

**INFLUENCE OF CONFORMANCE TO CATERING PRACTICES ON FOOD  
HYGIENE AND SAFETY: A CASE STUDY OF NATIONAL YOUTH SERVICE,  
GILGIL, KENYA**

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## **DECLARATION**

### **Declaration by the candidate**

This thesis is my original work and has not been presented for conferment of a degree in any University or for any other award.

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## **DEDICATION**

This study is dedicated to my parents; my mother, Faith Njeri and my father, Henry Ndaramu, who gave me the foundation of something they never enjoyed in totality, education. Through them, I appreciate reading and lifelong learning. To my Dad and Mum, “thank you” for the support you gave me including hope and wisdom to carry on. Thank you for consistently reminding me that “the roots of education are bitter but the fruits are sweet”.

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## **ACRONYMS AND ABBREVIATIONS**

<b>ANSI:</b>	American National Standards Institute
<b>CDC:</b>	Centre for Disease Control
<b>CDCP:</b>	Centre for Disease Control and Prevention
<b>F&amp;B:</b>	Food and Beverage
<b>FAO:</b>	Food and Agricultural Organization
<b>HACCP:</b>	Hazard Analysis and Critical Control Point
<b>NACOSTI:</b>	National Commission of Science, Innovation and Technology
<b>NYS:</b>	National Youth Service
<b>SOPs:</b>	Standard Operating Procedures
<b>WHO:</b>	World Health Organization

## ABSTRACT

Successful implementation of Standard Operating Procedures (SPO) during food production and service require full cooperation, commitment and training of food managers and handlers. Application of Hazard Analysis and Critical Control Point (HACCP) in food handling and safety practices have the benefits of preserving the quality of food, prevention of contamination that could lead to food-borne illness and offers competitive advantage in the global trade to the organization. The goal of the study was therefore to investigate conformance of catering practices to the stipulated food hygiene and safety at National Youth Service, (NYS) Gilgil. The specific objectives were; to determine the implementation of standard operation procedures and catering policies on food hygiene and safety at NYS; to investigate the influence of food-handling practices on food hygiene and safety; and to assess the implementation of HACCP procedures. The study was anchored on the Theory of Food Poisoning which proposes that food poisoning is 100 % preventable by ensuring stringent adherence to hygienic food handling practices. A mixed methods research design was adopted since both qualitative and quantitative data was utilized. The target population comprised of 121 employees of catering department in National Youth Services using a census approach. Data was collected using a structured questionnaire and interview guide. The data was analysed using descriptive, inferential statistics and themes for qualitative data. The findings indicated that Standard Operating Procedures had a significant effect on food hygiene and safety; food-handling practices had an effect on food hygiene and safety and; there was significant but weak relationship between implementation of Hazard Analysis and Critical Control Point principles and food hygiene and safety. Coefficient on Standard Operating Procedures was  $\beta_1=0.227$ ,  $p=0.007<0.05$ , Food Handling Practices was  $\beta_2=0.227$ ,  $p=0.007<0.05$  and HACCP principles was  $\beta_3=0.235$ ,  $p=0.039<0.05$  and Catering and Food hygiene and safety Practices. The R<sup>2</sup> value is 78.4 % at confidence level 95 % and sig is  $0.000<0.05$ . The study established that the implementation of this policy is supported by the guidelines of various Standard Operating Procedures, (SOPs), which include appropriate written codes of practice, and identify standards to be met for purchase, storage, preparation, cooking/regeneration and service of food. The testing and recording of food temperatures throughout the food chain - food receipt through to the point of service is an essential part of the quality control of good, nutritious, safe food .A food control system HACCP system in National Youth Service should be applied throughout the food chain from the primary producer to the final consumer. Besides enhancing food hygiene and safety, other factors in applying HACCP include more effective use of resources and more timely response to food hygiene and safety problems. In addition, the application of the HACCP system aid inspection by food controls regulatory authorities and increasing student's confidence in food hygiene and safety. The study recommends that all food hygiene and safety and hygiene policies and procedures should be implemented by having in place, which includes a form of risk assessment based upon the Hazard Analysis and Critical Control Point or HACCP system, all foods with the exception of unprepared and uncut fruit and vegetables, sugar, wine salt, fresh bread must be date coded.

## **CHAPTER ONE**

### **INTRODUCTION**

This chapter is a discussion of the background of the study regarding global, regional, and local perspective of Influence on Conformance of catering practices to food hygiene and safety: The chapter also discusses the overview of catering practices This chapter covers the discussion on the statement of problem, research objectives, research questions, justification of the study, scope of the study, and possible limitations of the study

#### **1.1 Background of the Study**

Due to the changes over the years in mode of food production, delivery and storage, concerns have been raised on safety of consumed foods products and food-borne diseases (Yiannas, 2008). Aagaard (2016) reports that in earlier years food was simply done with little processing, whilst today the food system has evolved into an increasingly complex network interdependent on many businesses, sectors, and individuals In Kenya, where food business is the order of the day with different stages of production, processing and distribution in the entire value chain, adherence to satisfy relevant hygiene and regulations to maintain/control and enhance safety before and upon consumption is highly necessary (Al Busaidi & Jukes, 2015). Food protection has 'public benefit' aspects which needs appropriate public funding. Appropriate expenditure allocation for improvements in food protection needs county governments to consider the current risks and benefits for Foodborne Disease (FBD) enhanced public potential for risk assessment of food safety. However, owing to the restricted accessibility of evidence attributing clinical issues to individual factors and general health underreporting Hospital system grievances, welfare projections and foodborne (FBD) economic costs in Kenya occur only at the national level. With regard to transition, the lack of County-specific estimates is a barrier to the effective control policy FBD. - FBD. In this report, we merge recent national health burden estimates Diarrhoeal rates for calculating the

health and economic burdens of FBD are calculated by FBD from the World Health Organisation (WHO). Application of Hazard Analysis and Critical Control Point (Hazard Analysis and Critical Control Point, HACCP) principle in food production and service areas is a requirement especially in global trade (Soon, 2019). Successful implementation of the procedures based on the HACCP principles requires the full cooperation and commitment of food handlers' requiring employees to undergo training. According to Fone (2013), the specific practices are not endeared, thus the reason for there being so much experiences of food contaminations both internationally and locally.

Food-borne illness sometimes mis-labelled food-borne disease, food-borne infection," or "food poisoning) is a common, costly and yet a preventable public health problem caused through contamination of different disease-causing microbes (pathogens), poisonous chemicals and other harmful substances. Other diseases such as poisoning are caused by harmful toxins or chemicals that have contaminated the food, like poisonous mushrooms. These different diseases have many different symptoms, so there is no one "syndrome" that is food-borne illness. However, when the microbe or toxin enters the body through the gastrointestinal tract, and often nausea, vomiting, abdominal cramps and diarrhoea are common symptoms in many food-borne diseases (Shravani, 2012).

Food-borne diseases and surveillance systems are a major issue in African countries; food being major factor in transmission of diarrheal diseases. A study by World Health Organization (WHO, 2012) found that most African countries lack or have weak surveillance system, thus investigation of food-borne disease causative factors and magnitude of exposure are inadequate. Wagacha and Muthomi(2008) found that poor documentation can be attributed to underreporting of food-borne illness. In developed countries, there are intricate standards for food preparation, whereas in lesser developed countries the main issue is simply the availability of adequate safe water, which is usually a critical item (WHO, 2010). ISO

22000 is the standard developed by the International Organization for Standardization (IOS) dealing with food hygiene and safety, specifying the requirements for a food hygiene and safety management system that involves interactive communication, system management, and prerequisite programs. American National Standards Institute (2016) found that if HACCP principles were well put into practice, food handlers worldwide would improve food hygiene and safety.

Centre for Disease Control (CDC) estimates that each year roughly 48 million people get sick from a food-borne illness, 128,000 are hospitalized, and 3,000 die. According to CDC (2015), investigating the food processing chain could help stop potential outbreaks and illnesses. They also play a key role in preventing food-borne diseases. During investigations new pathogens, new food vehicles, and unsuspected gaps in the food hygiene and safety system may be detected. They can improve scientific understanding of how the contamination occurred at specific points in the food supply chain, of the chances that it may occur again, and how it may be reduced or prevented. Often outbreak investigations raise questions that lead to new research to better understand how contamination occurs and how it can be prevented or reduced (Al Busaidi & Jukes, 2015).

In Kenya, Food hygiene and safety control agencies operate under the Ministries of health and sanitation despite, the measures put in place to, the country lacks a defined and effective policy on food hygiene and safety. The existing legal framework for food hygiene and safety and quality research have not been effective resulting into sub-standard food products in the Kenyan market (Olielo & Rombo, 2009). Cases of food poisoning have been reported in institutions of learning for instance; Parents of Taraganya High School students who took contaminated food want action taken against the school administration over negligence. Nakuru: 25 students from Mama Ngina Secondary School in Rongai Sub County were rushed to Langa Langa cholera treatment centre after they complained of severe abdominal pain and

diarrhoea, which was later, confirmed to be food poisoning (Standard Newspaper, 19,). Recently, the outbreak of cholera was active in two counties, namely Garissa and Nairobi. As of 17 July 2017, a total of 1216 suspected cases including 14 deaths (case fatality rate: 1.2%) were reported since 1 January 2017(Disease Outbreak News, 2017).

Additionally, Motive (2017) reports that in the week ending 16 July 2017, a total of 38 cases with no deaths were reported while in the month of September 2017 59 police officers residing at the Multimedia University Hotel in Rongai were admitted to various hospitals in Nairobi with cholera-like symptoms having reportedly taken meals at the Nairobi area Police Canteen. All the incidents could be attributed to how hospitality departments in learning institutions handle the issue of food and its safety upon consumption. Putting into consideration that, hygiene practices culture is a pattern of shared basic assumptions that a group learn, taught to new members as the correct way to perceive, think, and feel. While quality culture is, a prevailing attitudes and behaviors related to quality that is taught, directly and indirectly, to new employees (Taylor, 2011). Food hygiene and safety can probably be influenced by institutional culture. Yiannas (2008) opines that retail and food service establishments, as well as food producers at all levels of the food production chain have a growing responsibility to ensure that proper food hygiene and safety and sanitation practices are followed, thereby safeguarding the health of their customers.

### **National Youth Service (NYS),**

The National Youth Service (NYS) is an organisation under the Government of Kenya It was established in 1964 to train young people in important national matters. In 2019, the organization was transformed from a state department to a fully-fledged semi-autonomous state corporation after enactment of NYS act, 2018 by the Kenyan parliament. The National Youth Service has its headquarters in Gilgil town, a town in the Rift Valley of Kenya. Gilgil

Town in Kenya is located approximately 140 kilometres from Nairobi city in Kenya( Fatma, 2017).

The number of incidences or occurrences with regard to food hygiene and safety mentioned or reported in our public institutions suggests the need for a study to conduct research on either those that have failed or succeeded in maintaining safety within their establishment. The current study is based in National Youth Service (NYS), large public/government institutions (entire fraternity of about 15,000 individuals) that deal with a big number of food consumers (management to service recruits) from their mess. It is mandatory for the service recruits to get food from the messes, which make food hygiene to be all the more critical Jabbar & Grace, (2012).

The institute was selected for research because of having an established catering practice, a trend to food handling and safety practices. In spite of the institution dealing with a big number of personnel of diverse socioeconomic background, no known incidences of food poisoning have been reported formally and informally to date. Bearing in mind that incidences of food borne illnesses have been reported in many public institutions in the country lately, the study looked in depth into the practices and culture in the institution that may possibly influence its safe handling and catering practices and to be specific in our learning institutions in Kenya. Food poisoning is a challenge and measures need to be taken and continually improved to avert this problem. Hence, there is a great need of this study that targeted food handlers in National Youth Service Catering Brigade because they are directly responsible for the hygiene of the food served.

## **1.2 Statement of the Problem**

Food poisoning and contamination has become a major issue in our public institutions, with so many incidences being reported and some still in the hidden by food consumers. Hygiene practices covers proper acquisition and storage of food items, maintenance of clean

environment during food preparation and serving, and assurance that all equipment and serving dishes are clean/ free from pathogens and further contaminants (Lee et al, 2012). Food hygiene and safety plays a significant role in the economic and health development of Nations by safeguarding the nation's health, enhancing tourism, hospitality and international trade, the production, distribution and consumption of safe food (Tansey & Worsley, 2014).

