health and safety measures and the productivity of employees.

2.3.2 Work- Related Stress and Employee Productivity

Work-related stress is harmful physical and emotional reactions that can happen when there is struggle between workloads on the employee and the degree of control employee has over accomplishing these workloads. Cheng & McCarthy, (2013) suggest that stress disconnection refers to the practice of switching off or mentally uncoupling as a mechanism for avoiding stress. Work-related stress can destabilize the accomplishment of goals, both for individuals and for organizations. In U.S.A, Foy, (2015) conducted a research study on managing workplace stress for increased employees' performance. The study revealed that workplace stress has a negative relationship with social support and work performance and a positive relationship with work-life conflict. Effective workplace environment is a place where all people work together so as to realize a common vision for the physical fitness and well-being of workers in a work place and the surrounding community. This is whereby the

conditions that protect and promote health and safety are delivered to the workforce team. Parker & Wall, (2008) established that effective workplace environment provides physical, psychological and social factors to the employees. This brings about energy, contentment and positive attitude whereby employees are able to have more control over their work environment and at the same time improve it. Good and healthy working relationships are made up by several characteristics. These characteristics are trust, mutual respect, mindfulness, welcome of diversity, communication that is open and cooperation. (Peterson, 2011) argues that there is career improvement and open doors when good working relationships are built and maintained thus employees are more engaged and committed. Al-homayan et al., (2015) observed that lack of stress among employees improved their productivity. Kaynak et al., (2016) noted that good occupational health and safety measures reduced the work-related stress of employees and a significant relationship established in this regard.

The research that was carried out by National Safety Council in USA revealed that stresses related to work will cause one million employees to be absent on an average workday (Itasca,2013). According to World Health Organization pressure at the workplace is unavoidable due to the demands of the present-day work setting. The way jobs are designed, the work organizations, and the way people manage them, can cause work related stress. Having so much work to accomplish or having too little can cause stress. Working for hours without socializing may cause stress (WHO, 2005). Jaroslav& Miroslav, (2015) found that broader concept of the social support is linked with the phenomenon of relationship support in the environment people lives. Massoudi and Hamdi (2017) assert that challenges that relate to work-related stress among employees results to employee unproductiveness and inefficiencies. (Akther et al., 2017; Fitzgerald & Danner, 2016; Musyoka et al., 2016; Rafique et al., 2017; Ramya, 2017) found that employees sleep during working hours or experience poor work relationship due to work-related stress and to reverse the trend a sound decisions needs to be taken into consideration on the issues of stressors (Ezeamama, 2019; Hadi & Manaf, 2016; Hanc, 2019; Massoudi & Hamdi, 2017; Sabir, Akhtar, Bukhari, Nasir, & Ahmed, 2016).

A study that was conducted by (Guest et al, 2000) among 28,000 employees from 2,000 workplaces indications that relationship exists between employees' attitudes in workplace performance and human resource management and this is true in Organizations. Yorio et al,

(2014) cited Backer who said that the workplace systems that have high performance will enhance in attaining job performance. This will promote flexibility on the side of an individual performance. A study carried out by Purcell, (2013) on 12 firms to institute how people manage and control the performance in an organization. The study shows that there is clear pointer that is real between optimistic attitude towards Human Resource policies and actions, operational performance levels of satisfaction, motivation and commitment.

Purcell et al, (2003) argues that the optional behavior is described as the concern of Human Resource so as to enhance motivation and commitment of employee productivity. This are known as the choices that people at workplace frequently make concerning the manner in which they perform their duties and the volume of productive behavior, upkeep and effort that they demonstrate. It is not easy for the employer to define, monitor and control the amount of optional behavior required thus this is in the center of employment interactions.

Vineet Nayar, (2010) found that the life style of appreciating workforces by the management is very central and should not be disregarded. This practice improves commitment and motivation by presenting rules and processes that guarantee that people are acknowledged, treasured and remunerated for their work achievements, and for the levels of abilities and competency that they arrive. Harmonious relationships can be maintained by the creation of good working climate among employees and the management. This makes teamwork to flourish. The growth of the enterprise was as a result of value addition to the customers which is brought about by the value placed on the employees.

Mwangi Salome, (2015) on the effect of psychosocial stressors on employee performance revealed that there was a strong statistical relationship between psychosocial stressor variables and the performance of the employees. The study further revealed that misfit found between the employees own values and the specific culture of the workplace leads to poor job performance. Omondi (2015) established that the employee assistance program was adjusted to a reasonable extent in the Kenya Power company. He found that Kenya power has adopted the program on employee wellness to a moderate extent. Oluwaseun et al. (2017) noted that good working conditions and facilities improved the work-related wellbeing of employees. Akther, Akter, and Uddin (2017) noted that employees had mischievous behaviors at work place such as sleeping at work place when the supervisors

were not around or even pretending to be working but in real sense they were not. However, Williams, Grajales, and Kurkiewicz (2015) noted that due to supervision, employees may be productive but against their motivation or will.

2.3.3 Ergonomics at Work Place and Employee productivity

Ergonomics is the study of the correlation between the workers and the working environment. The objective of ergonomics is to help reduce accidents and injuries. Workplaces should be designed in a way that will enable employees safely and effectively carry out the necessary tasks. There are certain criteria that need to be taken into consideration while developing an ergonomic workplace such as dimensions, muscle strength and visual capabilities. When laying out a production workplace there are some general recommendations that need to be followed. Services needed by a number of people ought to be placed in a dominant setting. Amin, Mohamad, Mohd and Omar (2017) found that ergonomics of workplace significantly improved the productivity of employees in diverse ways.

In Malaysia, Department of Occupational Safety and Health (DOSH) was established to protect the safety, health, and welfare of the individuals in the workplace from any occupational hazard. Investigation on the occupational accidents by sectors has been done by DOSH annually for data analysis. In the year 2014, there were a total number of 2805 occupational accidents that were reported by DOSH. The total number of occupational accidents shot up to 3345 cases in the year 2015 which increased with 540 as compared to the year 2014. In the year 2016, the total number of occupational accidents cases continued to give a rise of 405 cases up until a total number of 3750 cases.

As the summarization to occupational accidents reported by DOSH, it appears that the condition is not optimistic since the cases are in upward trend in these few years therefore; it is critical for the workers to be concerned and realize the potential ergonomic risk factors around their workplace as the consequences are deadly like death and disability. (Tee et al, 2017) point out that the examples of the possible ergonomic risk issues consist of static posture, repetitive motion, heavy lifting, expose to excessive vibration, forceful exertion, and much more . The lack of awareness by the employees on the presence of the possible ergonomics risk factors at their environments might jeopardize their health and safety . Several studies have seen the importance of having good ergonomics in work place such as

work conditions and working facilities (Gitonga & Gachunga, 2015; Massoudi & Hamdi, 2017; Oluwaseun et al., 2017; Pickson et al., 2017; Ravindran, 2019). Some of the advantages of ergonomics included high employee productivity, low employee turnover, high employee motivation and improvement of employee safety among others (Alem et al., 2018; Ezeamama, 2019; Hanaysha, 2016; Massoudi & Hamdi, 2017; Ramya, 2017).

Health and Safety Executive, (2000) suggests that ergonomics applies information about human behavior, abilities and limitations and other characteristics to the design of tools, machines, tasks, jobs and environments for productive, safe, comfortable and effective human use. Aspects that involve the movement and posture of the body play a role in Ergonomics. The aim of Ergonomics is to offer productivity to the maximum with cost that is minimal. In this study the cost are the bills the company spend due to the accidents and injuries workers go though at workplace. In a workplace situation there are occasionally tasks that surpass the abilities of the work force. There may be works that will include a particular task that can only be done through extended reaches and that work which cannot be sustained for many hours. If the Ergonomic rules are put in place workers are able to perform the job without the risk of injury. Gitonga & Gachunga (2015) noted that working conditions to a large extent affected the productivity of employees. The researchers noted that working at one station for long or working while standing reduced the productivity of the employees. Ravindran (2019) noted that most of movement of employees in the company from one place to another reduces the productive time of the employees and recommended job specialization and division of labor to avoid unnecessary movements and increase employee productivity. Davidson (2018) established that employees worked for long hours and the compensation was not in line with the overtime offered by the employees. Ramya (2017) noted that long working hours were associated to poor productivity among the employees.

Kroemer & Grandjean, (2000) found that to reduce the risks of musculoskeletal injuries due to manual handling of materials, work that is assigned to a worker should match with their abilities. Applied Ergonomics stresses on the prevention of musculoskeletal disorders that are related to labor through identifying, expecting and decreasing risk factors in the initial stages of new systems of workplaces. This will result to design actions that ensure proper selection and use of tools, job approaches, workstation arrangements and materials that

execute no unwarranted stress and strain on the worker. Pickson, Bannerman, & Ahwireng, (2017) noted that due to masculine requirements of most of the roles in organizations more male are employed so as to boost productivity. Health and Safety Authority, (2005) points out that the objective for the design of workstations is to plan for as many people as possible and to have an acceptance of the Ergonomic standards of posture and movement which perform a major role in the establishment of a healthy, safe and relaxed work environment. "Posture and movement at work was dictated by the task and the workplace, the body's muscles, ligaments and joints are involved in adopting posture, carrying out a movement and applying a force".

A study that was conducted in Nigeria by Badelake, (2012) seeking to determine the effects of occupational health and safety policies on employee performance came out with findings that the cost that is spent on designing and making available a good safety policy and working environment is less than the amount of time wasted during accident and cost that is ignorantly spent on health care. According to ISO, (2010) productivity is about conduct. It is what employees do at workplace. It is not about the results of their labor. Thao & Hwang, (2011) established that the employee productivity denotes the overall conviction of the employee about actions and influences in the accomplishment of organizations. Okeke, Echo, and Oboreh (2016) found that when employees were trained on how to adhere to the safety measures in the company and what to do in the event of a risk or accident at work place thy were able to avoid the accidents.