Numerous foods safety's scares and emergencies have occurred over the past years in learning institutions food supply and production chain. For example, in the September of 2017, with Improper heating of the food, such as undercooking, re-heating and waiting in the heat, or improper cooling of the food account for 44% of the foodborne illnesses (WHO, 2017). Inadequate preparation and improper cooking practices, such as those involving cross-contamination, insufficient processing, poor hygiene and the re-use of leftovers, are responsible for causing 14% of these diseases. 59 police officers residing at the Multimedia University Hotel in Rongai were admitted to various hospitals in Nairobi with cholera-like symptoms having reportedly taken meals at the Nairobi area Police Canteen (Mutavi, 2017).

Studies by Todd & Bartleson, (2010) on Outbreaks where food workers have been implicated in the spread of foodborne disease . the study established that Failure to protect the safety of food leads to a decline in consumer confidence. Empericall Studies by AlYousuf & Taylor(2015), Developing a Government Strategy to Meet International Standards of Food hygiene and safety Across the Hospitality Industry established that gaps exist in terms of unreported illnesses and on the extent to which HACCP principles are adhered to in these institutions. None of the study focused on how catering practices influences food hygiene and safety in a large public organization. The study did not discuss Conformance of Catering Practices, which are very critical in preventing food borne disease. Hence, there for the study

will focus on the influence of conformance on catering practices to food hygiene and safety: a case study of National Youth Service, Gilgil, Kenya.

### **1.3 Objectives of the Study**

#### **1.3.1 General Objective**

The main objective of this study was to determine influence of conformance on catering practices to food hygiene and safety: a case study of National Youth Service, Gilgil, Kenya

#### **1.3.2 Specific Objectives**

The specific objectives are to:

- i. Determine the effect of Standard Operating Procedures on food hygiene and safety at the National Youth Service Catering Units in Gilgil, Kenya.
- ii. Investigate the influence of food-handling practices on food hygiene and safety at the National Youth Service Catering Units in Gilgil, Kenya.
- iii. Assess the effects of HACCP principles on food hygiene and safety at the National Youth Service Catering Units in Gilgil, Kenya.

### **1.4 Research Questions**

The study answered the following research questions:

- i. What is the effect of Standard Operating Procedures on food hygiene and safety at the National Youth Service Catering Units in Gilgil, Kenya?
- ii. How does a food-handling practice influence the food hygiene and safety at the National Youth Service Catering Units in Gilgil, Kenya?
- iii. To what extent does HACCP principles influences the food hygiene and safety at the National Youth Service Catering Units in Gilgil, Kenya?.

### **1.5 Significance of the Study**

The finding of this study has added to the existing knowledge on well-developed catering

practices on food hygiene and safety and corporate image of food areas of our learning Institutions. Catering practice is a fundamental issue that ought to be taken with much seriousness to provide 100% prevention on food poisoning and contamination. This study is of immense benefit to Educational managers, Food Handlers, students, privately and public owned learning or training institution and public corporations. In addition, the findings could inform the Government on areas of improvements to enhance food hygiene and safety practices in large institutions, thus putting measures where necessary. Furthermore, this study has documented empirical findings for reference by academicians and policy makers.

Food borne illness in Academic Institutions Kitchen is a thoughtful issue in Kenya. The implementations of food hygiene and safety strategies that focus on procedures to prevent food-borne illnesses are necessary. This is so because of the numerous incidences taking place on day to day learning of our Institutions in regards to food-borne illness outbreaks. This recognition of the important role the Academic kitchens and food handlers have in food borne illness outbreaks has led to a realization that there is need to understand risk factors leading to food borne diseases and to educate and train food handler. Therefore, there was much need to carry out a research that would enable food handlers to have a culture that embraces safety and hygiene concern thus irradiations of illness that are brought about by food contaminations or bad practices.

### **1.6 Scope of the Study**

The research covered 6 catering units' kitchens at the National Youth Service Gilgil in Nakuru County, which involved the catering brigade. The research focused on catering services with consideration of issues that may influence food hygiene and safety through practices or beliefs in the said area. This was done by exploring the type of catering practices and services at the NYS catering units. NYS unlike any other public institute deals with a

large number of client surpassing 10,000 clients at one go. The research focused on NYS because it is mandatory that all have to eat their meals from the catering units unlike probably in our University where one can choose to have their meals elsewhere. The findings explain the hygiene and safety practices of other Academic kitchens in Kenya. Gilgil is associated with high temperature all the year thus high chances of food spoilage is high. The National Youth Service (NYS) is the pride and backbone of our nation whose focus has been to help the youth discover and develop their potential since 1964. Caution must be taken when to generalize this information so as not misinterpretations the catering policies

### **1.6 Limitations of the Study**

Several limitations were observed in the study. First, the study was limited in scope in that it focused on food hygiene and safety at the National Youth Service and thus concentrated only one institutions of learning. This leaves out institutions like high schools, primary schools and universities. In addition, other catering units like food hotels were not studied. Secondly, the study population was too small. Only 121 numbers of respondents were studied in only one institution and thus results generalization to other learning/training institutions can only be done with caution. A wider study in terms of scope that touches on many institutions that are more public might give a clearer picture. The third limitation was the inherent bias with cross-sectional survey. For instance, it is not easy to compare those institutions that have good catering practices with those that neglect food hygiene and safety. In addition, the reality of parameters variability across different institutions would mean that the data collected is unique to the NYS catering units at Gilgil.

### **1.7 Definition of Key Terms**

**Catering:** is the business of providing food service at a remote site or a site such as a hotel, hospital, pub, aircraft, cruise ship, park, filming site or studio, entertainment site, or event venue.

**Catering-** This is the essence of providing food and beverages service to a set of people or an individual in a site such as a hotel, public house (pub), an institute kitchen or other location.

**Culture-** It is a pattern of shared basic assumptions that the group learned, taught to new members as the correct way to perceive, think, and feel. While Quality Culture is, a prevailing attitude and behaviours related to quality that is taught, directly and indirectly, to new employees.

**Dress Code-** A dress code is a set of rules, often written, with regards to clothing. Dress codes are created out of social perceptions and norms, and vary based on purpose, circumstances, and occasions

**Standard Operating Procedures-** Policy concerning how food is produced, processed, distributed, purchased, or provided. Food policies are designed to influence the operation of the food and agriculture system balanced with ensuring human health needs

**Food hygiene and safety culture-** The aggregation of the prevailing, relatively constant, learned, shared attitudes, values, and beliefs contributing to the hygiene behaviours used within a particular food handling environment.

**Food contamination-** Happens when food are corrupted with another substance. It can happen In the process of production, transportation, packaging, storage, sales and cooking process. The contamination can be physical, chemical and biological.

**Food-borne illness-** A disease that occurs or transmitted to people through food spoilage or contamination.

**Hazard Analysis Critical Control Point (HACCP)** - Is a systematic preventive approach to food hygiene and safety from biological, chemical, physical hazards and more recently radiological hazards in production processes that can cause the finished product to be unsafe and designs measures to reduce these risks to a safe level.

**Hazard analysis-** is defined as the process of collecting and interpreting information on hazards and conditions leading to their presence to decide which are significant for food hygiene and safety, and should be addressed in the HACCP plan

**Institutional culture-** this is a system of shared assumptions, values, and beliefs, which govern how people behave in an institution, which has a strong influence on the people in the institution on how they dress, act, and perform their jobs.

**Safe food handling-** This includes safe procedures for each process such as receiving, re-packing, food storage, preparation and cooking, cooling and re-heating, displaying products, handling products when serving customers.

**Safety culture-** The product of individual and group values, attitudes and beliefs, competencies and patterns of behaviours that determine the commitment to, and the style and proficiency of, an organization's health and safety management

**Standard Operating Procedure-** is a set of step-by-step instructions compiled by an organization to help workers carry out routine operations. SOPs aim to achieve efficiency, quality output and uniformity of performance, while reducing miscommunication and failure to comply with industry regulations.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter presents critical review of empirical literature, theoretical framework, catering practices, food hygiene and safety, policies, food handling practices, HACCP principles and Conceptual framework. It also discusses identification of research gaps and recap of the literature review.

#### **2.2 Theoretical Framework**

This study is anchored on two theories; the theory of food poisoning, which is 100% preventable, and; the behaviour-based food hygiene and safety-training model

##### **2.2.1 Theory of Food Poisoning**

Theory of food poisoning is 100% preventable as proposed by the WHO (1989), According to WHO (1989), in theory food poisoning is 100% preventable, the theory has five principles of food hygiene that have to be practiced in any food production area. These principles aid in preventing contamination of food with pathogens spreading, separating raw and cooked foods, cooking foods for the appropriate length of time and temperature, storing food at the proper temperature and using safe water and raw materials. By implementing the five said principles, any food handler is able to present a wholesome meal for consumption to the consumers.

This is indeed a very relevant theory to the current study as it aims at presenting a meal free from contamination. This is against an increase public conscious of food hygiene being an integral activity linked to the efficient production of safe, quality food that is fit for human consumption. The food industry is increasingly subjected to scrutiny and testing to ensure compliance with food hygiene and safety regulations and to protect public health. The theory

puts a responsibility on food handlers on the premise that it is possible to have zero food poisoning as opposed to the current situation in Kenya where food poisoning is common place. The study thus sought to determine what the food handlers were doing at the Gilgil NYS catering units to ensure this level of food hygiene and safety is attained within the precepts of the theory of food poisoning is 100% preventable.

### **2.2.2 Behaviour-Based Food Hygiene and Safety Training Model**

The second theory anchored to this study is the behaviour-based food hygiene and safety training model proposed by (Yiannas, 2008). According to Yiannas (2008) in his theory, behavior-based food hygiene and safety training, presents five phases model and argues that if practiced can lead to presentation of wholesome meal. These phases include; Phase 1: Human influence on critical control points, Phase 2: Safe food handling fundamentals, Phase 3: Understanding current behaviors and the reasons for them, Phase 4: Interventions to bring about change and Phase 5: Monitoring. This issues that were investigated in this study included Standard Operating Procedures , food handling practices and the Hazard Analysis Critical Control Points (HACCP) that are all be linked to the five phases. This model was used as framework to understand numerous factors thought to influence behaviors and behavioural change, specifically associated with education and training. This model supports the contention that factors other than knowledge, education, and training influence safe food handling behaviors or practices and ought to be considered more fully (Yiannas, 2008).

### **2.3.1 Food Hygiene and Safety**

Food hygiene and safety has been defined as conditions and measures that are necessary during production, processing, storage, distribution and preparation of food to ensure that it is safe, sound, and wholesome and fit for human consumption (WHO, 2012). Yiannas(2008)

asserts that food handlers neglecting the basic rule of food preparation such as mishandling and taking for granted hygiene practice contributed to the outbreaks of food poisoning.

According to Tansey and Worsley(2014) food hygiene and safety is a scientific discipline describing handling, preparation, storage and presentation of food in ways that prevent food borne illness. This includes a number of routines that should be followed to avoid potentially severe health hazards. The tracks within this line of thought are safety between industry and the market and then between the market and the consumer (Shravani, 2012).Considering industry to market practices, food hygiene and safety considerations include the origins of food including the practices relating to food labelling, food hygiene, food additives and pesticide residues, as well as policies on biotechnology, food guidelines for the management of governmental import and export inspection and certification systems for foods. Considering market to consumer practices, the usual thought is that food ought to be safe in the market and the concern is safe delivery and preparation of the food for the consumer

Contamination of produce with harmful micro-organisms can occur at all stages of production, processing, transportation, storage, preparation, and service. Al Yousuf, Taylor and Taylor(2015) assert that to prevent food borne illness, fresh produce needs to be handled with care at each step from farm to table. Auslan (2013) cautions practitioners to work with lot of caution while purchasing and receiving food commodities by use of purchasing specifications.

These specifications include food hygiene and safety requirements, such as maintaining produce at the proper temperature, maintaining clean and pest-free storage areas and delivery vehicles and complying with food hygiene and safety laws and regulations. More so, to ensure suppliers are getting produce from licensed, reputable sources and check storage and handling practices of vendors are adhered to. There should also be established procedures for inspecting, accepting or rejecting incoming deliveries. Cramer (2013) argues that procedures

should include checking the condition of fresh produce and the transportation vehicles to make sure specifications are met.

### **2.3.2 Food Catering Polices**

In a broader perspective, food hygiene and safety action plan draws the line for minimum expected standards and the overall objectives of food hygiene and safety system of a country (Nguz, 2007). Yiannas (2009) observed that systems and guidelines should be put in place to enhance food hygiene and safety by all food handlers. It identifies the approach the nation uses and the goals/targets the system aims to achieve. In Kenya, the nationwide food quality and safety systems are legally controlled by various government agencies under different ministries (WHO, 2010).

Food hygiene and safety regulation agencies work under the Ministries of Trade, Industrialization, Public Health and Sanitation, Livestock, Fisheries and Agriculture. Such agencies include the Kenya Bureau of Standards (KEBS), Kenya Agricultural Research Institute (KARI), Department of Public Health (DPH), and Kenya Plant Health Inspectorate Services (KEPHIS) among others (Nguz, 2007). These agencies aim at disseminating information on the code of hygiene necessary to all food handlers. This is followed by supervision and implementation of the mentioned practices. Food hygiene and safety is dependent upon the significant roles played by food handlers along the food service system. Food handlers may introduce pathogenic microbes to the food during the process of preparation, distribution and serving (Yiannas, Food hygiene and safety Culture, 2009). This is through inoculation of the food with infected excreta, pus, exhalations and other body discharges.

According to Huuhtanen and Laukkanen (2006), all food handlers should understand and internalize that Personal hygiene begins at home, with the essential elements for good hygiene being a clean body, clean hair and clean clothing. Hair in food can be a source of

both microbiological and physical contamination. Hairnets and beard covers should be worn to assure food product integrity. Moreover, Hennessey (2012) observed that long-sleeved smocks should be worn to cover arm hair. In addition, clean uniforms, aprons and other outer garments that are put on after the employee gets to work can help minimize food contamination. While working, clothing should be kept reasonably clean and in good repair (Booty, 2009).

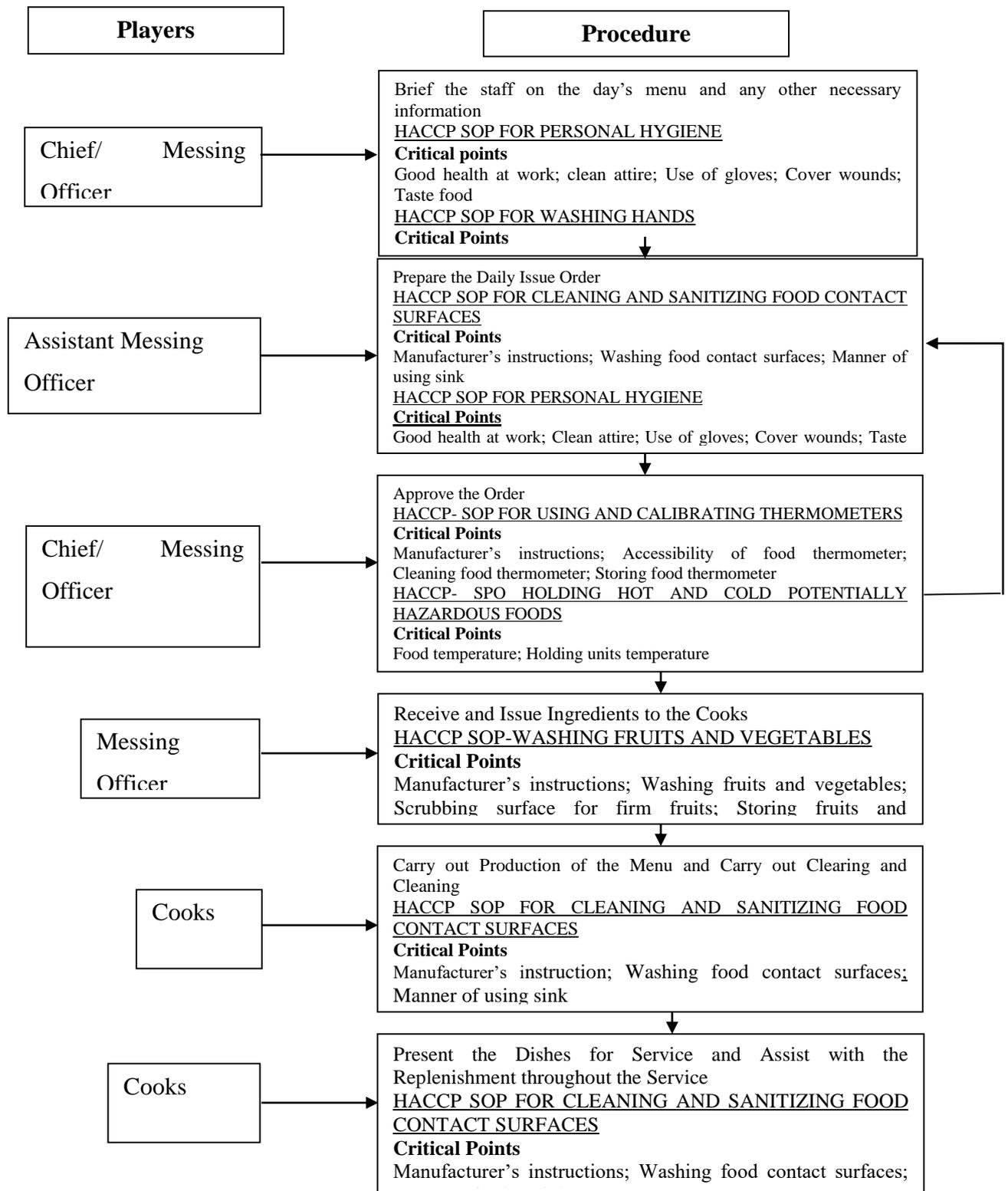
Food hygiene and safety does not happen by accident. To prepare safe food, you must follow certain steps and procedures throughout the entire food preparation process. You have to think, and you have to pay attention to how you prepare food to make sure it is safe. You do this by developing a food hygiene and safety plan. A good food hygiene and safety plan will make sure that anything that might make someone sick is under control (Foskett & Ceserani, 2007). Clear structure, rules and procedures on hygiene rules of workers on dress code and covering, health requirements of workers and routines, stipulated procedures or manual on food storage, refrigeration, leftover foods, cleanliness and serving temperatures should be put in place (WHO, 2010).

### **2.3.3 Food Handling Practices**

Good food hygiene is essential to all food handlers involved in food handling procedure. It is very important for all catering brigade to understand good food hygiene is for it helps one to reduce the risk of food poisoning among food consumers and protect business's reputation (Schlosser, 2012). The following is the Standard Operating Procedure (SOP) at the NYS Gilgil catering Unit. Figure 2:1 shows the SOP process from start to end. It shows that the main players are the chief messing officer, assistant messing officer, the messing officer and the cooks. The process runs from the chief messing officer who starts the procedures with a brief to the staff on the days' menu and any other necessary information and liaises with the assistant messing officer to prepare and approve the daily issue of order. Thereafter the

messaging officer receives and issues the ingredients to the cooks who carry out production of the menu and clearing and cleaning, then finally present the dishes for service and assist with the replenishment throughout the service.

According to Chesworth (2012), good food hygiene is about controlling harmful bacteria, which can cause illness and can occur in four main things to remember for good hygiene, cross-contamination, cleaning, chilling and cooking. At each step in the flow of food through a food service establishment, there are general food hygiene and safety procedures that should be followed. This should help reduce the risk of contamination and mishandling that could consequently lead to food-borne illness outbreaks. These are; procuring, storage, preparation, actual production or cooking and food presentation (Al Busaidi & Jukes, 2015). Additionally, no employee who is affected with, has been exposed to, or is a carrier of a communicable disease, the flu or a respiratory problem, or any other potential source of microbiological contamination shall work in any area where there is a reasonable possibility that food or food ingredients can be contaminated (Chesworth, 2012).



**Figure 2:1 Production/Cooking Procedure**

#### **2.3.4 Hazard Analysis Critical Control Points Principles**

HACCP is a management system in which food hygiene and safety is addressed through the analysis and control of biological, chemical, and physical hazards from raw material production, procurement and handling, to manufacturing, distribution and consumption of the finished product. Hazard Analysis and Critical Control Point (HACCP) is a system that helps food business operators look at how they handle food and introduces procedures to make sure the food produced is safe to eat (CDC, 2012). Manley (2011) says that there should be development of a range of food hygiene and safety management packs for different sectors of the food industry to help food production operators manage their food hygiene and safety management procedures.

The HACCP system can be used at all stages of a food chain, from production and preparation processes including purchasing, preparation, cooking, packaging and presentation (Troy& Kerry 2010). However, food hygiene and safety programs should be designed to help food handlers identify and manage hazards to food hygiene and safety (CDC, 2012). All food production and processing food handlers must develop own and implement a documented food hygiene and safety program (FSP) for this will help curb food contamination issues (Chesworth, 2012). According to Sun and Ockerman (2005), food hygiene and safety programs that identify potential hazards that may occur in all food handling operations carried out in the business should identify where these hazards can be controlled; monitor these control methods, provide corrective actions when a hazard is found to be not under control, establish, document and verify detailed pre-requisite programs; and regularly reviewed for adequacy. This would be the most appropriate one to any given food production sector.

Food handlers' practitioners should keep record and retain copies of action taken demonstrating compliance with the food hygiene and safety program and ensure it is audited by a food hygiene and safety auditor (CDC, 2012). HACCP being a management system in which food hygiene and safety is addressed through the analysis and control of biological, chemical, and physical hazards from raw material production, procurement and handling, manufacturing, distribution and consumption of the finished product. For successful implementation of a HACCP plan, CDC, (2012), management must be strongly committed to the HACCP concept and adhere to its implementation at all levels. Manley (2012) noted that top management provides company employees with a sense of the importance of producing safe food and thus should support implementation of HACCP.

## **2.4 Empirical Review**

The empirical literature review can offer an efficient method of building a professional knowledge base, understanding performance issues, identifying potential interventions and measurement methods, providing a foundation for asking the right questions in a project, and defining common practices in organizations (Kothari & Garg, 2011).

### **2.4.1 Standard Operating Procedures and Food Hygiene and Safety**

Food hygiene and safety does not happen by accident. To prepare safe food, you must follow certain steps and procedures throughout the entire food preparation process. You have to think, and you have to pay attention to how you prepare food to make sure it is safe. You do this by developing a food hygiene and safety plan. A good food hygiene and safety plan will make sure that anything that might make someone sick is under control (Foskett & Ceserani, 2007). According to University of Mississippi (2017) Food hygiene and safety Standard Operating Procedures (SOPs) are written practices and procedures that are critical to producing safe food. It is essential to have these SOPs in place and to train foodservice

employees to use them. Policies should ensure “Due Diligence” in respect of food hygiene and safety, ensuring all food handlers is appropriately trained and all areas of food hygiene and safety are risk assessed as well as ensuring compliance (Jabbar & Grace, 2012).

Aagaard (2016) revealed that there were deficiencies in attitudes, knowledge and practices in safe food handling among food handlers. Therefore, the core knowledge of food handlers may come from the root of the problem. Graduates who trained on food hygiene and sanitation play a major role in determining the level of awareness among food handlers in the industry. In Ghana, both public and private institutions (schools, research institutes, hospitals and prisons) often have food service or catering units where meals are served to both staff and clients (Greig, Todd, & Bartleson, 2007). To prevent outbreak of food-borne diseases in these institutions, high standards of hygienic and safety practices by food-handlers are essential parts of an overall food hygiene and safety program implemented by these institutions.

#### **2.4.2 Food Handling Practices and Food Hygiene and Safety**

According to Tansey and Worsley (2014) food hygiene and safety is a scientific discipline describing food handling, preparation, storage and presentation in ways that prevent food borne illness. This includes a number of routines that should be followed to avoid potentially severe health hazards. The tracks within this line of thought are safety between industry and the market and then between the market and the consumer (Shravani, 2012). The knowledge, attitudes and practices of food-handlers play dominant role in food hygiene and safety with regards to food service industry (Sharif & Al-Malki, 2010).