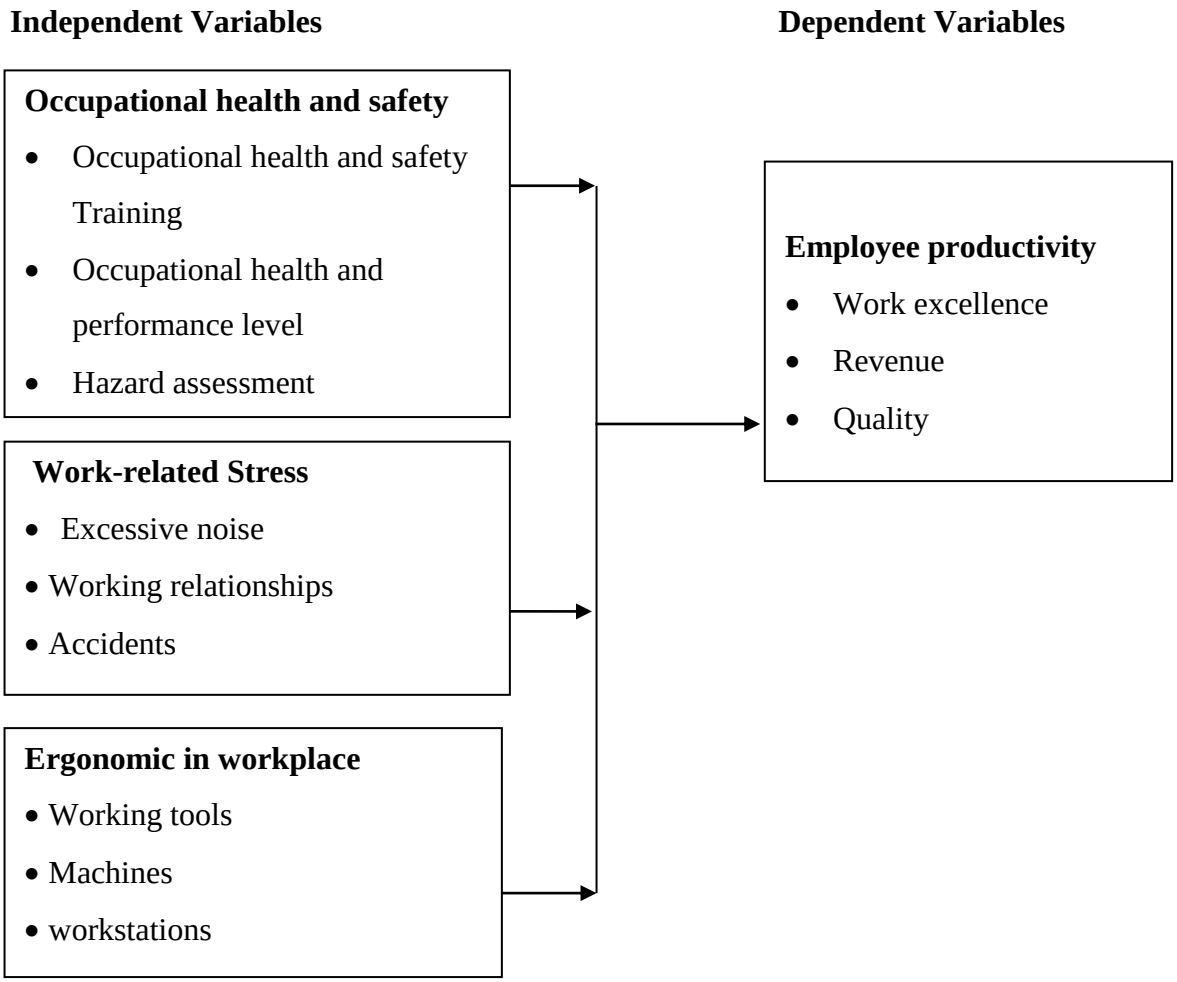
International Ergonomics Association, (2017) report that it is articulated as a complete methodology in which such contemplations of organizational, physical , social ,cognitive, environmental and other significant factors are taken into account to improve the design and evaluation of products, jobs and the systems in order to make them compatible with the abilities, needs and limitations of employees .This original idea also demonstrates that ergonomics includes both the improvement of individual employee as well as organizational progress. Thus, the study is of the opinion that employee productivity is a relative term that requires a baseline for comparison of employee output. Attaianese, (2012) asserts that employees' productivity can be improved by the way furniture is designed using ergonomic principles and at the same time injuries at workplace can be reduced. Other experts such as Fulton, (2000) claim that there are about 86% problems that relate to employees'

productivity that can be located in the work place environment. That means employees' productivity is affected by the environmental conditions in the work place. Hanaysha, (2016) assert that ergonomic factors such as good ventilation and lighting among other factors were seen to improve the productivity and efficiency of the employees to a large extent. The prosperity of an enterprise was determined by the working environment in which employees operate.

Wegge et al (2007) argues that the level of motivation of an employee to perform is impacted by how healthy the workplace employs to a member of staff. The years that an employee will stay in a job, collaboration with other employees, physical wellbeing, error rate, innovation level and absenteeism was as influenced by poor workplace environment. It is therefore important to note that employees' productivity is influenced in an adverse way by the deficiencies of ergonomics design and input variables. The entire Organizational output is determined by the employees' productivity which is affected positively or negatively by how badly or how well the workplace is designed. It is important for the workers to understand the significance of the ergonomics to assess the possible ergonomics risk factors that happen around their work place.

2.4 Conceptual Framework

The conceptual framework presented in figure below displays the diagrammatical representation of the interrelationship among variables of the study. The figure presents the factors that are perceived to influence employee productivity. The framework shows that employee' productivity is greatly affected by certain workplace environment which includes occupational health and safety measures such as occupational health and safety trainings, occupational health and safety performance level and hazard assessment. It is also affected by Work-related stress factors such as excessive noise, lack of support from managers, working relationships among employees and the last aspect is ergonomic factors such as working tools, machines and workstations. These independent variables when manipulated will have an impact on how employees' productivity was that is either high/increase or low/decrease.



Source: Author (2020)

Figure 2.1: Variables of effects of Occupational Health and Safety measures on Employee's Productivity

2.5 Research Gaps

The subject of health and safety measures needs to be taken seriously by organizations in order to be in a position of preventing workplace related illnesses and injuries. Literature review suggests that various studies have been conducted on effects of health and safety in relation to employees' productivity in different parts of the world. Studies such as Kar & Mishra, (2016), Stavroula et al, (2010) assert that work gives financial gains, though the employees are unprotected from many health condition risks. Studies by Mwangi Salome, (2015) Vineet Nayar, (2010) Parker & Wall, (2008) & Foy, (2015) concluded that an employee who is physically, psychologically and mentally healthy is productive. Studies by

Esi, (2012) &Cudjoe (2011) asserts that employees' productivity is influenced negatively by poor administration of safety practices and safety programs, bad management attitude towards health and safety. According to Jelimo (2013) design of workplace, workplace environment, career growth and employee remuneration had a significant positive relationship with employee productivity. There are possible ergonomic risk issues such as static posture, repetitive motion, heavy lifting, expose to excessive vibration, forceful exertion which affect the health of employees (Tee et al, 2017). Employees who enjoy good health and safety demonstrate Productivity. Organizations with active and efficient health and safety regulations are able to attract long term productive workers. The lack of awareness by the employees on the presence of the possible ergonomics risk factors at their environments might jeopardize their health and safety. Absence of health and safety measures could result into injuries and frequent accidents, absenteeism, increase in medical bill, high employee turnover and insurance claim on the other hand unceasing progress on health and safety measures impacts employee satisfaction, productivity, commitment and performance greatly. The existing literature relating to the effects of health and safety on employees' productivity is inadequate thus there was need to carry out this study on effects of occupational health and safety measures on employee productivity in maize flour processing companies .

2.6 Chapter Summary

The above section include employee productivity model which anchored to the dependent variable in the study. Occupational health and safety (Domino theory) anchored to the first and the second objective of the study. Ergonomic theory in workplace anchored to the third objective in the study. The section also includes areas of empirical review on the study which are occupational and health in workplace and employee productivity, work-related Stress in workplace and employee productivity, ergonomics in workplace and employee productivity. It also include conceptual framework displaying the independent and dependent variables, study gaps and the chapter summar**y.**

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This section comprises of research design, target population, study site, sample size and sampling procedure, data collection instruments, pilot study, validity and reliability of research instruments, data collection procedures, data analysis method and finally the Ethical considerations.

3.2 Research Design and Study Site

3.2.1 Research Design

Research design is defined simply as the framework or blue print for the research (Yusuf, 2018). According to Kothari, (2014) research design is an arrangement of the conditions for collecting and analyzing data in a manner that aims to bring together relevant information to the research purpose with economy in procedure hence it is the conceptual structure within which research is conducted.

According to Burke descriptive research design is a non-experimental research design used to observe a variable when little conceptual context has been developed on specific aspects of the variables under study (Roberts Burke, 2014). The main objective of descriptive research is the accurate representation of the characteristics of persons, situations or groups (Polit & Hungler, 2013). A descriptive method in qualitative research that enables the researcher collects accurate data on the subject and to give a clear picture of the phenomenon being investigated. A descriptive study is concerned with determining the frequency with which something occurs or the relationship between variables (Marais, 2012). This study used descriptive research approach. This approach was suitable for this study since the study intended to collect detailed information through descriptions making it useful to identify variables under the study.

This approach was particularly suitable because of the need of an accurate and authentic description of the effects of workplace health and safety precautions on employee productivity. The descriptive research design entailed the process of data collection so as to answer questions concerning the present position of the subject in the study. This approach assisted the study to accumulate the critical knowledge and solutions in relation to workplace health and safety precautions as well as employee productivity.

3.2.2 Study Site

The study site included C01 and C02 maize flour processing companies located in Nakuru West Sub-county in Nakuru County, Kenya. C01 Maize flour Millers Ltd was founded in 1978. The company has many branches in Kenya. The study concentrated on Nakuru branch which is located in Nakuru West Sub- County, Nakuru County. This company is famous for its maize flour quality (East Africa Edition, 2014) and animal feeds. This company operates for six days in a week. It has 94 employees. On the other hand C02 maize flour company was established in 1975. It is located in Nakuru west Sub- County, Nakuru County, Kenya. This particular company is known for its wheat and maize flour products and variety of other cereals and animal feeds. It has 110 employees. These two companies are closely located. In terms of economic activates, both companies meet the needs of Nakuru residents as well as other people in the whole Kenyan society. A map of C01 and C02 was included in the appendices.

3.3 Study Population

Target population is the population that is targeted as a comprehensive group of individual, cases or items with the same shared characteristics to which the researcher wants to generalize the results of the study (Mugenda & Mugenda, 2013). The target population for this study included the management staff, senior staff and junior staff of two maize flour processing companies Coded C01 and C02 in Nakuru West Sub-County. The total population from the selected companies was 204 employees. The study used the stratified sampling design followed by simple random sampling to select respondents. The study purposely selected 10 key informants from the management level to fill the information gap left out on the questionnaires.

3.4 Sampling Techniques and Sample Size Determination

3.4.1 **Sampling Techniques**

The stratified random sampling is a technique by which the sample is constrained to include elements from all of the divisions and it is useful when the researcher wants to study the characteristics of certain population subgroups (Tahedoost, 2018). Both C01 and C02 maize flour processing companies have different departments and therefore population was stratified into management staff, senior and junior staff, this was followed by simple random

sampling which was used to select respondents for the study from each stratum. Therefore a sample size of 67 employees was obtained from the population of 204 employees. Simple random sampling is a type of probability sampling technique. According to Mugenda and Mugenda, probability sampling can provide accurate information about groups that are too large to study in their entirety (Mugenda & Mugenda, 2013).

3.4.2 Sample Size Determination

The study used Naissuma formula for sample size determination as follows;

$n=NC^2 \div (C^2 + (N-1)e^2)$

Where:

N = Population Size (N=204)

C = Coefficient of variation which is 0.5 (50%)

e = Margin of error (0.05)

Computation;

$n=204 \times 0.5^2 \div (0.5^2 + (204-1) \times 0.05^2)$

n = 67

A Sample size of 67 employees was picked from the selected companies for the study with a total population of 204 employees.