In Ghana, previous studies have evaluated the knowledge, attitudes and practices of food-handlers in selected hotels in Accra (Annor & Baiden, 2011), and food hygiene practices by street food vendors (Boateng, 2014). Lack of proper food hygiene and safety measures lead to

food poisoning, which occurs because of consuming food, contaminated with microorganisms or their toxins, inadequate preservation methods, unhygienic handling practices, cross-contamination from food contact surfaces, or from persons harbouring the microorganisms (Ansari-Lari, Soodbakhsh& Lakzadeh, 2010). According to Fielding, Aguirre and Palaiologos (2001) unhygienic practices during food preparation, handling and storage creates the conditions that allows the proliferation and transmission of disease causing organisms such as bacteria, viruses and other food-borne pathogens. Additionally, many reported cases of food-borne viral diseases have been attributed to infected food-handlers involved in catering services (Baş, Ersun, & Kıvanç, 2006).

### **2.4.3 HACCP Principles and Food Hygiene and Safety**

HACCP is a management system in which food hygiene and safety is addressed through the analysis and control of biological, chemical and physical hazards from raw material production, procurement and handling, to manufacturing, distribution and consumption of the finished product. Hazard Analysis and Critical Control Point (HACCP) is a system that helps food business operators look at how they handle food and introduces procedures to make sure the food produced is safe to eat (CDC, 2012). HACCP allows each business to focus on their operation and its unique characteristics rather than having a standardized inspection process that may not offer the flexibility to consider the uniqueness of each food production unit and each food product. The focus of HACCP is not on having a standardized production process but on having a monitoring process that is adequate to assure each food handler is producing a safe product by minimizing the risk of a food hygiene and safety problem.

Charlotte and Robyn (2006) carried out a study that aimed at assessing the factors affecting compliance with food hygiene and safety legislation within small and medium-sized enterprises. The study found that in addition to the barriers identified within other research

that were present within food businesses (specifically time and money), there were also several complex, underlying issues that prevented compliance with regulatory requirements and which have implications for regulatory and enforcement policy. These barriers included the lack of trust in food hygiene and safety legislation and enforcement officers; a lack of motivation in dealing with food hygiene and safety legislation; and a lack of knowledge and understanding.

According to Taylor (2008b) there is no requirement for people working in catering services to be aware of or to have any knowledge of HACCP in order to develop and implement the system. However, FAO/WHO (2006) opines that in order to achieve the successful implementation of HACCP, the concept must be understood first by the managers of the establishments. Their understanding and involvement are essential to define responsibilities and tasks for each staff member, and to provide specific training for each one of them.

Implementing HACCP is to help food companies increase their competitiveness. In the long term, firms should not only implement HACCP principles but also achieve continuous improvement, prevent foodborne illnesses and control food safety risk. To achieve these goals, employing personnel with food safety knowledge, such as knowledge of food pathogens, chemical hazards and food hygiene, is necessary.

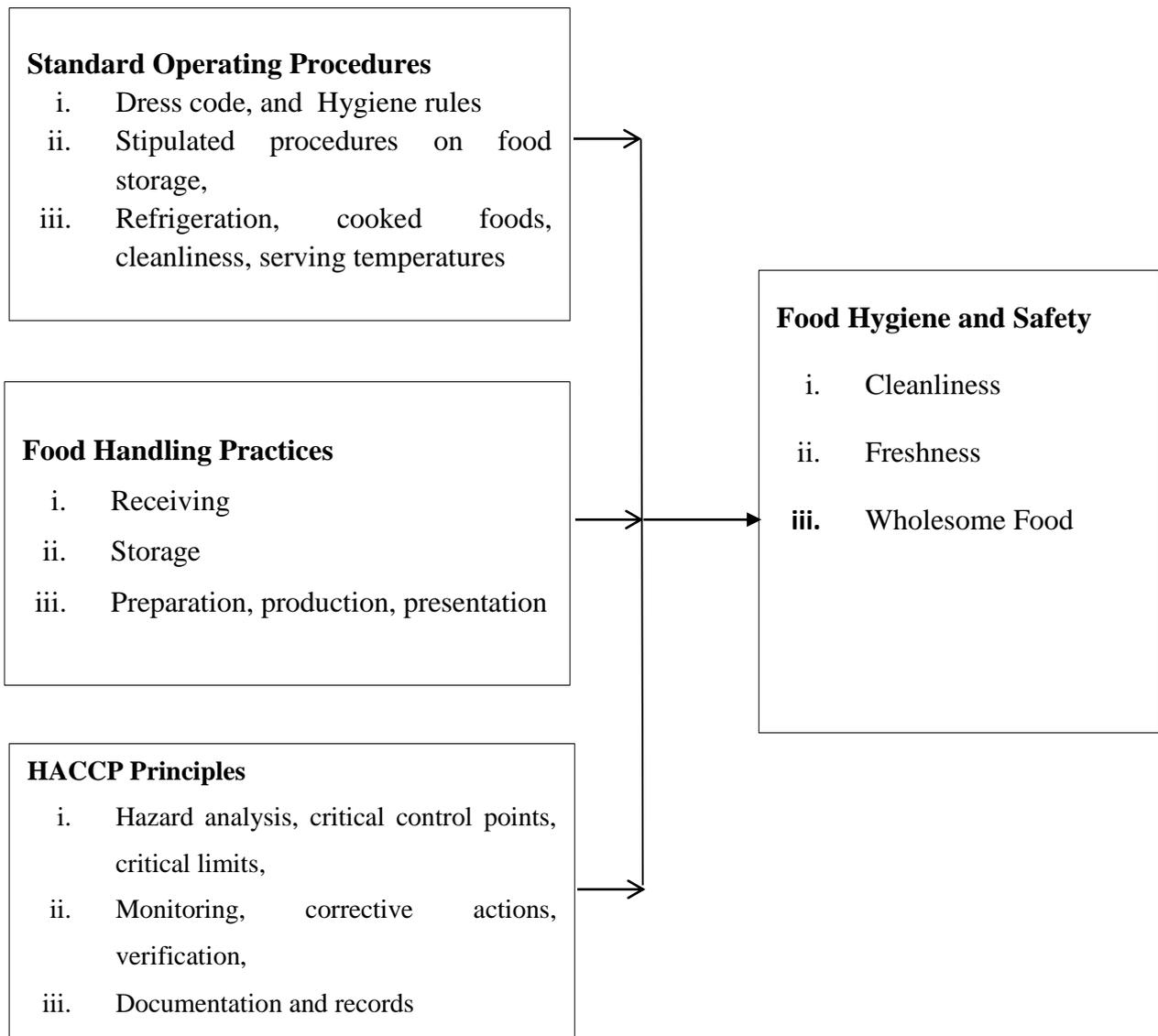
Rebouças & de Castro Almeida,. (2017). stated that outbreaks of foodborne illnesses related to restaurants, fast-food joints and takeaway joints are commonly engendered by the heating of food along with subsequent time–temperature abuse, by cross contamination between raw and cooked ingredients and by defective food preparation and hygiene protocols. Accordingly, we hypothesized that food safety knowledge is related to HACCP implementation.

## **2.5 Conceptual Framework**

The study proposes that Standard Operating Procedures has an influence on food hygiene and safety. Based on extensive literature review, catering practices was measured by these indicators; Standard Operating Procedures, food handling practices and HACCP principles as the independent variables of the study. The dependent variable was food hygiene and safety. Food hygiene and safety management practices in different institute determine the level of food hygiene and safety. The relationship between the independent and dependent variables is presented in the schematic diagram in Figure 2.2.

## Independent Variables

## Dependent Variable



**Figure 2:2. Conceptual Model**

### 2.11 Chapter Summary

Undesirable food handling practices are often deeply rooted in the work environment and not easily changed, even by the most imaginative quality policies. The researcher felt it is best Practices as stated in the Theory of Catering Foskett and Ceserani (2007) to put into consideration and practice the appropriate food product selection considering quality and

acceptance by consumers. This will lead into prevention of food contamination, spoilage and food-borne illness and thus effective standardized food production and consumption of all customers' meals, snacks and special nourishments in their wholesome state. Staff schedules timeframes for production with the aid of HACCP principles, including time and temperature guidelines for food purchasing, preparation, holding, service and storage (Dawso Van Druff, 2012). Standardized food production guidelines, cleaning guidelines, schedules for production, service and washing areas should be put in place. Additionally, equipment, cleaning procedures and those for waste management should be adhered to at all time (WHO, 2007). However, knowledge about food hygiene and safety doesn't automatically translate into good hygienic practice. The management of a food processing unit needs to enforce good hygiene practice not only by training and refresher courses for food handlers and providing the necessary facilities but by actively encouraging and rewarding good practice. Thus the need of the current study, assessment of catering practices on food hygiene and safety at national youth service catering units in Gilgil.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter covers the various methods used to carry out this study. They include the research design, target population of the study, sample and sampling techniques, description of research instruments, data collection procedure, pilot testing, reliability and validity of the instrument, and data analysis and presentation techniques while conducting the study. Research methodology is intended to provide a roadmap for the data collection exercise.

#### **3.2 Research Design**

The study adopted a mixed research methodology. Creswell and Plano Clark (2011) describes mixed methods research as a methodology for conducting research that involves collecting, analyzing and integrating quantitative and qualitative research. According to Mugenda and Mugenda (2012) quantitative data includes close-ended information such as that found to measure attitudes, behaviors and performance instruments. The analysis of this type of data consists of statistically analyzing scores collected on instruments such as questionnaires or checklists to answer research questions.

Qualitative data consists of open-ended structured questions information, interview checklist that the researcher gathered through interviews, focus groups and observations. The analysis of the qualitative data (words, text or behaviours') typically follows the path of aggregating it into categories of information and presenting the diversity of ideas gathered during data collection. The quantitative and qualitative approaches in combination provide a better understanding of research problems than either approaches alone (Creswell & Plano Clark, 2011). Both qualitative and quantitative data collection were done concurrently in the study.

This was supported by use of tools that allowed both qualitative responses and quantitative responses that could be analyzed using descriptive statistics that included a self-administered questionnaire and an interview guide

### **3.3 Study Area**

The scope of the study was limited to NYS Catering unit kitchens in Gilgil College. The findings explain the hygiene and safety practices of other Academic kitchens in Kenya. Gilgil is associated with high temperature all the year thus high chances of food spoilage is high. The National Youth Service (NYS) is the pride and backbone of our nation whose focus has been to help the youth discover and develop their potential since 1964. It is currently a department in the Ministry of Public Service, Youth & Gender Affairs with 21 camps in the Country. However, NYS Gilgil College in Nakuru County, in the older Naivasha District, is the Mother Unit of all the units in Kenya and any one taking a course with NYS must undergo a Paramilitary Training. NYS Gilgil College has Six (6) all operating under different point (Angel, 2003). This is due to the Ranking and systems of National Youth Service. The NYS is highly populated with more than 15, 000 population, which sources large quantity of raw material from within Nakuru and Naivasha metropolitan.

### **3.4 Target Population**

Target population is that population to which the researcher wants to generalize the results of study on (Mugenda & Mugenda, 2012). This study adopted a census method; reason being the total population was 121 as described by Cochran, (2007) census approach as the use of the entire population. The cost considerations make census impossible for large populations, hence only attractive for small population of 200 or less. Kothari (2004) points that census approach eliminates sampling error and provides data on all the individuals in the population. The whole population of 121 employees in NYS catering department were considered for the study. Target populations of the study in the catering department consist of one hundred and

twenty one, (121) employees as presented in Table 3.1. Hence, a census study was more appropriate for the current study since the population was small.

**Table 3:1: Target Population**

<b>NYS catering department</b>	<b>Target Population</b>
Cooks (cooks and assistants)	105
Storekeepers	6
Cateress	6
Management (Chief messing Officer, Assistant Chief messing officer, chief ratio Officer, NYS Health Officer)	4
<b>Total</b>	<b>121</b>

**Researcher, 2019**

**3.5 Research Instruments**

The study used structured questionnaire and interview guide as instruments of data collection. According to Kothari, (2004) the most suitable research instrument for mixed method research design is a questionnaire. A questionnaire was developed for the Messing/Catering Officer, Cooks, Assistant cooks, Storekeepers. On the other hand, an interview guide was developed for NYS Health Officer, Chief Messing Officer, Assistant Messing Officer and Chief Ratio Officer. The questionnaire tool included both open and closed ended questions for ease of analysis (appendix I). Questionnaires gave respondents freedom to express their views or opinion and also to make suggestions while maintaining anonymity (Fowler, 2013). Further, structured questionnaires are generally less expensive and do not consume a lot of time in their administration (William, 2009), and therefore considered appropriate for this study. Turner III (2010) describes an interview guide as a quantitative research method commonly employed in survey research. The aim of this approach was to ensure that each

interviewer is presented with exactly the same questions in the same order. This ensures that answers can be reliably aggregated and comparisons can be made with confidence between sample subgroups or between different survey periods. The interview schedule is presented in (Appendix III consisting of the interview guide).

### **3.6 Data Collection**

Data collection is the process of gathering and measuring information on variables of interest, in an established systematic manner that enables one to answer stated research questions, test hypotheses and evaluate outcomes (Mugenda & Mugenda, 2012). The researcher secured an authorization letter from the Karatina University and then used it to obtain a research permit from the National Commission of Science, Innovation and Technology, NACOSTI (Appendix X). The researcher then obtained authorization to conduct the research from the Nakuru County Director of Education. After that the researcher made a reconnaissance visit to the targeted National Youth Service Catering Units in Gilgil, for introduction and to obtain consent from the respondents. This reconnaissance visit included explaining the intended study, setting dates for data collection, and informant interviews. The questionnaires were disseminated to the respondent through the help of their supervisors and collected from the same individual in two weeks' time. A follow up phone calls and electronic mail were sent to respondents to remind them before the two weeks were over. The interviews were conducted in the most appropriate manner as agreed with the respondents.

### **3.7 Validity**

Validity refers to how well a test measures what it is purported to measure (Colin, 2005). There are three basic approaches to the validity of tests and measures. These include the content validity that measures the degree to which the test items represent the domain or universe of the trait or property being measured. Secondly, there is construct validity that

concerns the degree to which the test measures the construct it was designed to measure. Third there is criterion-related validity that is concerned with detecting the presence or absence of one or more criteria considered to represent traits or constructs of interest (Key, 2016).

A pilot study was conducted on 12 individuals at the Kenya Education Management institute. The findings were not included in the actual study. The main purpose was to check on suitability and the clarity of the questions on the instrument design, relevance of the information being sort out, the language used and the content validity of the instruments from the responses that were given. This helped in making necessary adjustment on the instruments to enhance validity. The instrument was also shared with experts including my supervisors for their opinion and recommendations. The researcher discussed the structure of research instruments with the supervisor to improve their content and construct validity. These competent persons examined the questionnaires individually and provided feedback to the researcher. Content validity was employed in this study by examining if the instruments answered the research questions. Those items that were found to be inadequate or vague were edited to improve the quality of the research instrument, thus increasing validity.

### **3.8 Reliability**

Reliability is the degree to which an assessment tool produces stable and consistent results after repeated tests (Tavakol & Dennick, 2011). Reliability of the questionnaire was evaluated using test and retest method and the interview guide. Scale used in the research was evaluated using a test-retest method and aimed at establish the Cronbach after two tests done at National Youth Service Catering Units in Gilgil within a span of two weeks. Cronbach's alpha coefficient ranges between 0 and 1 as cited by (Waiganjo, 2013). Higher alpha coefficient values means that scales are more reliable. Cronbach's alpha values of all the variables above 0.7, implies that the instruments are sufficiently reliable for measurement

(Nunnally, 1978). A reliability of coefficient, of 0.73 was achieved and thus considered adequate for the study. Credibility and trust worth were adhered to while collecting the data.

### **3.9 Data Analysis**

Data collected was analysed using descriptive and inferential statistics. According to Creswell and Plano (2007), data analysis in mixed methods research consists of analyzing the quantitative data using quantitative methods and the qualitative data using qualitative methods. The response from the quantitative data from the questionnaires were tabulated, coded and processed by use of the statistical package for social sciences (SPSS). Analysis of quantitative data was accompanied with tabulations, graphs and percentages. Both descriptive and inferential statistics were used to analyse the data

Food hygiene and safety at NYS catering units was regressed against the three study objectives namely: Policies, food handling practices and HACCP principle. The equation was expressed as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon$$

Where:

Y=the dependent variable (food hygiene and safety)

$\beta_0$  =the intercept, i.e.  $Y = \beta_0$ , when  $X_1, X_2, X_3 = 0$

$\beta_1, \beta_2$  and  $\beta_3$  are the regression coefficients describing the size of contribution of the representative independent variable (Policies, food handling practices and HACCP principle)

$X_1$  = Standard Operating Procedures

$X_2$ = Food Handling Practices

$X_3$ = HACCP principle

$\epsilon$  is the error term

Data from the open-ended items in all the categories of questionnaires were recorded for qualitative data analysis. The analysis of the qualitative data (words, text or behaviours') typically follows the path of aggregating it into categories of information and presenting the diversity of ideas gathered during data collection. Themes and categories for all types from the interview guide and observation was generated using codes assigned by the use of SPSS computer programme. The data was then evaluated and analysed for helpfulness in answering research questions and for report writing. Thematic analysis was adopted for the qualitative data through the process of coding in six phases to create established, meaningful patterns. These phases are familiarization with data, generating initial codes, searching for themes among codes, reviewing themes, defining and naming themes, and producing the final report (Silver & Lewins, 2014).

### **3.10 Ethical Considerations**

The researcher sought permission from the National Council of Science and Technology and an introduction letter from Karatina University to conduct the study. In addition prior arrangements were made with the Health Officer, National Youth Service, Gilgil, and other relevant officers regarding the day and time of the visit to respective catering units. The researcher visited each catering unit and established a rapport with the said officers before administering the questionnaires. The filled-in questionnaires were collected at the agreed time.

The respondents were assured that strict confidentiality would be maintained in dealing with their identities and they need not to indicate their names. The completed questionnaires and schedules were collected immediately after they were filled. In this research, all the

respondents' information and identity were kept confidential and information gathered only used for the purposes of the study. The respondents were also given a free will to participate and contribute voluntarily to the study. A copy of findings could also be made available to any willing department on request. The researcher has also acknowledged all literature cited in the study to avoid cases of plagiarism. All respondents were informed of their rights and the confidentiality of the information related to their participation.

## **CHAPTER FOUR**

### **DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSION**

#### **4.1 Introduction**

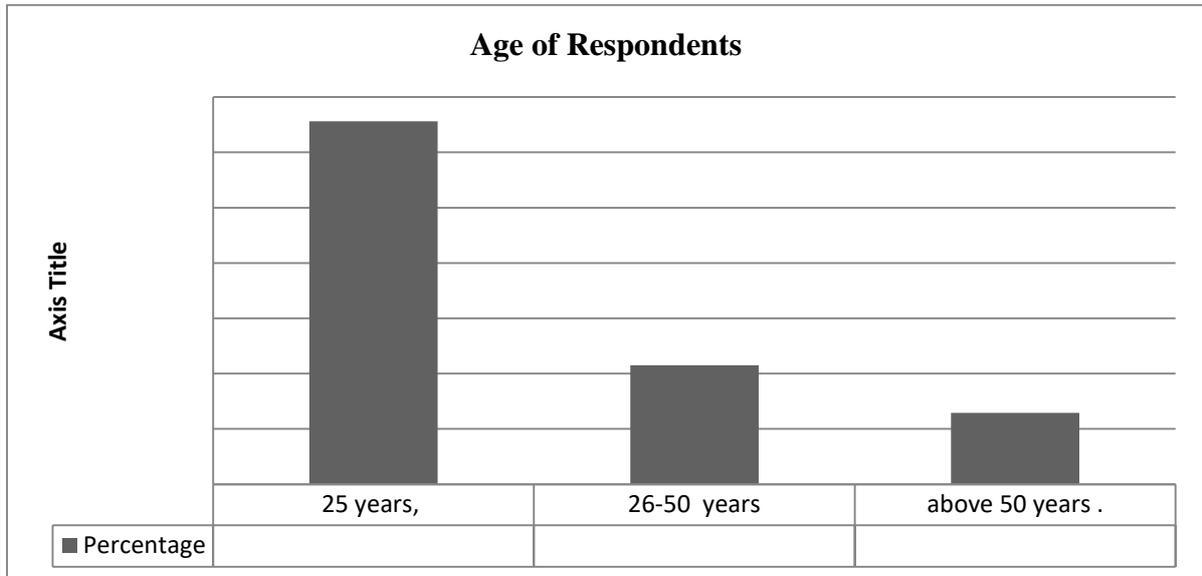
This chapter interprets and analyses data gathered by the study, in line with the objectives of the study. For the descriptive, data is presented in form of table and, charts. The section is divided according to the three objectives of the study. The first part presents preliminary findings on response rate and demographic information of the respondent. Information is presented in form of percentage. The second part presents data on descriptive statistics for Standard Operating Procedures, food handling practices and implementation of HACCP, in addition to qualitative information. Out of 121-targeted respondents, 93 filled and returned the questionnaires resulting to 76.9 percent response rate. According to Best and Khan (2006), a response rate of 50 percent is considered adequate, 60 percent good and above 70 percent very good. Therefore, the response rate of 76.9 percent was considered very good and exceeded the threshold postulated by Best and Khan. On the basis of this, the researcher went ahead to analyze data as presented in the tables.

#### **4.2 Demographic Information of Participants**

##### **4.2.1 Age of Respondents**

In this study the frequencies, percentages, tables and pie charts were used to present background data in the section that follows. Demographic information of participants sought the determine age, gender, work experience, training and participation in decision. The study obtained data on the age of the respondents. Age of the respondents was considered important, as it determine the prevalent age of respondents. Age was measured in three categories and the results are presented in Figure 4.1. Figure 4.1 shows that majority of the respondents 65.6 percent were aged below 25 years, 21.5 percent were between 26-50 years

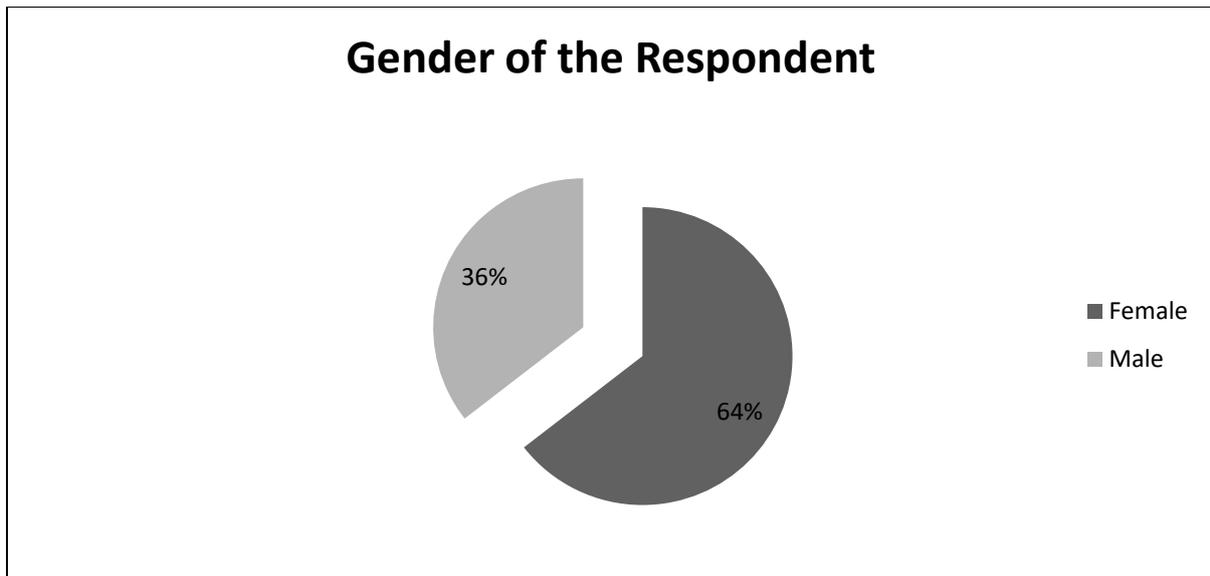
and above 50 years were 12.9 percent. This indicates that majority of the respondents were youthful and implies that they can cope up with change.