Table 3.1: Sample of Selected Employees

Company	Department Level	Population	Sample
CO1 Maize Millers	Management Level	10	3
	Senior level	30	10
	Junior Level	56	18
CO1Maize Millers	Management Level	10	3
	Senior Level	38	13
	Junior Level	60	20
Total		**204**	**67**

Source: C01 and C02 Maize Flour Companies (Nakuru) 2019

3.5 Research Instruments

The study employed two different research instruments which were questionnaire and interview guide. These research instruments were developed and tested for consistency, coherence and reliability

3.5.1 Questionnaires

The study used opened ended questionnaires whereby the respondents were required to choose an answer from the choices provided. In respect to this, the questionnaire collected quantitative data. The questionnaire was divided into 5 sections. Each section had different question content. Section A was on background information of the respondents. Section B, C, D, which contained research questions relating to the specific objectives of the study while Section E contained questions relating to the dependent variable of the study. Questions in Section B to Section E were based on five point Likert scale whereby; 5-Always, 4-Usually, 3-Sometimes, 2-Rarely and 1-Never. Questionnaire is a well-established tool within social science research for acquiring information on participants' social characteristics, present and past behavior, normal behavior or outlooks and their principles and details for action with respect to the topic under investigation.

The study used questionnaires to collect primary data because they were cheap and practical in providing information. The questionnaires were distributed to the selected population. In

case of respondents who did not know how to read or write, the questionnaire was explained to them in the language that was familiar to them so that they understood and at the same time were assisted to fill the questionnaire appropriately.

3.5.2 Interview Guide

The set of questions that were asked during the interview is known as an interview guide. The interview guide was semi-structured to make it possible for editing in case some questions needed to be omitted or added. The process was face to face interviews. During the discussion the numbering of questions changed depending on its flow.

3.6 Pilot Study

Pilot study was conducted in maize flour company Coded (C03) in Nakuru – East Sub – County, Nakuru County, Kenya. This Company is known for the quality of its maize flour and competence. It has 50 employees and similar features in comparison to C01 and C02 maize processing companies. It also has three levels of employees, management level, senior and junior levels. Piloting was carried out among 10 employees.

3.7 Validity and Reliability of Research Instruments

3.7.1 Validity

Validity is the degree to which the research instruments appropriately and accurately measure what they were supposed to measure (Orodho, 2005). Validity was done by cross checking the content on the questionnaires. This was done to ensure that the questions in the questionnaire fully represented the domain of attitudes towards the health and safety measures on employees' productivity. The questionnaire items were further reviewed by my research supervisors and an expert from Unga Limited (Nakuru branch). The questionnaire items were reviewed for readability, clarity and comprehensiveness. It was agreed upon which items to be included in the final questionnaire. The vague questions were removed and inaccurate responses or indicated weaknesses were corrected so as to attract appropriate responses from the respondents.

3.7.2 Reliability

Reliability is all about the degree consistency to which a research instrument yields similar results after repeatedly measuring what it is required to measure (Orodho, 2005). The

reliability of questionnaires was established by the use of Cronbach's Alpha that determines the internal consistency. Alpha coefficient ranges from 0 to 1. The study carried out a pilot study that involved 10 respondents selected at random from C03 maize millers in Nakuru – East Sub – County, Nakuru, Kenya, upon which reliability test was done.

3.8 Data Collection Procedure

Exploration was done prior to the actual study to familiarize with the study area to build rapport with the management team. This started by obtaining consent from the management of both C01 maize flour Mills and C02 Maize Millers Nakuru branch. There was an official visitation to the companies when the questionnaires were distributed to the sampled respondents. A Likert scale of 1 to 5 was used to examine the various ranks of reactions. A total number of 67 questionnaires were administered to the senior and junior staff respondents. The respondents were asked to fill the questionnaire forms at their own suitable time to avoid inconvenience during work hours. Drop and pick method was used to administer the questionnaires and the response was picked after 5 days during the study.

An interview guide was issued to 10 respondents in the managerial level who were considered as the key informants for this research study. These respondents were purposively selected from the designers' and implementers departments of the C01 and C02 Company's strategies. This form of data collection was chosen to ensure that data was obtained from resourceful people. A formal data collection process is crucial as it ensures that data collected is both defined and detailed and that subsequent decisions based on the arguments demonstrated in the findings are valid. The interview sessions were conducted according the individuals' respondent availability and consent. During the face to face interviews information was documented to make sure it was not lost but preserved for analysis. Statistics collection is defined as the procedure of gathering bits of raw information, facts or figures that are required for the research procedure and which can be analyzed to offer useful information from which conclusions may be drawn.

3.9 Data Analysis Method

Data from the field was checked for completeness. Complete questionnaires were coded and entered into Statistical Package for Social Sciences (SPSS) software version 24. From the quantitative analysis, both descriptive and inferential statistics were used. In respect to this, for descriptive statistics, frequencies, mean scores, and standard deviation were sued while for inferential statistics, Pearson correlation was used. Quantitative analysis was presented in form of tables. The qualitative data was analyzed using NVivo version 12 for thematic analysis. Major themes were obtained and presented in narrative manner.

3.10 Ethical Considerations

The researcher first of all obtained research authorization letter from the University. Before the actual process of collection of data, a research permit was sought from National Commission for Science, Technology and Innovation (NACOSTI) and after obtaining permission from the two selected maize flour companies, the researcher preceded to collect the data. There were sessions to educate the respondents on the purpose and method of the investigation of the study. It was made very clear to them that their involvement was voluntary and they could pull out from the project at any phase without punishment. The reason behind this study was explained. Data collection procedure was described clearly to the respondents so that they were acquainted with what they were doing.

The interviewees chose the meeting place of their convenience and were provided with the opportunity to ask any questions about the research study. Their questions were answered honestly and favorably in a polite language. They were invited to be at ease during the interview. The arranged interview meetings did not seriously cause any work distraction to the interviewees. A method of the interview that was used in this study was designed to assist the respondents to describe their experiences at their respective work place relating to the subject of the study. This study, therefore, was not thought of as modifying the knowledge, thinking, attitudes, feelings and behavior of the respondents. Furthermore, the information that was obtained in dialogues did not involve sensitive questions which could bring any interference to the respondents. Basically, according to the techniques of the

study, no risks were involved. The risks were apparently overshadowed by the possible benefits of this study.

All private statistics of the participants was preserved as private. It remained confidential throughout the study and after the research had been completed it was destroyed. Private statistics such as appropriate own information was not used without first procurement of permission from the relevant individuals. The names of those who were involved were omitted so as to make sure that their privacy was protected. The respondents were assured by that confidential measures were put in place in handling the information. The research exercise was voluntary.

CHAPTER FOUR
RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter presents the research findings and discussion and the discussion of the findings. It covers the response rate, reliability results, and background information of the respondents, descriptive statistics and inferential statistics of the study. Discussion of the study findings is also included in this chapter. The data analysis and presentation was done according to the research objectives of the study.

4.2 Response Rate

The study sought to collect data from 67 employees and 10 key informants who included managers and supervisors from C01 and C02 maize processing companies in Nakuru West Sub-county in Nakuru County. Table 4.1 shows the response rate obtained from the data collection.

Table 4.1: Response Rate

Respondents	Sample	Response	Response Rate
Employees	67	56	83.6%
Managers and Supervisors	10	8	80.0%
Total	**77**	**64**	**83.1%**

Out of the 67 questionnaires issued to employees of C01 and C02 maize processing companies, 56 questionnaires were correctly and completely filled and returned to the researcher for analysis. This presents a response rate of 83.6% for the employees. Eight out of ten sampled key informants were consented to take part in the study and were available for the interviews. This presents a 80% response rate for the key informants. Therefore the overall response rate for the study was 83.1%. Sloan & Quan-Haase(2017) asserts that a response rate of at least 80% is sufficient for generalization of study findings to the target population. The high response rate achieved in this study implied the findings from this study could be generalized to other maize processing companies. This high response rate was achieved as a result giving the respondents sufficient time to fill the questionnaires as well as adhering to all ethical considerations of research.

4.3 Reliability Results

The obtained pilot data was used to test the internal consistency of the questionnaires using Cronbach's Alpha. The reliability results are as shown in Table 4.2.

Table 4.2: Reliability of Research Instruments

Variable	Number of Items	Cronbach's Alpha
Occupational Health and Safety	10	0.908
Work- Related Stress	10	0.845
Ergonomic	9	0.754
Employee Productivity	11	0.864
Overall Cronbach Coefficient	**40**	**0.730**

The Cronbach's Alpha for the Occupational Health and Safety questions was 0.908 while questions on workplace related Stress had a Cronbach's alpha of 0.845. The study obtained a Cronbach's alpha of 0.754 on questions related to Ergonomic factors while a Cronbach's alpha of 0.864 was achieved in regard to questions on Employee Productivity. The overall Cronbach's Alpha for all questions on the study variables achieved a Cronbach's alpha coefficient of 0.730. Mehdi recommends a Cronbach's alpha coefficient of 0.7 and above for a data collection tools to be used in a study (Mehdi , 2016). This implied that the questionnaire had internal consistency and therefore reliable for data collection of the study.

4.4 Background Information of Respondents

The study sought to establish background information of the respondents and information integrated in the explanation of variations in respondents' feedback. The background information sought by the study included gender of the respondents, education level, age, company working for, department, position at work and finally the work experience of the respondents.

4.4.1 Gender of the Respondents

The respondents were asked to indicate their gender in filling the questionnaire. Table 4.3 shows the distribution of the gender of the respondents.

Table 4.3: Gender of Respondents

Gender	Frequency	Percentage
Male	41	72.7
Female	15	27.3
Total	**56**	**100.0**

Table 4.3 indicates that majority (72.7%) of the employees at the C01 and C02 maize processing companies were male with only 27.3% being female. This indicates that maize processing companies employ more men than female. This is due to masculine requirements of most of the roles at such companies and thus in order to boost productivity, such companies employ more male (Pickson, Bannerman, & Ahwireng, 2017).

4.4.2 Education Level

The respondents indicated their highest level of education as whether no formal education, primary, secondary or tertiary educational. Table 4.4 shows the education level of the employees as they indicated in the questionnaire.

Table 4.4 Education Level

Education Level	Frequency	Percentage
No formal education	7	12.5
Primary	10	17.9
Secondary	21	37.5
Tertiary	18	32.1
Total	**56**	**100.0**

The results indicated that majority (37.5%) of the employees had secondary level of education as their highest level of education with 32.1% of them indicated that they had tertiary education. It was further noted that 17.9% of the employees had primary education as the highest level of education and only 12.5% of the employees had no formal education.

The results indicated that majority of the employees could comprehend the questions in the questionnaire and answered from a point of understanding. The ones who had challenges in filling the questionnaire were assisted by the researcher in a researcher-aided data collection in order to ensure that the correct and valid information of each of the employees was captured. According to Sabir, Akhtar, Bukhari, Nasir, and Ahmed, (2016) majority of employees are employed in unskilled workforce and thus do not require them to have high academic qualification .

4.4.3 Age of the Respondents

The study further sought to establish the age of the employees and whose results are as shown in Table 4.5.

Table 4.5 Age of the Respondents

Age	Frequency	Percentage
Below 25	16	28.6
[25-34] years	29	51.8
[35-44] years	7	12.5
[45-55] years	4	7.1
Total	**56**	**100.0**

The study established that majority (51.8%) of the respondents were aged between 25 and 34 years of age followed by those aged below 25 years of age at a frequency of 28.6%. This is the most energetic age group to execute most of roles in milling companies that require use of a lot of energy. The study further noted that 12.5% of the respondents were aged between 35 years and 44 years while those aged between 45 years and 55 years were only 7.1%. This indicates that the majority of employees of the maize milling companies were below 35 years of age. Most of the jobs that require manual workforce and especially heavy physical tasks have employed younger individuals who are still energetic (Okech & Njururi, 2016).