**Figure 4:3 Age of Respondents**

#### **4.2.2 Gender of the Respondent**

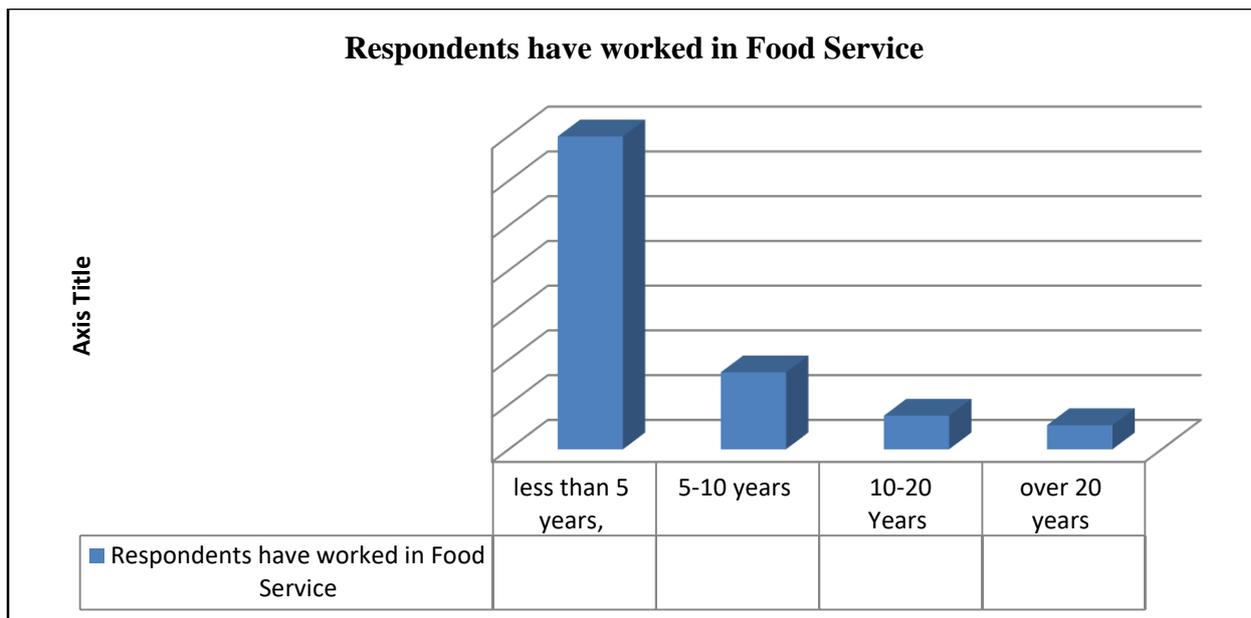
The study sought data on the gender of respondents. Gender was of concern to establish whether the institution, being a public entity has adhered to Government affirmative rule of 1/3 gender rule on employment. The results are presented in Figure 4.2. The findings show that most of the respondents 64.5 percent were female while 35.5 percent were male. Although it is abiding by the state affirmative law of 1/3 gender rule, the gender of the respondents is skewed towards female and thus most of staff working in the catering department is made up of women.



**Figure 4:4 Gender of the Respondent**

#### **4.2.3 Time Respondents have worked in Food Service**

The study also sought to determine the length of time respondents have worked in any type of food service. The length of service of respondents was important as it implies knowledge, experience and familiarity with the organization. A length of service implies knowledge and familiarity of the organization due to the accrued experience; it is an important factor to reliability and validity of the responses. The results are presented in Figure 4.3. The findings in Figure 4.3 show that most of the respondents 69.9 percent had experience of less than 5 years, 17.2 percent had experience between 5-10 years 7.5 percent had experience of over 20 years while 5.4 percent fall in the bracket of 10-20 years. This implies that majority of the respondents have low number of years' hence there for they understood that HACCP system is capable of accommodating change, such as advances in equipment design, processing procedures



**Figure 4:5 Time Respondents have worked in Food Service**

### 4.3 Descriptive Statistics

#### 4.3.1 Standard Operating Procedures

The first objective of the study aimed at determining the effects of catering policies on food hygiene and safety. Standard Operating Procedures was measured by both open-ended questions and closed ended question. Questions were used in the study and the results obtained are presented in Table 4.2 Table 4.3 shows statistical mean and the standard that gives insight about responses on the effects of catering policies on food hygiene and safety. The study sought data from respondents on whether all the necessary information for handling food safely is readily available to them. The study showed that more than half of the respondents disagreed with a mean value of 3.44 and a SD of 1.14. The study showed that a greater number of the respondents disagreed that management provides adequate training to improve employees' food hygiene and safety with a mean value of 3.24 and a SD of 1.04. Majority of the respondents agreed that the management would not take even a small risk when it comes to food hygiene and safety while a good number disagreed with a mean value

of 3.25 and a standard deviation of 1.37. A higher percentage of the respondents disagreed that managers' actions showed providing safe food to customers is a top priority though those who agreed had a little difference with a mean value of 3.72 and a standard deviation of 1.30. The respondents agreed with a mean value of 3.75 and a standard deviation of 1.05 that their manager is actively involved in making sure safe food handling is practiced.

The findings in the Table 4.2 further show that an equerry higher number of the respondents agreed with a mean value of 3.55 and standard deviation of 1.08 that food. Data on whether there is good cooperation among departments to ensure that consumers receive prepared food safely reported a mean value of 3.55 and a standard deviation of 1.05 the study reveals that popular of the respondents disagreed with a mean value of 3.82 and a standard deviation of 1.14 that their food hygiene and safety policies and procedures help to ensure that safe food handling practices are followed. This implies that a bigger number of respondents responded were not of the view that food hygiene and safety policies and procedures help to ensure that safe food handling practices are followed. The study findings concurred with those of (AlBusaidi& Jukes, 2015). That Policies such as safety operating procedures aim at ensuring that food service providers comply with food hygiene and safety legislation. In addition, the policies ensure that people who use the services, staff and visitors are not at risk of food poisoning.

**Table 4:1 Effects of Catering Policies on Food Hygiene and Safety**

<b>Statement</b>	<b>N</b>	<b>Mean</b>	<b>StD</b>
Availability of all necessary information for handling food safely to Respondents	93	3.44	1.14
Management provides adequate training to improve employees' food hygiene and safety practices	93	3.24	1.04
Management will not take even a small risk when it comes to food	93	3.25	1.37

hygiene and safety			
Managers' actions show that providing safe food to customers is a top priority	93	3.72	1.30
Managers actively ensure practicing of safe food handling	93	3.72	1.05
Respondents follow and practice food hygiene and safety rules because they know they are important	93	3.35	1.20
New employees and experienced employees work together to ensure food hygiene and safety practices	93	3.52	0.90
Food hygiene and safety training/education provided by management improves practices	93	3.55	1.08
Cooperation among Departments to Ensure Safe Food Preparation	93	3.55	1.05
Food hygiene and safety policies and procedures help to ensure Adherence to safe food handling practices	93	3.82	1.14

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#### **4.3.2 Food Handling Practices**

The second objective of the study aimed at investigating food handling practices on food hygiene and safety. The respondents were requested to indicate the level of agreement the study showed that a bigger number of the respondents disagreed with a mean value of 3.08 and a standard deviation of 1.08 that there were adequate supplies tools and materials such as gloves and thermometers, which are readily available to perform safe food handling practices. The study reveals that a higher percentage of the respondents agreed that equipment items needed to prepare food safely such as hand washing sinks is readily available and accessible while a good number disagreed with a mean value of 3.46 and a standard deviation of 1.02. The respondents strongly indicated that they were are being provided with quality supplies that make it easy for them to follow safe food handling practices, with a mean value of 3.41 and a standard deviation of 0.95. to a moderated extent the respondents agreed with a mean value of 3.51 and a standard deviation of 1.03 that there are adequate resources, including tools and equipment to prepare food safely, further reveals that a higher percentage of the respondents agreed with a mean value of 3.04 and a standard deviation of 1.27 that facilities

such as freezer and warmer were of adequate quality to follow safe food handling practices. The respondents to moderated extended agreed that the staff in NYS didn't compromises with safe practices are made when handling food which was supported by a mean of 4.20 and standard deviation of 1.30, the study indicated that Organisation was Cutting corners with food hygiene and safety to save costs when preparing food which was supported by a mean of 3.19 and standard deviation of 1.33. This implies that to significant extent facilities such as a freezer and warmer at NYS catering units are of adequate quality and can thus support safe food handling practices. The study findings concurred with those of Aagaard, (2016) that food handling process should be capable of accommodating change, such as advances in equipment design, processing procedures or technological developments.

**Table 4:2 Food Handling Practices**

Statement	N	Mean	StD
Adequate supplies tools and materials readily available for safe food handling practices	93	3.08	1.08
Equipment items needed to prepare food safely (e.g., hand washing sinks) are readily available and accessible	93	3.46	1.02
Staff provided with quality supplies that makes it easy to follow safe food handling practices	93	3.41	0.95
Adequacy of resources to prepare food safely	93	3.51	10.28
Adequacy of facilities quality in order to follow safe food handling practices	93	3.04	1.27
Fumigation done	93	3.24	0.43
Records kept for food temperature	93	3.30	0.46
Food handling practices are standardized and institutionalized	93	3.32	0.47

Measures on prevention on food contamination	93	4.05	0.43
No compromises with safe practices are made when handling food	93	4.20	1.30
Organisation Cutting corners with food hygiene and safety to save costs when preparing food	93	3.19	1.33

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### 4.3.3 HACCP Principles

The third objective of the study aimed at assessing the implementation of HACCP principles and their effect on food hygiene and safety. The study revealed that majority of the respondents agreed with a mean value of 3.49 and a standard deviation of 1.16. Food hygiene and safety inspections by health inspectors ensure Adherence to safe food handling practices. The study revealed that reveals that majority of the respondents agreed that food-hygiene operating procedure had been documented while a good number disagreed with a mean value of 3.34 and a standard deviation of 0.48. Most of the respondents disagreed with a mean value of 3.81 and a standard deviation of 1.30 on whether employees are rewarded for following safe food handling practices.

This implies that a greater number of the respondents were of the view that food-hygiene operating procedure has been documented. On whether employees are rewarded for following safe food handling practices, the study showed that most of the respondents disagreed with a mean value of 4.01 and a standard deviation of 1.30. This implies that a good number of respondents were of the opinion that employees are not rewarded for following safe food handling practices. The respondents indicated that Adherence to food hygiene and safety practices part of annual work performance evaluation with a mean value of 3.17 and a standard deviation of 1.38. The respondent further agreed that establish the corrective action to be taken when monitoring indicates that a particular CCP is not under control helped in food handling which was supported by a mean of 3.91 and standard deviation of 0.72. This

implies food hygiene and safety practices as part of their annual work performance evaluation. The study findings were in agreement with those of AlYousuf & Taylor, (2015), that measures for safe food handling need strengthening as part of annual work performance evaluation. The study concurred with those of that

**Table 4:3 HACCP Principles**

<b>Statement</b>	<b>N</b>	<b>Mean</b>	<b>Std</b>
Food hygiene and safety inspections by health inspectors ensure Adherence to safe food handling practices	93	3.49	1.16
Any documentation of food hygiene handling procedures	93	3.34	0.48
Employees are rewarded for following safe food handling practices	93	4.01	1.30
Adherence to food hygiene and safety practices part of annual work performance evaluation	93	3.17	1.38
Establish procedures for ensuring the HACCP system is working as intended	93	3.67	0.38
Establish critical control point monitoring requirements	93	4.03	0.98
Establish documentation concerning all procedures and records appropriate to these principles and their application.	93	3.89	0.34
Establish the corrective action to be taken when monitoring indicates that a particular CCP is not under control.	93	3.91	0.72

### **4.3.3 Food Hygiene and Safety**

To majority, not all the necessary information for handling food safely is readily available. Managers are actively involved in making sure safe food handling is practiced and in most of

situations, new employees and experienced employees work together to ensure food hygiene and safety practices are in place while training/education on food hygiene and safety is provided by management, which help improve practices. Most staffs don't use food gloves when preparing food items and don't use detergent water when cleaning vegetables. Staffs go for food handling medical check-ups, but most have not attended any in-service training. Most uses menu and procedures for food production and do record what is received for preparation in the kitchen. They also they do take temperature measurements and keep records of all food temperature during service. The staffs think handling practices are standardized and institutionalized across NYS catering units and there are measures put in place to prevent food contamination and poisoning. Majority of staff have not heard about HACCP or any other food hygiene and safety standards though they think there are continuing education courses on HACCP and food hygiene for food-handlers. *All the key informants showed that there have never been incidences of food contamination or food poisoning in NYS.* This means there are low food poisoning incidences in the institution.

#### **4.4 Regression Analysis**

##### **4.4.1 Standard Operating Procedures on Food Hygiene and Safety Practices**

The study found in the table below, the R Square, which is the coefficient of determination, was used to measure the dependent variable variations and their effect on the dependent variables. As observed, The R Square value was 0.475; this value is between 0 and 1. Analytically, this shows that 47.5 % of variations in the dependent variable can be explained by the independent variables. That 47.5 % of variation in food hygiene and safety in National Youth Service, Gilgil, Kenya which is explained by Standard Operating Procedures, while the remaining 52,5 % is associated with factors

#### **Table 4:4 Standard Operating Procedures and Food Hygiene and Safety Practices**

<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
1	.689a	.475	.469	.530

a. Predictors: (Constant), Standard Operating Procedures

#### **4.4.2 Food Handling Practices**

The study found in the table below, the R Square, which is the coefficient of determination, was used to measure the dependent variable variations and their effect on the dependent variables. As observed, The R Square value was 0.451; this value is between 0 and 1. Analytically, this shows that 45.1% of variations in the dependent variable can be explained by the independent variables. That 45.1% of variation in Food Handling Practices in National Youth Service, Gilgil, Kenya which is explained by Standard Operating Procedures, while the remaining 54,9 % is associated with factors

**Table 4:5 Food Handling Practices and Food hygiene and safety Practices**

<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
1	.672a	.451	.445	.542

a. Predictors: (Constant), Food Handling Practices

#### **4.4.3 HACCP Principles**

The study found in the table below, the R Square, which is the coefficient of determination, was used to measure the dependent variable variations and their effect on the dependent variables. As observed, The R Square value was 0.557; this value is between 0 and 1. Analytically, this shows that 55.7 % of variations in the dependent variable can be explained by the independent variables. That 55.7 % of variation in HACCP Principles in National

Youth Service, Gilgil, Kenya which is explained by Standard Operating Procedures, while the remaining 44.3 % is associated with factors

**Table 4:6 Model Summaries**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.756 <sup>a</sup>	.571	.557	.458

a. Predictors: (Constant), Implementation of HACCP Principles

#### 4.5 Multiple Regressions

The study sought to determine the combine effect of all the variables through multiple regressions and presented the results in the section below. The regression model in Table 4:8 shows the R and R<sup>2</sup> value representing the simple correlation between the combined variables and the dependent variable. The R value is 0.885 which indicates a fairly strong correlation. The R<sup>2</sup> value indicates how much of the dependent variable (Conformance on catering practices), can be explained by the combined independent variables, (Standard Operating Procedures, Food Handling Practices and HACCP Principles). In this case, 78.4 % in the dependent variable can be explained by the independent variables. Which is fairly strong? This therefore implies that there is a strong association between Conformance on catering practices and Food hygiene and safety practices and the investigated variables.

**Table 4:7 Model Summaries**

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate
1	.885 <sup>a</sup>	.784	.777		.343

a. Predictors: (Constant), Food hygiene and safety

a. Predictors: HACCP Principles, Standard Operating Procedures Safety, Food Handling Practices

#### 4.6 Regression Coefficient

The study determined the strength of the relationship between the independent variables (Standard Operating Procedures, Food Handling Practices and Implementation of HACCP Principles) and Food hygiene and safety practices and results presented in Table 4.9. The Table provides the information needed to predict Catering and Food hygiene and safety practices at NYS from the independent variables in which the constant and the Standard Operating Procedures variable are significant. The regression equation is presented as follows;

Food hygiene and safety practices = 1.044 + 1.106 (Standard Operating Procedures) +2.137(Food Handling Practices) + 1.142 (Implementation of HACCP Principles)The results shows that food handling practices had highest influence on catering and food hygiene and safety practices followed by Standard Operating Procedures and then implementation of HACCP Principles.

**Table 4:8 Regression Coefficients**

Model 1	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.044	.333		3.133	.002
Standard Operating Procedures	1.106	.125	.133	1.846	.000
Food Handling Practices	2.137	.104	.205	3.313	.001
HACCP Principles	1.042	.113	.039	1.372	.002

a. Dependent Variable: Food hygiene and safety

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon$$

Where:

Y=the dependent variable (food hygiene and safety)

$\beta_0$  =the intercept, i.e.  $Y = \beta_0$ , when  $X_1, X_2, X_3 = 0$

$\beta_1, \beta_2$  and  $\beta_3$  are the regression coefficients describing the size of contribution of the representative independent variable (Policies, food handling practices and HACCP principle)

$X_1$  = Standard Operating Procedures

$X_2$ = Food Handling Practices

$X_3$ = HACCP principle

## **4.8 Discussion**

### **4.8.1 Standard Operating Procedures on Food Hygiene and Safety**

Findings established that majority agreed that food hygiene and safety policies and procedures provided detailed guidance for practices although most believed that these regulations are nothing more than cover-up in case there are legal issues. In addition, to majority did not think that all the necessary information for handling food safely is readily available including adequate training to the employees to improve food hygiene and safety practices and quality. Evidence suggests that the management falls short of providing adequate and timely information about current food hygiene and safety rules and regulations. According to University of Mississippi (2017) food hygiene and safety standard operating procedures (SOPs) are written practices and procedures that are critical to producing safe food. It is essential to have these SOPs in place and to train food-service employees to use

them. In addition, policies should ensure “Due Diligence” in respect of food hygiene, safety, ensuring all food handlers is appropriately trained, and all areas of food hygiene and safety are risk assessed as well as ensuring compliance (Jabbar & Grace, 2012). There is inadequate training of personnel meant to improve food policies and food hygiene and safety. This implies the catering department has a shortfall in providing adequate training to the staff to improve employees’ food hygiene and safety practices.

According to FAO (2016) states that though consumers, governments and other stakeholders play an important role in ensuring both food hygiene and safety and quality, in free-market societies the ultimate responsibility for investing the physical and managerial resources necessary for implementing appropriate controls correspond with food industry that continuously oversees manufacture and processing of foods. The management in place offering food service should therefore continuously offer leadership that ensures highest level of food hygiene and safety. Additionally, six key informants commented that *the policies in place help in ensuring that workplace cleanness is maintained.*

#### **4.8.2 Handling Practices on Food Hygiene and Safety**

From the analysis, a larger part of the respondents do not use food gloves when preparing food items, hence the staff should be sensitized on the need to adopt usage of gloves as a way of boosting safe food handling at the institution. All the key informants noted that *tools are provided and there have never been incidences of food contamination or food poisoning in the institution.* Food handling safety in the catering is fairly good although numerous hindrances to safe handling practices were noted such as lack of cooperation among staff and lack of water. This means there are low food poisoning incidences in the institution. A report by WHO (2015) on estimates of the global burden of food-borne diseases that comprehensive reported the impact of contaminated food on health and well-being of individuals estimated that each year as many as 600 million, or almost 1 in 10 people in the world, fall ill after

consuming contaminated food out of which, 420 000 people die. The report further cited 31 agents of food-borne diseases that include bacteria, viruses, parasites, toxins and chemicals. This report emphasizes the importance of ensuring zero incidences of food poisoning by ensuring stringiest adherence to hygienic food handling.

#### **4.8.3 HACCP Principles on Food Hygiene and Safety**

A bigger percentage of the respondents have no information and knowledge on hazard analysis and critical control points principles and their effect on food hygiene and safety, because of inadequate training. Food-hygiene operating procedures had been documented although the food hygiene and safety practices are hardly followed. Fundamental role of health inspectors on food handling practices was highly noted by the respondents. A report by WHO (2015) on Estimates of the Global Burden of Food-borne Diseases that comprehensive reported the impact of contaminated food on health and well-being of individuals estimated that each year as many as 600 million, or almost 1 in 10 people in the world, fall ill after consuming contaminated food out of which, 420 000 people die. The report further cited 31 agents of food-borne diseases that include bacteria, viruses, parasites, toxins and chemicals. This report emphasizes the importance of ensuring zero incidences of food poisoning by ensuring stringiest adherence to hygienic food handling.

## CHAPTER FIVE

### SUMMARY OF THE FINDINGS, CONCLUSION AND RECOMMENDATION

#### 5.1 Introduction

In this chapter the researcher makes summary of the study then draws conclusion and gives recommendations based on the research findings and analysis done in previous chapter. The summary is a brief overview of the research process while conclusion is the report of the crucial findings and the recommendations are suggestions and advice based on the research findings

#### 5.2 Summary of the Findings

This study sought to determine influence of conformance on catering practices to food hygiene and safety: a case study of National Youth Service, Gilgil, Kenya the specific objectives that guided that study included to find out conformance on catering practices to food safety. SPSS version 23 was used to aid in data analysis. Data analysis results were presented using charts and tables. Multiple linear regression results have shown that four predictors can explain 75.2% of food hygiene and safety: a case study of National Youth Service; Standard Operating Procedures, Food Handling Practices and HACCP Principles.

##### 5.2.1 Standard Operating Procedures on Food Hygiene and Safety

The study objective was Determine the effect of Standard Operating Procedures on food hygiene and safety at the National Youth Service Catering Units in Gilgil, Kenya. The study established that Standard Operating Procedures positive influence on food hygiene and safety at. ( $\beta_1 = 1.106$ ,  $p = 0.000 < 0.05$ ). The study established that The implementation of this policy is supported by the guidelines of various Standard Operating Procedures, (SOPs), which include appropriate written codes of practice, and identify standards to be met for purchase, storage, preparation, cooking/regeneration and service of food. The testing and recording of food

temperatures throughout the food chain - food receipt through to the point of service is an essential part of the quality control of good, nutritious, safe food .A food control system ensures that foods conform to safety and quality requirements and are honestly and accurately labelled, as required by law

### **5.2.2 Food Handling Practices on Food Hygiene and Safety**

The study objective was Investigate the influence of food-handling practices on food hygiene and safety at the National Youth Service Catering Units in Gilgil, Kenya. The study established that Standard Operating Procedures positive influence on food hygiene and safety at. ( $\beta_2=2.137$   $p=0.001<0.05$ ).The study established that All foods, if handled properly, can be safe handling, storage It is much better to prevent food hazards arising than it is to simply monitor food at the point of sale or consumption. Sampling and analysing the final product will provide adequate protection to the consumer. The introduction of preventive measures at all stages of the food handling and distribution chain, rather than only inspection and rejection at the final stage, also makes better economic sense, because unsuitable products can be identified earlier along the chain

### **5.2.3 HACCP Principles on Food Hygiene and Safety**

The study objective was Assess the implementation of HACCP principles and their effect on food hygiene and safety at the National Youth Service Catering Units in Gilgil, Kenya. . The study established that HACCP Principles positive influence on food hygiene and safety at. ( $\beta_3=1.142$ ,  $p=0.002<0.05$ ).The study established that The HACCP system can be applied throughout the food chain from the primary producer to the final consumer. Besides enhancing food hygiene and safety, other benefits in applying HACCP include more effective use of resources and more timely response to food hygiene and safety problems. In addition, the application of the HACCP system can aid inspection by food control regulatory

authorities and promote international trade by increasing buyer confidence in food hygiene and safety.

### **5.3 Conclusion**

#### **5.3.1 Standard Operating Procedures on Food Hygiene and Safety**

The study concluded that National Youth Service Kitchens are required to have a schedule of cleaning in place. Responsibility for undertaking the cleaning activity and frequency will be based on the national standards for cleanliness. It is important that the correct cleaning method is specified and understood by the catering staff responsible for carrying out the task. Similarly, the correct product to use and the correct time to do the job needs to be specified. Such information must therefore be summarised in the form of a cleaning schedule. Cleaning schedules provide a clear set of standards/frequencies and with the use of simple check lists, enable the kitchen supervisor to monitor the standard of hygiene being maintained

#### **5.3.2 Food Handling Practices on Food Hygiene and Safety**

The study concluded that National Youth Service should enforce the handling guidelines and accessing processes of food product in order to prevent and rescue them from all the unwanted and unhealthy factors. Food-handling staff should be trained to a level commensurate with their work activities and training records maintained to ensure compliance with Trust-, department- and statutory requirements. National Youth Service students and Staff be trained in the use of chemicals, Control of Substances Hazardous to Health, (COSHH)), and with respect to personal hygiene, awareness of sickness reporting procedures and infection control good practices.

#### **5.3.3 HACCP Principles on Food Hygiene and Safety**

The study recommends that The HACCP system in National Youth Service should be applied throughout the food chain from the primary producer to the final consumer. Besides enhancing food hygiene and safety, other factors in applying HACCP include more effective

use of resources and more timely response to food hygiene and safety problems. In addition, the application of the HACCP system aid inspection by food controls regulatory authorities and increasing student's confidence in food hygiene and safety. Attention to high standards of management of food services and good hygiene practices are essential with the current legal obligations are to be met. The food hygiene and safety management system adopted by the National Youth Service should be based on Hazard Analysis Critical Control Points (HACCP) principles.