4.4.4 Company Name

The study asked the respondents to indicate the maize flour milling company that they worked for. The company names were coded for ethical purposes. These results are as shown in Table 4.6.

Table 4.6: Company Name of Respondents

Company	Frequency	Percentage
C01 Maize Millers	20	35.3
C02 Maize Millers	36	64.7
Total	**56**	**100.0**

This study established that majority (64.7%) of the respondents were employees of C02 Maize Millers while 35.3% were from C01 Maize Millers. This is in line to the employee population proportions between the two companies. C02 Maize Millers had more employees than the C01 Maize Millers and therefore sample was proportionally selected.

4.4.5 Work Department

The respondents were asked to give details of their working department and whose results are shown in Table 4.7.

Table 4.7: Work Department of the Respondents

Department	Frequency	Percentage
Finance & Accounting	5	8.9
ICT	4	7.1
Quality & Assurance	5	8.9
Production	31	55.4
Transport	5	8.9
Marketing	6	10.7
Total	**56**	**100.0**

According to Table 4.6, majority (55.4%) of the employees were at the production department. This is because production department is the largest department in the maize milling companies. Marketing department had a 10.7% of the sampled respondents while Finance and Accounting department, Quality & Assurance department and Transport departing having an equal proportion of 8.9% of the total sample. The ICT department had a representation of 7.1%. All departments were sampled and therefore the results could be realizable to the target population.

4.4.6 Management Level

The study further sought to establish whether the employees sampled were management staff, senior staff or junior and whose results displayed in Table 4.8.

Table 4.8: Management Level

Management Level	Frequency	Percentage
Management Staff	18	32.1
Senior Staff	10	17.9
Junior Staff	28	50.0
Total	**56**	**100.0**

The study further noted that all job cadres were represented in the study in that the respondents belonged to management staff, senior staff or junior staff level. In respect to this, half (50.0%) of the respondents were junior staff while 32.1% were part of the management with 17.9% of the employees working as senior staff. Saha (2016) asserts that most managerial or top officials in an organization are less than the junior staff and thus the findings are in conformity to common company structures.

4.4.7 Working Experience

The study further sought to establish the number of years that the employees had worked in the two flour milling companies and the results were shown in Table 4.9.

Table 4.9: Work Duration

Years	Frequency	Percentage
[0-3] Years	14	25.5
[4-7] Years	30	54.5
More than 7 Years	11	20.0
Total	**55**	**100.0**

The study established that more than half (54.5%) of the respondents had a working experience of between 4 and 7 years while 20% had a working experience of more than 7 years. The study further noted that 25.5% of the respondents had a working experience of utmost three years. These results indicated that almost 75% of the respondents had a working experience of more than three years. Experience of employees is a metric of measuring the level of productivity and thus most employers and companies retain most experienced employees in the company even in major organizational transitions (Taghipour, 2015).

4.5 Descriptive Statistics

The study sought to establish the effects of workplace health and safety precautions on employees' productivity in maize flour processing companies. In so doing, the study first established the descriptive statistics for each of the variables of the study. The descriptive

statistics used by the study included frequencies, percentages, mean scores and standard deviations.

4.5.1 Occupational Health and Safety

The first objective examine the effects of occupational health and safety on employees' productivity in maize flour processing companies in Nakuru West Sub-County, Nakuru County, Kenya. In measuring the level of occupational health and safety in the two maize milling companies, the following aspects were considered; provision of protective devices while working, presence of a health and safety policy in the company, communication on regulations on health and safety practice, presence health and safety committees and training employees on health and safety aspects. Other metrics used included commitment of management towards health and safety of the employees, handling of health and safety matters, provision of employees with a medical cover, involvement of employees in health and safety matters and provision of welfare facilities for members of staff. The frequencies, percentages, mean scores and standard deviations for occupational health and safety in the sampled companies are as shown in Table 4.10.

Table 4.10 Descriptive Statistics on Occupational Health and Safety

Statement	Never	Rarely	Sometimes	Usually	Always	Total	
	F %	F %	F %	F %	F %	Mean	Std. Dev.
The company provides protective devices while working	1 1.8%	4 7.1%	39 69.6%	6 10.7%	6 10.7%	3.21	0.803
There is a health and safety policy in the company	2 3.6%	17 30.4%	23 41.1%	7 12.5%	7 12.5%	3.00	1.044
The regulations on health and safety practice at company's workplace are communicated to employees	3 5.4%	22 39.3%	24 42.9%	7 12.5%	0 0.0%	2.63	0.776
There are health and safety committees in the company	10 17.9%	19 33.9%	23 41.1%	3 5.4%	1 1.8%	2.39	0.908
The company trains employees on health and safety aspects	15 26.8%	19 33.9%	21 37.5%	1 1.8%	0 0.0%	2.14	0.841
The company officials are committed to health and safety of the employees	3 5.4%	20 35.7%	19 33.9%	10 17.9%	4 7.1%	2.86	1.017
The company handles health and safety matters	2 3.6%	14 25.0%	26 46.4%	10 17.9%	4 7.1%	3.00	0.934
The company provides employees with a medical cover	1 1.8%	12 21.4%	28 50.0%	8 14.3%	7 12.5%	3.14	0.962

The company involves employees in health and safety matters	10 17.9%	26 46.4%	15 26.8%	2 3.6%	3 5.4%	2.32	0.993
The organization provides welfare facilities for members of staff	5 8.9%	3 5.4%	12 21.4%	25 44.6%	11 19.6%	3.61	1.139
Composite Scores						**2.83**	**0.942**

According to Miller and Whicker (2017), using a Likert such that 5-Always, 4-Usually, 3-Sometimes, 2-Rarely and 1-Never, a mean score between 1.0 and 1.8 implies that on average the respondents tended to rate the corresponding item as 'Never' while a mean score in the range between 1.8 and 2.6 implies that the respondents on averaged tended to rate the corresponding item as 'Rarely'. The author adds that a mean score in the range between 2.6 and 3.4 and a mean score in the range between 3.4 and 4.2 corresponds to 'Sometimes' and 'Usually' on average in the rating scale. A mean score of 4.2 and above implies that on average the respondents rated the item as 'Always'. This scale ensures that there is equidistance between each response across the Likert scale points. On the other hand, a standard deviation less than 1.00 implies a low variance of responses across the respondents and therefore a presence of consensus. However, a standard deviation of 1.000 and above implies low consensus among the respondents and a large variance in responses given on a particular metric.

The study sought to establish whether the respondents were given protective devices while working and in which on average the respondents indicated that sometimes they were given proactive devices while working. This is due to a mean score of 3.21 and a majority (69.6%) of the respondents indicating that they were sometimes given protective devices while working. It was further noted that there was a consensus among the respondents in rating this metric as evidenced by a standard deviation of 0.803. Mabuza (2018) asserts that safety of employees is very important and employers need to protective gears for employees while working. The current results are in support of those by Subramaniam (2017) who noted that sometimes employers provided protective gears such as aprons and masks as well as helmet.

In respect to frequency in which regulations on health and safety practice at company's workplace were communicated to employees, the study revealed the communication was rarely made to 39.2% of the employees and sometimes made to 42.9% of the employees. None of the employees indicated that this communication was always done. A mean score of 2.63 was achieved in regard to this metric which indicated that on average the communication to employees about on health and safety practice at company's workplace was sometimes done. There was consensus in asserting this as indicated by a standard deviation of 0.776. In line to this, Kar and Mishra (2016) noted that employees were not well communicated to about the health and safety guidelines in the company and this put employee life into risk.

In respect to employee training on health and safety aspects, 26.8% of the employees indicated that they were never trained while 33.9% and 37.5% of them were rarely and sometimes trained respectively. A mean score of 2.14 was thus achieved in respect to this metric which hence revealed that on average the training of employees on health and safety aspects was rarely done. A small spread of responses in rating this aspect of training was observed due to a standard deviation of 0.841 and thus indicating that there were consensus among majority of the respondents in agreeing that training was rarely done. These results are in line to those by Chemirmir, Nassiuma, and Musebe (2017) who noted that there were hardly any training on employees on how to take precautions and safety measures at the work place. The results however differ with those by Okeke, Echo, and Oboreh (2016) who noted that employees were trained on how to adhere to the safety measures in the company and what to do in the event of a risk or accident at work place.

A mean score of 2.86 and a standard deviation of 1.017 were achieved in respect to the frequency in which company officials were committed to health and safety of the employees. The achieved mean score indicates that on average the company officials were sometimes committed to health and safety of the employees. In respect of this, 35.7% (rarely) and 33.9% (sometimes) of the respondents indicated that company officials were not fully committed to health and safety of the employees. The achieved standard deviation (more than 1.000) however indicates that there were diverse opinions given by employees in regard to this aspect of commitment of officials to health and safety of the employees and hence lack of consensus. This further indicates there are those officials who were committed

to health and safety matters of employees and those who were not concerned. These findings are in disagreement to those by Saha (2016) who noted that the management teams of most of companies were not fully committed to health and safety of the employees and in this manner, they did not take serious the safety of employees nor did they resolve employee complains relating to their safety.

The study established that majority (44.6%) of the respondents indicated that their organization usually provided welfare facilities for members of staff. It was further revealed that 19.6% of the employees were always given welfare facilities. A mean score of 3.61 was achieved in regard to this aspect and therefore indicating that on average the members of staff were usually provided with welfare facilities. However, a standard deviation of 1.139 achieved on the statement indicated that there were large variations in the responders given by the employees and thus lack of consensus. Yang et al., (2015) noted that employees were given warfare facilities by the company they worked for in order to motivate them to be productive and avoid high employee turnover.

The most highly rated statement aspect was the aspect of provision of welfare facilities while the least rated aspect was the aspect on training employees on health and safety aspects. Overall, the study established that most of statements were rated as either 'sometimes' or 'rarely' except one statement rated as 'usually'. This therefore indicates that most of the occupational health and safety measures were not fully provided and therefore implying a negative aspect in terms of the health and safety of employees in the maize milling companies. These assertions are also supported by the composite mean score of 2.83 and a composite standard deviation of 0.942. However, (Kar & Mishra, 2016; Kaynak et al., 2016; Mabuza, 2018; Okeke et al., 2016; Rafique et al., 2017; Saha, 2016) noted disparities in the way safety measures were taken into considerations in diverse sectors of employment and which indicated that much interventions were needed to improve the occupation health and safety of employees.