## **5.4 Recommendations**

### **5.4.1 Standard Operating Procedures on Food Hygiene and Safety**

The study recommends that all food hygiene and safety and hygiene policies and procedures should be implemented by having effective management of food hygiene and safety systems in place, Having SOPs reduces miscommunications within facility because everything is written down with written protocols exist, they are useful in training new employees. They ensure no essential information is left out of training and ensure that new and old employees receive the same, no contradictory information.

### **5.4.2 Food Handling Practices on Food Hygiene and Safety**

The study recommends that there the importance of establishing a food hygiene and safety culture in National Youth Service. This involves a commitment to continually operate in a safe manner, being proactive at eliminating hazards, training employees, and establishing consistent food hygiene and safety protocols. Internal food hygiene and safety checklists are proactive measures to ensure food hygiene and safety standards are being met. Items that are devised to support and encourage food hygiene and safety behaviors become should be completed properly. Third party inspections by National Youth Service Hiring outside food hygiene and safety inspectors which is a is worthwhile investment.

### **5.4.3 HACCP Principles on Food Hygiene and Safety**

The study recommends that a successful application of HACCP require the full commitment and involvement of management and the workforce. Where monitoring has established that critical limits at a CCP have been exceeded, it's essential that corrective action be taken to ensure that the hazard does not become a problem. This might mean disposing of any items that are not cooked properly, withdrawing from sale items that might have been compromised, or taking any other action that prevents a hazardous item from being consumed.

### **5.5 Suggested Areas for Further Study**

The study suggests a replica of the same study in other Government establishments such as schools, colleges and universities. It also suggests a study on the influence of HACCP on food sourcing and procurement and a conduct of a similar study in different private establishments such as hotels. The study also suggests that a similar study should be conducted using a larger sample so that generalization of results to other institutions can be done with greater confidence. In addition, a longitudinal study should also be done to ensure comparison of findings over a lengthy period. This would allow continuous and data based improved of catering services at NYS catering units Gilgil.

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## APPENDIX I: QUESTIONNAIRE

I'm a student at Karatina University pursuing a Postgraduate degree in Master of Hospitality Management. I'm doing a research on 'Investigation on Conformance of Catering Practices to Food Hygiene and Safety of National Youth Service, Gilgil, Kenya, for my Master's Thesis. I am requesting you to answer the questions below, which will assist me in collecting the data needed for my research. All information provided will be treated with total confidence.

### SECTION A: BACKGROUND INFORMATION

1. What is your age in years?
  - a. Below 25      26-50    Above 50
2. What is your gender?              a) Male              b) Female
3. How long have worked in any type of food service?

Less than 5years b) 5-10 Years c) 10-20 Years d) Over 20 Years

### SECTION B: STANDARD OPERATING PROCEDURES

4. Please read each of the following statement regarding catering policies on food safety in your workplace and respond appropriately. How do you agree or disagree with the following statements regarding catering policies on food safety? Use Strongly disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly agree (5)

NO	STATEMENT	1	2	3	4	5
1.	Availability of all necessary information for handling food safely to Respondents					
2.	Management provides adequate training to improve employees' food hygiene and safety practices					
3.	Management will not take even a small risk when it comes to food					

	hygiene and safety					
4.	Managers' actions show that providing safe food to customers is a top priority					
5.	Managers actively ensure practicing of safe food handling					
6.	Respondents follow and practice food hygiene and safety rules because they know they are important					
7.	New employees and experienced employees work together to ensure food hygiene and safety practices					
8.	Food hygiene and safety training/education provided by management improves practices					
9.	Cooperation among Departments to Ensure Safe Food Preparation					
10.	Food hygiene and safety policies and procedures help to ensure Adherence to safe food handling practices					

### SECTION C: FOOD-HANDLING PRACTICES ON FOOD SAFETY

5. Please read each of the following statement regarding food-handling practices on food safety on food safety in your workplace and respond appropriately. How do you agree or disagree with the following statements regarding catering policies on food safety?

Use strongly disagree (1), Disagree (2), Neutral (3), Agree (4), strongly agree (5)

	Statement	1	2	3	4	5
1.	Adequate supplies tools and materials readily available for safe food handling practices					
2.	Equipment items needed to prepare food safely (e.g., hand washing sinks) are readily available and accessible					
3	Staff provided with quality supplies that makes it easy to follow safe					

	food handling practices					
<b>3</b>	Adequacy of resources to prepare food safely					
<b>4</b>	Adequacy of facilities quality in order to follow safe food handling practices					
<b>5.</b>	Fumigation done					
<b>6.</b>	Records kept for food temperature					
<b>7</b>	Food handling practices are standardized and institutionalized					
<b>8</b>	Measures on prevention on food contamination					
<b>9</b>	No compromises with safe practices are made when handling food					
<b>10</b>	Organisation Cutting corners with food hygiene and safety to save costs when preparing food					

7. How frequent do you clean the working services and equipment?

- a) Four times a day    b) Two times a day    c) Once a day    d) After every use

ii. Any other kindly indicate

-----  
-----  
-----

8 What is your general view on food handling safety? -----

-----  
-----

9. Indicate which of the following food-hygiene practices are carried out in your catering units (check all that apply)

- a. Hazard analysis of food practices  
b. Inspection of raw materials \_\_\_\_\_

c. Identification of critical points regarding food safety \_\_\_\_\_

### SECTION C: HACCP PRINCIPLES

10. Please read each of the following statement regarding HACCP principles on food safety on food safety in your workplace and respond appropriately. How do you agree or disagree with the following statements regarding catering policies on food safety? Use strongly disagree (1), Disagree (2), Neutral (3), Agree (4), strongly agree (5)

	Statement	1	2	3	4	5
1.	Food hygiene and safety inspections by health inspectors ensure Adherence to safe food handling practices					
3.	Any documentation of food hygiene handling procedures					
4.	Employees are rewarded for following safe food handling practices					
5.	Adherence to food hygiene and safety practices part of annual work performance evaluation					
6.	Establish procedures for ensuring the HACCP system is working as intended					
7.	Establish critical control point monitoring requirements					
8.	Establish documentation concerning all procedures and records appropriate to these principles and their application.					
9	Establish the corrective action to be taken when monitoring indicates that a particular CCP is not under control.					
10	Food hygiene and safety inspections by health inspectors ensure Adherence to safe food handling practices					

12. Have you ever heard of HACCP or any other food safety standards? a) Yes b) No

If yes, do you use Critical Control Points Tree? \_\_\_\_\_

13 . Are continuing education courses on HACCP and food hygiene for food-handler been implemented?

**-END-**

**THANK YOU VERY MUCH**

**APPENDIX II: RESEARCH SCHEDULE (WORK PLAN)**

<b>Time Elapsed</b>	<b>January – April 2017</b>		<b>May 2018</b>		<b>June – December 2018</b>		<b>January-April 2019</b>		<b>May-August 2020</b>	
<b>Milestones</b>										
Confirmation										
Proposal Defence										
Project Defence										
<b>Research Coursework</b>		Critical Writing				Proposal Defence				Project Defence
<b>Thesis Writing</b>										
Title & Abstract										
Introduction										
Literature Review										
Methodology										
Data Analysis										
Discussion										
Conclusion										
<b>Research Process</b>										
Accessing Literature										
Consider Methodologies										
Access Sample										
Gather Results										
<b>Approvals/Agreements</b>										
Research Approval										
Questionnaire Respondents										
<b>Outputs</b>										
Research Project										

### APPENDIX III: RESEARCH BUDGET

Budget Item	Sub-item	Amount in KS.	Sub-Total in KS.	Justification
<b>Reconnaissance (Pre-visit)</b>	Travel cost t	30000		To familiarize with the area of study, making initial contacts and gather crucial preliminary data
	Accommodation and food for two days	23000		
	Commuter cost between hotel and the study area	8000		
			<b>61000</b>	
<b>Proposal Development</b>	Printing of full proposal	3000		To seek approval to undertake the study from the project supervisor in good time
	Printing of data collection instruments	25000		
			<b>28000</b>	
<b>Field Work</b>	Travel cost to	3000		For actual collection of data in the field
	Accommodation and Food for two days	4000		
	Commuter cost from hotel to Study area	8000		
	Personnel-Data Collection Assistant	3000		
<b>Data Entry and Analysis</b>	Personnel-Research Assistant	20000		To assist in coding of questionnaires, data entry, data management and analysis of data
			<b>38000</b>	
<b>Printing, Photocopying and Binding of Project Report</b>	Printing 2 copies and Binding of Project Report	1600		
			<b>1600</b>	
Total Direct Expense			22600	
<b>Miscellaneous (10% of total direct expense)</b>			22600	
<b>Total Project Expense</b>			<b>172,000.</b>	

#### **APPENDIX IV: INTRODUCTION LETTER FROM THE UNIVERSITY**

Dear Respondent,

I'm a student at Karatina University pursuing a Master of Hospitality Management Degree. My research is on '**An Assessment Of Catering Practices On Food hygiene and safety Investigation On Conformance Of Catering Practices To Food Hygiene And Safety At National Youth Service Catering Units In Gilgil**'. I am requesting you to answer the questions which will assist me in collecting the data/information needed for my research.

All information provided will be treated with total confidence Thank you for your support and cooperation.

Yours Faithfully,

**Ndaramu Gitu Onesmus** :

**B304/21O4P/15**

Tel: 0721929389

Email: [ndaramujunior@gmail.com](mailto:ndaramujunior@gmail.com)

## APPENDIX V: RESEARCH PERMIT

  
**NATIONAL COMMISSION FOR SCIENCE,  
TECHNOLOGY AND INNOVATION**

Telephone: +254-20-2213471  
2241349, 3310571, 2219420  
Fax: +254-20-318245, 318249  
Email: dg@nacosti.go.ke  
Website: www.nacosti.go.ke  
when replying please quote

9<sup>th</sup> Floor, United House  
Uhuru Highway  
P.O. Box 30623-00100  
NAIROBI-KENYA

Ref. No: **NACOSTI/P/17/17400/16193** Date **27<sup>th</sup> March, 2017**

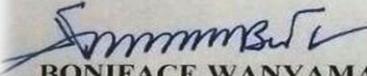
Onesmus Gitu Ndaramu  
Karatina University  
P.O. Box 1957-10101  
**KARATINA.**

**RE: RESEARCH AUTHORIZATION**

Following your application for authority to carry out research on *“An assessment of influence of catering practices on food safety at National Youth Service Messes in Gilgil,”* I am pleased to inform you that you have been authorized to undertake research in **Nakuru County** for the period ending **27<sup>th</sup> March, 2018.**

You are advised to report to **the County Commissioner and the County Director of Education, Nakuru County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

  
**BONIFACE WANYAMA**  
**FOR: DIRECTOR-GENERAL/CEO**

Copy to:

The County Commissioner  
Nakuru County.

The County Director of Education  
Nakuru County.

# RESEARCH CLEARANCE

**CONDITIONS**

1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit.
2. Government Officer will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2) hard copies and one (1) soft copy of your final report.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice

  
**REPUBLIC OF KENYA**

  
**National Commission for Science, Technology and Innovation**

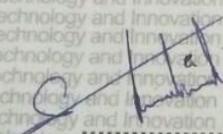
**RESEACH CLEARANCE PERMIT**

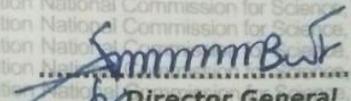
Serial No. **13479**

**CONDITIONS: see back page**

**THIS IS TO CERTIFY THAT:**  
**MR. ONESMUS GITU NDARAMU**  
**of KARATINA UNIVERSITY, 525-20116**  
**Gilgil, has been permitted to conduct**  
**research in Nakuru County**  
**on the topic: AN ASSESSMENT OF**  
**INFLUENCE OF CATERING PRACTICES ON**  
**FOOD SAFETY AT NATIONAL YOUTH**  
**SERVICE MASSES IN GILGIL**  
**for the period ending:**  
**27th March, 2018**

**Permit No : NACOSTI/P/17/17400/16193**  
**Date Of Issue : 27th March, 2017**  
**Fee Received :Ksh 1000**

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

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