From the interviews, it was established that the occupational health and safety aspects that were considered most important to employees included making sure that the work environment is had protective gears as employees work as well as assessing the hazards that can cause accidents and injuries and eradicating them. The interviewed managers indicated

that the occupational health and safety measures that they had put in place to ensure that the safety of employees is guaranteed at all-time included face masks, aprons, dust coats, air conditioners, proper lighting in the work place and removal of obstacles in the walk ways. One manager said that;

> *"We have face masks, aprons and dust coats. We have fixed air conditions to make since there is air circulation."*

Some of the Occupational Health and Safety challenges faced by the companies as cited by the interviewees included experiences respiratory diseases, skin problems and allergies, accidents such as falling causing hands and legs injuries and spinal injuries. These challenges were cited to cause high employee turnover and many cases of absenteeism and sick leaves. One of the interviewed key informant indicated that;

> *"Employees sometimes fail to take health and safety measures, and end up suffering from back pains, respiratory problems, skin problems and allergies."*

From the interviews, the study sought to establish how occupational health and safety aspects affect employee productivity. The study established that when proper occupational health and safety measures are put in place, employees were able to work for the hours expected, achieve the goals of the company, and be present through put the year. The managers of the other hand said that if the occupational health and safety measures are not put in place, the companies suffered from absenteeism, loss of working hours, unfinished work-errors and expectations not met and the company use its profit to pay hospital bills for those who experience accidents. In respect to this, one of the respondent said that;

> *"When employees suffer from accidents or sickness, the employees are absent thus lost working hours and the company use its profit to pay hospital bills for those who experience accidents"*

4.5.2 Work- related Stress

The second objective of the study sought to find out the effects of work- related stress on employees' productivity in maize flour processing companies in Nakuru West Sub-County,

Nakuru County, Kenya. In measuring work-related stress at workplace, the study examined the following aspects; concentration while working, Job dissatisfaction, employee (colleague) absenteeism, enthusiasm (motivation) at work, sleeping at work during working hours and Sick leaves or off days. Other aspects also considered in measuring this variable included anxiety at workplace, relationship with other employees, job resignation or quitting and commitment of errors or mistakes at job place. The descriptive statistics in regard to the variable are presented in Table 4.11.

Table 4.11: Descriptive Statistics on work-related Stress in Workplace

Statement	Never	Rarely	Sometimes	Usually	Always	Total	
	F %	F %	F %	F %	F %	Mean	Std. Dev.
Poor concentration while working	2 3.7%	7 13.0%	19 35.2%	21 38.9%	5 9.3%	3.37	0.958
Job dissatisfaction	0 0.0%	9 16.7%	21 38.9%	19 35.2%	5 9.3%	3.37	0.875
Employee (colleague) absenteeism	0 0.0%	2 3.6%	26 46.4%	25 44.6%	3 5.4%	3.52	0.660
Lack of enthusiasm (motivation) at work	4 7.1%	3 5.4%	25 44.6%	19 33.9%	5 8.9%	3.32	0.974
Sleeping at work during working hours	18 32.1%	25 44.6%	12 21.4%	1 1.8%	0 0.0%	1.93	0.783
Sick leaves or off days	0 0.0%	2 3.6%	24 42.9%	26 46.4%	4 7.1%	3.57	0.684
Anxiety at workplace	0 0.0%	5 8.9%	28 50.0%	18 32.1%	5 8.9%	3.41	0.781
Poor relationship with other employees	0 0.0%	18 32.1%	32 57.1%	4 7.1%	2 3.6%	2.82	0.716
Job resignation or quitting	0 0.0%	13 23.2%	16 28.6%	19 33.9%	8 14.3%	3.39	1.003
Commitment of errors or mistakes at job place	1 1.8%	2 3.6%	35 62.5%	13 23.2%	5 8.9%	3.34	0.769
Composite Scores						3.20	0.820

The study established that 35.2% of the employees sometimes had a poor concentration while working and on the other hand majority of them (38.9%) usually had poor concentration at work. A mean score of 3.37 was achieved in rating this metric which indicates that on average the respondents usually had poor concentration while working. This is therefore an indicator of work-related stress among the employees at the maize flour milling companies. The employees were in consensus in rating this metric as evidenced by a

standard deviation of 0.958. This is in line to Kar and Mishra (2016) who noted that work-related challenges faced most of employees that this reduced their productivity since most of them had poor concentration at work place due to their pressing issues.

In regard to whether employees slept during working hours, there was consensus among the employees that they rarely (44.6%) slept during working hours with 32.1% indicating that they never slept at all during working hours. None of the employees indicated that they usually slept during working hours. This could be due to strict supervision by senior or management staff. Again the working environment may not be conducive in doing so due to noises from mills. This is further evidenced by a mean score of 1.93 and a standard deviation of 0.783. This differs with the findings by Akther, Akter, and Uddin (2017) who noted that employees had mischievous behaviors at work place such as sleeping at work place when the supervisors were not around or even pretending to be working but in real sense they were not. However, Williams, Grajales, and Kurkiewicz (2015) noted that due to supervision, employees may be productive but against their motivation or will.

The study also sought to find out the frequency in which the employees committed mistakes or errors in their duties. In this regard, the study found that on average, the employees usually committed mistakes and errors in their workplace. This is supported by a man score of 3.34 that was achieved on this metric. In addition, it was found that majority (62.5%) of the respondents sometimes committed mistakes in their work place with 23.2% indicate that they usually made errors in their working. standard A deviation of 0.768 achieve on this metric indicates that the respondents' feedback was in concurrent. Massoudi and Hamdi (2017) assert that work-related challenges among employees results to employee unproductiveness and inefficiencies.

Focusing on the composite scores, work-related stress obtained a composite mean score of 3.20 and a composite standard deviation of 0.820. This indicates that the respondents were on average in consensus in rating that they sometimes experienced work-related stress in diverse ways in their workplace. Most of high rated indicators of work-related stress included employee (colleague) absenteeism, sick leaves or off days and anxiety at workplace. Sleeping at work during working hours and poor relationship with other

employees were among the least rated indicators of work-related stress among employees at maize flour milling companies in Nakuru West Sub-County. The challenges were also cited on diverse studies which is an indication of the challenges of employees in battling with work-related stress issues (Akther et al., 2017; Fitzgerald & Danner, 2016; Musyoka et al., 2016; Rafique et al., 2017; Ramya, 2017). This implies that sound decisions needs to be taken in order to reverse the trend (Ezeamama, 2019; Hadi & Manaf, 2016; Hanc, 2019; Massoudi & Hamdi, 2017; Sabir, Akhtar, Bukhari, Nasir, & Ahmed, 2016).

From the conducted interviews, most of the managers and supervisor indicated that some employees and especially junior staff were depressed, they were angry and fearful. These work-related stress challenges were evident in the way the employees related with the other employees and through headaches while others seem absent minded. One of the interviewees indicated that;

> *"Some employees seem depressed due to broken work relationships and absent minded due to the noise by machines which end up causing headaches"*

Some of the indicators of work-related stress among the employees as noted by the interviewed key informants were depression, mood changes, anger, anxiety, fear, broken relationships, headaches, ulcers, unfinished work, unhappiness, accidents, product errors, employee's shouting to one another and employees do not meet their targets. One of the respondents said that;

> *"Depression, mood changes, anxiety, fear, broken work relationships, headaches, accidents, product errors, employees do not meet the target and anger."*

Some of the causes of work-related stress among the employees were noted to be broken work relationships, noise of the grinding machine, machine breakdown, unfinished work, much work, lack of motivation from managers and personal problems. The following excerpt was quoted;

> *"Broken work relationships, noise of the grinding machine, machine breakdown, unfinished work"*

From the interviews, the study sought to find out how work-related stress among the employees affected their productivity. Most indicated that work-related stress led to products errors, unfinished work, and slow pace of working, absenteeism, lack of self-motivation and emotional change and reckless behaviors. One of them asserted that;

> *"Products errors, unfinished work, slow as they work, absenteeism, lack of self-motivation."*

4.5.3 Ergonomics in Workplace

The third objective of the study sought to establish the effects of Ergonomics on employees' productivity in maize flour processing companies in Nakuru West Sub-County, Nakuru County, Kenya. Ergonomics was measured in terms of; standing in one working position the whole day, breakdown of machines while working, poor distribution of work to employees, loading and off-loading goods manually, movement from one work department (place) to another, poor (or lack of) servicing of machines, long working hours, difficulties in operating machines and poor ventilation or lighting in work place. Table 4.12 shows the frequencies, mean scores and standard deviations of the Ergonomics.

Table 4.12: Descriptive Statistics on Ergonomics in Workplace

Statement	Never	Rarely	Sometimes	Usually	Always	Total	
	F %	F %	F %	F %	F %	Mean	Std. Dev.
Standing in one working position the whole day	0 0.0%	0 0.0%	11 19.6%	28 50.0%	17 30.4%	4.11	0.705
Breakdown of machines while working	0 0.0%	5 8.9%	44 78.6%	4 7.1%	3 5.4%	3.09	0.611
Poor distribution of work to employees	0 0.0%	7 12.5%	35 62.5%	12 21.4%	2 3.6%	3.16	0.682
Loading and off-loading goods manually	0 0.0%	3 5.4%	4 7.1%	20 35.7%	29 51.8%	4.34	0.837
Movement from one work department (place) to another	1 1.8%	3 5.4%	42 75.0%	8 14.3%	2 3.6%	3.12	0.634
Poor (or lack of) servicing of machines	0 0.0%	5 9.1%	45 81.8%	5 9.1%	0 0.0%	3.00	0.430
Long working hours	0 0.0%	2 3.6%	6 10.7%	15 26.8%	33 58.9%	4.41	0.826
Difficulties in operating machines	0 0.0%	8 14.3%	34 60.7%	10 17.9%	4 7.1%	3.18	0.765
Poor ventilation or lighting in work place	0 0.0%	5 8.9%	6 10.7%	18 32.1%	27 48.2%	4.20	0.961
Composite Scores						**3.62**	**0.716**

The study revealed that majority (50.0%) of the employees usually stood in one working position the whole day while 30.4% of them indicated that they always stood in one working position the entire day. None of the employees indicated that they never or rarely stood in one working position the whole day. A mean score of 4.11 was achieved in respect to this metric and therefore implying that on average the employees stood in one working position the whole day. This therefore implied that the work ergonomics were not favourable for employees. In rating this metric, the study revealed that there was a consensus among the

respondents as evidenced by a standard deviation of 0.705. In line to this, Gitonga & Gachunga (2015) noted that working conditions to a large extent affected the productivity of employees. The researchers noted that working at one station for long or working while standing reduced the productivity of the employees.

In respect to movement from one work department (place) to another, the study revealed that majority of the respondents were required to frequently move from one department or one place to another. Three-quarter (75.0%) of the employees agreed that they were sometimes required to move from one department to another. A mean score of 3.12 was achieved in rating the frequency of movement from one place or from one department to another. This implied that on average the respondents tended to agree that they were sometimes required to make these movements. Ravindran (2019) noted that most of movement of employees in the company from one place to another reduces the productive time of the employees and recommended job specialization and division of labor to avoid unnecessary movements and increase employee productivity.

The study further sought to establish whether employees worked for long hours and in which this study found that 58.9% of the respondents always worked for long hours without a rest while 26.8% of them indicated that they were usually required to work for long hours. This is further supported by a mean score of 4.41 which in this respect implied that on average the employees always worked for long hours. This metric elicited common responses as shown by a standard deviation of 0.826. These implied employees were faced with negative ergonomic factors in their working place. In line to this Davidson (2018) established that employees worked for long hours and the compensation was not in line with the overtime offered by the employees. Ramya (2017) noted that long working hours were associated to poor productivity among the employees.

The study further noted that there was poor ventilation or lighting in work place as cited by a majority of the respondents at a frequency of 48.2% indicating that this was the case always and 32.1% of them indicating that this occurred on usual basis. A mean score of 4.20 was achieved and thus implying that on average the respondents tended to agree that always they worked in places with poor lighting or ventilation. It was also noted that were was a small spread of responses among the employees in rating this aspect that therefore implying

a common occurrence in the work place in term of poor ventilation and lighting. Ergonomic factors such as good ventilation and lighting among other factors were seen to improve the productivity and efficiency of the employees to a large extent and thus concurrent to the current study (Hanaysha, 2016).

Looking at the composite scores, the study revealed that on average the respondents tended to agree that they usually faced ergonomic problems in their work place. This is due to a composite mean score of 3.62 and a composite standard deviation of 0.716. The study also noted that standing in one working position the whole day, loading and off-loading goods manually, long working hours and poor ventilation or lighting in work place were the most frequently experienced ergonomic problems among the maize flour processing companies employees. It was also noted that all employees were in consensus in rating all aspect of ergonomics in the maize flour processing companies in Nakuru West Sub-County. Several studies have seen the importance of having good ergonomics in work place such as work conditions and working facilities (Gitonga & Gachunga, 2015; Massoudi & Hamdi, 2017; Oluwaseun et al., 2017; Pickson et al., 2017; Ravindran, 2019). Some of the advantages of ergonomics included high employee productivity, low employee turnover, high employee motivation and improvement of employee safety among others (Alem et al., 2018; Ezeamama, 2019; Hanaysha, 2016; Massoudi & Hamdi, 2017; Ramya, 2017).

From the interviews, managers indicated the most important ergonomics that were considered in the maize flour processing companies as follows; work stations, work positions, working tools, the design of workplace, manual handling and design of machines. Some of the challenges the companies faced in ensuring employee efficiency in their working environment included employees standing in one position for long hours, lack of enough working space, lack of machine servicing on regular basis, manual offloading of goods, lack of quality work tools and machine breakdown while working. In respect to this, one of the interviewed persons indicated that;

> *"The factory does not have enough space, we are not able to service our machines frequently and our revenues are not enough to buy quality work tools."*

The study further sought to establish the effects of good working conditions and environment on the productivity of employees through the interviews. Some of the cited

effects included that employees were able to work efficiently, there was minimum or no injuries and accidents, employees were able to finish their work in time and employees made few errors on the products. One of the asserted that;

> *"Workers finish their work on time and since workers were not sick, they were able to produce more products with few errors on the products"*

4.5.4 Employee Productivity

The dependent variable against which all the independent variables were evaluated was employee productivity. Employee productivity was measured in terms of employee's ability to undertake work in an organized manner while identifying priorities, effectiveness with customers, and participation in evaluation exercise, punctuality in their duties, ability to mentor other employees and ability to meet their set work targets (goals). The study further measured employee productivity in terms of ability to accomplish their tasks on time, adherence to moral principles of work, ability to embrace teamwork (team player), hardwork to complete an assignment and acquisition of required competencies for their work. Table 4.12 shows the descriptive results for the employee productivity.

Table 4.13: Descriptive Statistics on Employee Productivity

Statement	Never	Rarely	Sometimes	Usually	Always	Total	
	F %	F %	F %	F %	F %	Mean	Std. Dev.
I have the ability to undertake work in an organized manner while identifying priorities	0 0.0%	0 0.0%	18 32.7%	22 40.0%	15 27.3%	3.95	0.780
I communicate effectively with customers	0 0.0%	0 0.0%	9 16.1%	34 60.7%	13 23.2%	4.07	0.628
I participate in evaluation exercise	7 12.5%	14 25.0%	8 14.3%	25 44.6%	2 3.6%	3.02	1.168
I am punctual in my duty	0 0.0%	0 0.0%	1 1.8%	33 58.9%	22 39.3%	4.37	0.524
I have the ability to mentor other employees	0 0.0%	3 5.4%	18 32.1%	27 48.2%	8 14.3%	3.71	0.780
I meet my set work targets (goals)	0 0.0%	1 1.8%	13 23.2%	30 53.6%	12 21.4%	3.95	0.724
I accomplish my tasks on time	0 0.0%	3 5.4%	15 26.8%	25 44.6%	13 23.2%	3.86	0.841
I adhere to moral principles of work	0 0.0%	0 0.0%	12 21.4%	27 48.2%	17 30.4%	4.09	0.721
I embrace teamwork (team player)	0 0.0%	1 1.8%	20 35.7%	18 32.1%	17 30.4%	3.91	0.859
I put extra effort (hardwork) to complete an assignment	0 0.0%	0 0.0%	4 7.1%	18 32.1%	34 60.7%	4.54	0.631
I have the required competencies for my job	0 0.0%	0 0.0%	7 12.5%	18 32.1%	31 55.4%	4.43	0.710
Composite Scores						**3.99**	**0.761**

The study revealed that 32.7% of the employees sometimes undertook work in an organized manner while identifying priorities while this was the usual case by majority of the respondents at a frequency of 40.0%. The study also noted that 27.3% of the employees always undertook work in an organized manner while identifying priorities. A mean score of 3.95 and a standard deviation of 0.780 were achieved by the study and therefore implying that there was consensus among the respondents that employees usually undertook work in an organized manner while identifying priorities. This is a positive aspect of employee productivity. These results differ with those by Sarode and Shirsath (2015) who noted that most employees were not able to organize their work in most urgent and important tasks in their assignments and this reduced the productivity of the employees.

The study also noted that majority of the employees (44.6%) usually participated in evaluation exercises while 25.0% of the employees rarely participated in the evaluation exercise. This shows that there was a divergence of response from the different employees sampled in the study and therefore an indication of low consensus among the respondents. The divergent opinions may be due to lack of the evaluation programs in either of the companies or certain cadre of employees. This is evidently shown by a standard deviation of 1.168 which is more than 1.000. In view of this variable the study noted that on average employees sometimes participated in the evaluation exercises. Appraisal systems were seen to improve the productivity of employees and it was noted that the appraisal systems had challenges such as unfair rating and lack of employee participation in designing the measures of productivity and job targets (Osborne, 2017; Sarode & Shirsath, 2015; Sultan & Zafar, 2016).

A mean score of 3.95 was achieved on the metric on whether the employees were able to meet their job goals or targets. This therefore implied that on average the employees were usually able to meet their targets in their day to day duties in the companies they were working for. This is further evidenced by majority (53.6%) of the respondents indicating that they usually met their targets. None of them indicated a total failure in meeting the set work targets. A standard deviation of 0.724 achieved in regard to the ability to meet work targets implied that there was no much variance the responses given by the employees on the metric. This is a positive attributes of employee performance. However, Hanaysha

(2016) noted that many employees were unable to meet their job targets and this resulted to low employee productivity.

The study also found that most of the employees always put extra effort (hard work) to complete an assignment as evidenced by 60.7% of the respondents. The study also noted 32.1% of the respondents usually put extra effort (hard work) to complete an assignment. This is high degree of employee productivity which is also evidenced by a mean score of 4.54. This implied on average the respondents tended to agree that they always put extra effort (hard work) to complete an assignment. In addition, the study revealed that the respondents were in consensus in rating this metric as shown by a standard deviation of less than 1.00 (standard deviation=0.631). These results are in line with those by (Okech & Njururi, 2016)who noted that most employees were hardworking and were able to meet their job targets in time with few exceptions of delays by few employees.

A composite mean score of 3.99 and standard deviation 0.761 were achieved in respect to the statements used to measure the level of employee productivity. This therefore implied that on average employees were usually productive in their duties and that there was consensus in rating the various metrics of employee productivity. Punctuality in the duties of an employee, ability to put extra effort (hard work) to complete an assignment and possession of the required competencies for their job were the most highly rated aspects of employee productivity. Most of the employees never lacked key competencies in their duties at the milling companies. In respect to employee productivity, most studies noted divergence of views with the ones established by this study (Ezeamama, 2019; Hanaysha, 2016; Hatam et al., 2015; Massoudi & Hamdi, 2017; Okech & Njururi, 2016; Sabir et al., 2016). This could be due to employee trying to impress that they are always productive against their reality. However, the study interviewed managers and supervisors to ascertain this and achieve data triangulation requirements.

4.6 Correlational Analysis

The study further sought to establish the effect of occupational health and safety, psychological stress, and ergonomics on employees' productivity in maize flour processing companies in Nakuru West Sub-County, Nakuru County, Kenya. This was established through the use of Pearson correlations. However for the Likert type categorical data to be used for Pearson correlations, it must be in scale. To transform the categorical data to scale, the study calculated the mean scores of the responses given by each respondent per variable. In respect to this, the study obtained a single scale value ranging between 1 through 5 for each variable of the study. The four variables measured as scale were hence fit for correlational analysis and the correlational analysis of the study variables is as shown in Table 4.14.

Table 4.14: Pearson Correlations

Statement		Occupation Health and Safety	Work-related Stress	Ergonomics	Employee Productivity
Occupational Health and Safety	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	56			
Work-related Stress	Pearson Correlation	-0.292*	1		
	Sig. (2-tailed)	0.029			
	N	56	56		
Ergonomics	Pearson Correlation	0.418**	-0.372**	1	
	Sig. (2-tailed)	0.001	0.005		
	N	56	56	56	
Employee Productivity	Pearson Correlation	0.496**	-0.521**	0.379**	1
	Sig. (2-tailed)	0.000	.000	0.004	
	N	56	56	56	56

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

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

Correlation measures strength of a relationship, its direction and significance. A correlation coefficient ranging between |0.1| and |0.3| implies a weak relationship while a correlation coefficient ranging between |0.4| and |0.6| implies a moderate relationship. On the other hand, a correlation coefficient ranging between |0.7| and |0.9| implies a strong relation. The author added that a correlation coefficient of zero indicates a no relationship while a correlation coefficient more of |1| implies a perfect relationship. A negative correlation coefficient implies an inverse relationship while a positive correlation coefficient implies a direct relationship between the two measured variables. In regard to significance, Leung (2016) asserts that $p<0.05$ implies that the relationship is significant while $p>0.05$ implies

that the relationship is not significant. Significance of a relationship is an indication that the effect of relationship does not occur by chance (Kearney, 2016).

Ergonomics factors were reversed coded since the stated were framed in negative before the correlation analysis was done. According to Table 15, the study established that there was a negative and weak relationship between occupational health and safety and work-related stress of employees which as significant at 5% significance level. This is due to a correlation coefficient of -0.292 and p-values less than 0.05. This implied that an increase in occupational health and safety decreases the level of work-related stress and vice versa. These results were consistent to those by Kaynak et al., (2016) who noted good occupational health and safety measures reduced work-related stress of employees and a significant relationship established in this regard.

In respect to ergonomics, the study established that there was a positive and moderate significant relationship between occupational health and safety and ergonomics of workplace of the maize flour processing companies' employees. This is due to a correlation coefficient of 0.418 and $p<0.05$. A correlation coefficient of -0.372 was obtained between work-related stress and ergonomics. This implied that there was a negative and weak relationship between the two variables. This further indicates that an increase in ergonomics would lead to a decrease in work-related stress and the vice versa. These results were similar to those by Oluwaseun et al. (2017) who noted that good working conditions and facilities improved the work-related wellbeing of employees and in this aspect a significant relationship was established.

Focusing on the dependent variable of the study, it was revealed that occupational health and safety affected the employee productivity. This is due to a correlation coefficient of 0.496 between occupational health and safety and employee productivity. This therefore implied that there was a moderate and positive relationship between occupational health and safety and employee productivity which as significant at 5% significance level ($P<0.05$). An increase in occupational health and safety increases the employee productivity and the vice versa. This concurs to the findings of Saha (2016) who established that there was a significant relationship between occupational health and safety measures and the

productivity of employees. Saha (2016) found that good safety measures for employees improved their productivity due to less accidents and sick leaves and high employee turnover.

The study further revealed that there was a negative and moderate relationship between the work-related stress and the employee productivity, which was significant at 5% significance level. This is due to a correlation coefficient of -0.521 and p-value less than 0.05. The results therefore indicated that work-related stress of employees affected their performance negatively. This further indicates that when work-related stress increases, the employee productivity decreases and the vice versa. Al-homayan et al. (2015) also noted that there was a negative relationship between stress and the employee productivity. In respect to this, Al-homayan et al. (2015) observed that lack of stress among employees improved their productivity.

A correlation coefficient of 0.379 was obtained in respect to the relationship between ergonomics and the productivity of employees at the maize flour milling companies in Nakuru Wets Sub-County. The achieved correlation coefficient indicates that there was a positive and weak relationship between the ergonomics at work place and the productivity of employees, which was significant at 5% significance level. In respect to this, the study established that ergonomics at work place affected employee productivity positively. This further indicates that an improvement of work place conditions and facilities improves the employee productivity and the vice versa. These results are consistent to those by Amin, Mohamad, Mohd and Omar (2017) who found that ergonomics of workplace significantly improved the productivity of employees in diverse ways.

4.7 Regression Analysis

The study further sought to establish whether the independent variables predicted the dependent variable. In respect to this, the study regressed the occupational health and safety, workplace related stress and ergonomics against the productivity of employees at the maize flour milling companies in Nakuru Wets Sub-County. Table 4.15 shows the summary for the regression model.

Table 4.15: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.638[a]	0.407	0.373	0.40077

a. Predictors: (Constant), Ergonomics, Work-Related Stress, Occupation Health and Safety

The study established that there was a moderate relationship between the independent variables of the study with the dependent variables. This was due to an R value of 0.638. It was further established that 40.7% of the variation in the level of employee productivity was due to changes in the dependent variables of the study. This is an indication that occupational health and safety, psychological stress and ergonomics accounted for 40.7% of the employee productivity. A small standard error of estimate of 0.40077 indicated that the regression model was accuracy in its estimation. The study further sought to establish the significance of the model as a whole and whose results are shown in ANOVA Table 4.16.

Table 4.16: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.737	3	1.912	11.906	0.000[b]
	Residual	8.352	52	0.161		
	Total	14.089	55			

a. Dependent Variable: Employee Productivity

b. Predictors: (Constant), Ergonomics, work-related Stress, Occupation Health and Safety

The study revealed that the regression model as a whole was significant it its prediction due to a F(3,55)=11.906 and a p-value less than 0.05. This therefore implied that the regression model provides a good fit for the data. The individual effects of each of the independent variables of the study was evaluated and the results shown in Table 4.17.

Table 4.17: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	4.849	0.691		7.018	0.000
Occupational Health and Safety	0.249	0.086	.346	2.902	0.005
Work- Related Stress	-0.366	0.111	-.386	-3.315	0.002
Ergonomic	0.208	0.146	.290	1.425	0.006

a. Dependent Variable: Employee Productivity

The study established that all the independent variables of the study had a significant effect on the employee productivity due to p-values less than 0.05 on all the variables. The beta coefficients were used to answer the research questions of the study. The first research question asked; what is the effect of occupational health and safety on employees' productivity in maize flour processing companies in Nakuru West sub-county, Nakuru County, Kenya? In respect to this, the study established a beta coefficient of 0.249 on occupational health and safety. This therefore implied that a unit increase in occupational health and safety results into 0.249 units increase in the employee productivity with other factors held constant. This concurs to the findings of Saha, (2016) who established that there was a significant relationship between occupational health and safety measures and the productivity of employees.

The second research question asked; what is the effect of psychological stress on employees' productivity in maize flour processing companies in Nakuru West Sub-County, Nakuru County, Kenya? In response to this, the study established a beta coefficient of -0.366, which implied that a unit increase in work-related stress, resulted to 0.366 units decrease in the employee productivity. Al-homayan et al. (2015) also noted that there was a negative relationship between psychological stress and the employee productivity. In respect to this, Al-homayan et al. (2015) observed that lack of stress among employees improved their productivity.

The third research question of the study asked; what is the effect of ergonomics on employees' productivity in maize flour processing companies in Nakuru West Sub-County, Nakuru County, Kenya? A beta coefficient of 0.208 was achieved in regard to regression between ergonomics and employee productivity. In answer to the research question, the study established that a unit increase in ergonomics of work place resulted to increase in 0.208 units in productivity of employees. These results are consistent to those by Amin, Mohamad, Mohd & Omar (2017) who found that ergonomics of workplace significantly improved the productivity of employees in diverse ways.

The results implied that work-related stress had the greatest effect on employee productivity, followed by occupational health and safety and lastly ergonomic aspects of workplace. The following regression equation was formulated from the regression analysis;

Employee Productivity = $4.849 + 0.249X_1 – 0.366X_2 + 0.208X_3 + 0.40077$

Where;

X_1= Occupational Health and Safety

X_2= Work- Related Stress

X_3=Ergonomics

However, this rank is different according to the key informants who were interviewed. From the interviews, the study sought to find out the most important contributor of employee productivity among occupational health and safety, work-related stress, and ergonomics. Occupational health and safety was cited by all key informants of the study as the biggest contributor to employee productivity. Some of the extracted excerpts are as follows;

> *"The important contributor is occupational health and safety because when the employees are healthy and there is safety at the work place they are able to work and meet the company target thus profit; when they are healthy and safe they are present and therefore working hours are not lost; they are happy and work in team well."*

4.8 Chapter Summary

The chapter has indicated that the response rate for the study was adequate and that the research tools were reliable for data collection. This chapter gave the background findings of the respondents that included gender of the respondents, education level, age, company working for, department, position at work and finally the work experience of the respondents. The chapter has shown that on average the occupational health and safety measures were rarely put in place. The chapter has also showed that work-related stress was usually felt by majority of the employees at the maize flour processing companies in Nakuru West Sub-County. Ergonomic problems were shown to be common in the maize flour processing companies sampled by the study. The chapter presents all independent variables as significant correlates and predictors of employee productivity. The chapter also showed that work- related stress had the greatest effect on employee productivity, followed by occupational health and safety and lastly ergonomic aspects of workplace.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents summary of the data findings, conclusions and recommendations for policy making as well as suggestions for further studies.

5.2 Summary of Findings

The major findings of the study are presented in this section according to the objectives of the study.

5.2.1 Occupational Health and Safety and Employee Productivity

The first objective examined the effects of occupational health and safety on employees' productivity in maize flour processing companies in Nakuru West Sub-County, Nakuru County, Kenya. The study established that most of the occupational health and safety measures were not fully provided and therefore implying a negative aspect in terms of the health and safety of employees in the maize milling companies. These assertions are also supported by the composite mean score of 2.83 and a composite standard deviation of 0.942.

Focusing on the dependent variable of the study, it was revealed that occupational health and safety affected the employees' productivity. This is due to a correlation coefficient of 0.496 between occupational health and safety and employee productivity. This therefore implied that there was a moderate and positive relationship between occupational health and safety and employee productivity which as significant at 5% significance level ($P<0.05$). The first research question asked; what is the effect of Occupational health and safety on employees' productivity in maize flour processing companies in Nakuru West sub-county, Nakuru County, Kenya? In respect to this, the study established a beta coefficient of 0.249 on occupational health and safety. This therefore implied that a unit increase in occupational health and safety results into 0.249 units increase in the employee productivity with other factors held constant.

5.2.2 Work- Related Stress and Employee Productivity

The second objective of the study sought to find out the effects of work-related stress on employees' productivity in maize flour processing companies in Nakuru West Sub-County,

Nakuru County, Kenya. Focusing on the composite scores, work-related stress obtained a composite mean score of 3.20 and a composite standard deviation of 0.820. This indicates that the respondents were on average in consensus in rating that they sometimes experienced stress in diverse ways in their workplace.

The study further revealed that there was a negative and moderate relationship between the work-related stress and the employee productivity, which was significant at 5% significance level. This is due to a correlation coefficient of -0.521 and p-value less than 0.05. The results therefore indicated that work-related stress of employees affected their performance negatively. The second research question asked; what is the effect of work-related stress on employees' productivity in maize flour processing companies in Nakuru West Sub-County, Nakuru County, Kenya? In response to this, the study established a beta coefficient of -0.366, which implied that a unit increase in work-related stress resulted to 0.366 units decrease in the employee productivity.

5.2.3 Ergonomics and Employees' Productivity

The third objective of the study sought to establish the effects of Ergonomics on employees' productivity in maize flour processing companies in Nakuru West Sub-County, Nakuru County, Kenya. Looking at the composite scores, the study revealed that on average the respondents tended to agree that they usually faced ergonomic problems in their work place. This is due to a composite mean score of 3.62 and a composite standard deviation of 0.716. A correlation coefficient of 0.379 was obtained in respect to the relationship between ergonomics and the productivity of employees at the maize flour milling companies in Nakuru Wets Sub-County. The achieved correlation coefficient indicates that there was a positive and weak relationship between the ergonomics at work place and the productivity of employees, which was significant at 5% significance level.

The third research question of the study asked; what is the effect of ergonomics on employees' productivity in maize flour processing companies in Nakuru West Sub-County, Nakuru County, Kenya? A beta coefficient of 0.208 was achieved in regard to regression between ergonomics and employees' productivity. In answer to the research question, the

study established that a unit increase in ergonomics of work place resulted to increase in 0.208 units in productivity of employees.

5.3 Conclusion of the Study

5.3.1 Occupational Health and Safety

The study concluded that occupational health and safety affected the employees' productivity. This conclusion was based on positive and significant relationship established between the occupational health and safety and employees' productivity

5.3.2 Work-Related Stress

The study concluded that work-related stress affected the productivity of employees with increase in work-related stress leading to reduced employees' productivity. The conclusion was based on negative and significant relationship between psychosocial stress and employees' productivity.

5.3.3 Ergonomics

The study concluded that ergonomic aspects of workplace affected the productivity of employees. The conclusion was based on the positive and significant relationship between the ergonomics and employees' productivity.

5.3.4 Employee Productivity

The study concluded that stress had the greatest effect on employees' productivity, followed by occupational health and safety and lastly ergonomic aspects of workplace. This conclusion was based on the significant beta coefficients of the regression model. This conforms to employee productivity model used in this study.

5.4 Recommendations of the Study

5.4.1 Occupational Health and Safety

The study recommends companies to train their employees on health and safety aspects so that the employees can identify hazards and adopt safe and healthy working practices. This could avoid the pain, anguish and financial costs that accidents and ill health cause to the employee productivity and company performance in the long run. This can be done through setting health and safety committees in the company also as well involving employees in health and safety matters of the company. These aspects were established to be rarely done in the sampled companies.

5.4.2 Work-related Stress

The study further recommends companies to motivate their employees through creation of optimistic work environment that gives employees hope that they can achieve their own goals. This would lead to solving challenges of job dissatisfaction, employee absenteeism, high employee turnover and lack of enthusiasm at work as established in the current study. In implementation of this recommendation, the work-related wellbeing of employees would improve and thus attaining high level of productivity.

5.4.3 Ergonomics

The study also makes a recommendations to companies to improve their machines and working conditions of employees such as improving the comfortability of working stations, reduction of working hours, using machines to load and off-load goods and servicing their machines. This would improve the efficiency of the employees and thus improving the productivity of the employees and hence that of the company.

5.3.4 Employee Productivity

In policy making in maize flour processing companies, the study recommends that the management to prioritize the implementation of policies relating to work-related wellbeing of the employees for this was established to have the greatest effect on employee productivity. Other policies related to the occupational health and safety and to ergonomics should follow in that order for the companies to realize optimal employee productivity.

5.5 Suggestion for Further Studies

A further study can be done on the influence of employment contracts and performance appraisals on the employee performance. A further study can be done to establish the effect of employee motivation on job satisfaction in different sectors of economy. Since the current study was done in one county, a conclusive finding can be reached on the effects of workplace health and safety precautions on employees' productivity by replacing the study in other counties in Kenya.

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APPENDICES

APPENDIX I: QUESTIONNAIRE

Introduction: This questionnaires sought to gather data in order to examine the effects of occupational health and safety, psychological stress, ergonomics on employees' productivity in maize flour processing companies in Nakuru West Sub-County, Nakuru County, Kenya. The data collected from this study was treated with utmost confidentiality and therefore do not write any identifying details.

Instructions: Please provide the following regarding your position in the organization by placing tick [√] in the appropriate block.

SECTION A: BACKGROUND INFORMATION

NO	QUESTION	CODING
1.	Gender of respondent	Male ……. (1) Female……(2)
2.	Company name	Crater flour mills……..(1) Mombasa maize millers(Nakuru).(2)
3.	Work department	Finance & Accounting……(1) ICT……..(2) Quality & Assurance…….(3) Production……..(4) Transport…… (5) Marketing…….. (6)
4.	Management level	Management Staff……...(1) Senior Staff…….....(2) Junior Staff……(3)
5.	Working Experience	0-3…….(1) 4-7……..(2) More than 7……..(3)

6.	Education level	No education…….(1) Primary……..(2) Secondary……..(3) Tertiary ……(4)
7.	Age	Below 25……..(1) 25 - 34…….(2) 35 - 44……(3) 45 - 55……(4) Above 55 years……..(5)

SECTION B: OCCUPATIONAL HEALTH AND SAFETY

Instructions: Please indicate the frequency to which you perceive that the following statements apply to your company by indicating with a [√] in the appropriate box. Use the following Likert scale whereby; 5-Always, 4-Usually, 3-Sometimes, 2-Rarely and 1-Never.

NO	Statement	5	4	3	2	1
8.	The company provides protective devices while working					
9.	There is a health and safety policy in the company					
10.	The regulations on health and safety practice at company's workplace are communicated to employees					
11.	There are health and safety committees in the company					
12.	The company trains employees on health and safety aspects					
13.	The company officials are committed to health and safety of the employees					
14.	The company handles health and safety matters					
15.	The company provides employees with a medical cover					
16.	The company involves employees in health and safety matters					
17.	The organization provides welfare facilities for members of staff					

SECTION C: WORK- RELATED STRESS

Instructions: Please indicate the frequency to which you perceive that the following aspects apply to you by indicating with a [√] in the appropriate box. Use the following Likert scale whereby; 5-Always, 4-Usually, 3-Sometimes, 2-Rarely and 1-Never.

NO	Statement	5	4	3	2	1
18.	Poor concentration while working					
19.	Job dissatisfaction					
20.	Employee (colleague) absenteeism					
21.	Lack of enthusiasm (motivation) at work					
22.	Sleeping at work during working hours					
23.	Sick leaves or off days					
24.	Anxiety at workplace					
25.	Poor relationship with other employees					
26.	Job resignation or quitting					
27.	Commitment of errors or mistakes at job place					

SECTION D: ERGONOMIC

Instructions: Please indicate the frequency to which you perceive that the following aspects apply to your company by indicating with a [√] in the appropriate box. Use the following Likert scale whereby; 5-Always, 4-Usually, 3-Sometimes, 2-Rarely and 1-Never.

NO	Statement	5	4	3	2	1
28.	Standing in one working position the whole day					
29.	Breakdown of machines while working					
30.	Poor distribution of work to employees					
31.	Loading and off-loading goods manually					
32.	Movement from one work department (place) to another					
33.	Poor (or lack of) servicing of machines					
34.	Long working hours					
35.	Difficulties in operating machines					
36.	Poor ventilation or lighting in work place					

SECTION E: EMPLOYEE PRODUCTIVITY

Instructions: Please indicate the frequency to which you perceive that the following statements apply to you by indicating with a [√] in the appropriate box. Use the following Likert scale whereby; 5-Always, 4-Usually, 3-Sometimes, 2-Rarely and 1-Never.

NO	Statement	5	4	3	2	1
37.	I have the ability to undertake work in an organized manner while identifying priorities					
38.	I communicate effectively with customers					
39.	I participate in evaluation exercise					
40.	I am punctual in my duty					
41.	I have the ability to mentor other employees					
42.	I meet my set work targets (goals)					
43.	I accomplish my tasks on time					
44.	I adhere to moral principles of work					
45.	I embrace teamwork (team player**)**					
46.	I put extra effort (hardwork) to complete an assignment					
47.	I have the required competencies for my job					

The End

Thank you for your feedback

APPENDIX II: INTERVIEW GUIDE

1. Occupational Health and Safety

i) Which Occupational Health and Safety aspects do you consider most important to your employees?

……

……

……...

ii) What Occupational Health and Safety measures have you put in place to ensure that the safety of employees is guaranteed at all times?

……

……

……...

iii) What Occupational Health and Safety challenges do you face in your company? Comment of its prevalence.

……

……

……

iv) How does Occupational Health and Safety aspects affect employee productivity?

……

……

……

2. Work-Related Stress

v) Comment on the prevalence of work-related stress among the employees in your company?

……

……

……

vi) What are some of the indicators of work-related stress among the employees in your company?

……

……

……

vii) What could be some of the causes of work-related stress among the employees in the company?

……

……

……

viii) How does work-related stress among the employees affect their productivity?

……

……

……

3. Ergonomics in work place

ix) Which ergonometric factors do you consider important in your company?

……

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……

x) What challenges do you face in ensuring employee efficiency in their working environment?

……

……

……

xi) What is the effect of good working conditions and environment on the productivity of employees in your company?

……

……

……

Conclusion:

Among occupational health and safety, work- stress, and ergonomics, which one do you rank as the most important contributor to employee productivity in your company? Give reason for your answer

……

……

……

Thank you for your feedback

APPENDEX III: INTRODUCTION LETTER

ST. PAUL'S UNIVERSITY

Private Bag 00217 LIMURU, KENYA
Email: office@spu.ac.ke
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27th January 2020

National Commission for Science and Technology,
P.O. BOX 30623-00100,
Nairobi.

Dear Sir/Madam,

Re: Recommendation for Loice Wanjeri Kabaki to conduct research.

This letter confirms the above named person is a second year student of the Master of Development Studies at St. Paul's University.

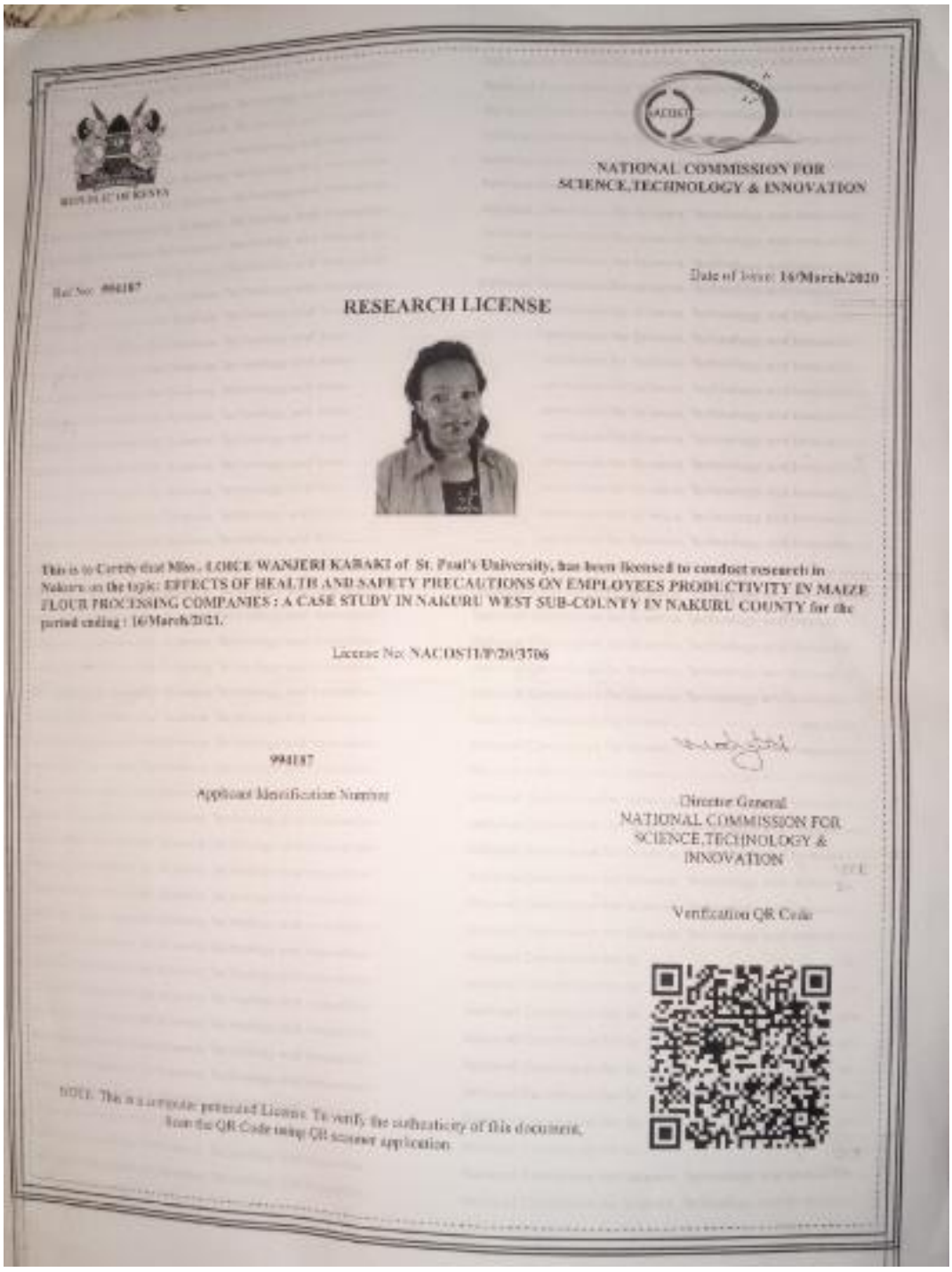
The second year consists of a major research work leading to a dissertation. The student's selected topic is *'Effects of workplace health and safety precautions on employees' productivity in Maize flour processing companies'.*

Kindly grant this student the required permit.

Yours Faithfully,

Dr. Sammy Githuku
Director, Postgraduate Studies

APPENDEX IV: RESEARCH PERMIT



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RESEARCH LICENSE

This is to Certify that Miss. LOICE WANJERI KABAKI of St. Paul's University, has been licensed to conduct research in Nakuru on the topic: EFFECTS OF HEALTH AND SAFETY PRECAUTIONS ON EMPLOYEES PRODUCTIVITY IN MAIZE FLOUR PROCESSING COMPANIES : A CASE STUDY IN NAKURU WEST SUB-COUNTY IN NAKURU COUNTY for the period ending : 16/March/2021.

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APPENDIX V: MAP OF THE STUDY AREA

