INFLUENCE OF GENDER INEQUALITY ON FOOD SECURITY: A CASE FOR USIGU DIVISION OF SIAYA COUNTY, KENYA

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A Research Project Report Submitted in Partial Fulfilment of the Requirements for the Award of the Degree of Master of Arts in Project Planning and Management of the University of Nairobi

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DECLARATION

This research project report is my original work and has not been presented for a degree or any award in any other University or institution.

Signed.....

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This research project report has been submitted with my approval as University Supervisor

Signed.....

Date.....

Dr. Anne Ndiritu

ODeL CAMPUS, SCHOOL OF DISTANCE LEARNING

DEDICATION

This research project is dedicated to my children Alfayo, Charles (Junior), Branice and Brandon whose time had to be sacrificed to create time for this research and my treasured wife Rose for untiring encouragement.

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ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
ART	Anti-Retroviral Therapy
CEDAW:	Convention on the Elimination of All Forms of Discrimination against Women
CBS	Central Bureau of Statistics
CMD	Cassava Mosaic Disease
ECA	Europe and Central Asia Region
FAO:	Food and Agriculture Organization of the United Nations
FHHs:	Female Headed Households
FNSP	Food and Nutrition Security Policy
FPE	Free Primary Education
PDSE	Free Day Secondary Education
GDP:	Gross Domestic Product
GOK	Government of Kenya
HIV	Human Immuno-deficiency Virus
ICT	Information and Communication Technology
IFIs	International Financial Institutions
IFPRI	International Food Policy Research Institute
ILC	International Law Commission
KWFT:	Kenya Women Finance Trust
MDG:	Millennium Development Goal
MFI:	Microfinance Institutions
MHH:	Male Headed Household
MSME:	Micro, Small, and Medium Enterprises
NACC	National Aids Control Council
NACOSTI	National Commission of Science, Technology and Innovations
NGEC	National Gender and Equality Commission
NGO	Nin Governmental Organization
NREGA	National Rural Employment Guarantee Act
OECD	Organization for Economic Cooperation and Development
OWIT:	Organization of Women in International Trade
PRC	Peoples' Republic of China

SACCOs: Savings and Credit Cooperatives

SSA: Sub Saharan Africa

UDHR: Universal Declaration of Human Rights

UNCEDAW: United Nation Convention on the Elimination of All Forms of Discrimination Against Women

UNECA: United Nations Economic Commission for Africa

UNDP United Nations Development Programme

UNHCR: United Nations Higher Commission for Refugees

USAID: United States Agency for International Development

ABSTRACT

The purpose of this study was to investigate the influence of gender inequality on Food Security in Usigu Division of Siaya County in Kenya. The objectives of the study were to: examine the extent to which gender inequality in land ownership and control influence food security; assess how gender inequality in access to information and education influence food security; establish how gender inequality in access to health services influence food security; analyze the extent to which gender inequality in access to paid employment opportunities influence food security and finally determine how gender inequality in access to credit facilities influence food security in Usigu Division of Siaya County in Kenya. This study adopted a descriptive survey design in describing the gender inequalities and their influence on food security. The study employed three types of sampling procedure; purposeful sampling in identifying key informants from known players in food security relevant to the study. Multi stage random sampling was used to select villages, sub locations and households for interview. Furthermore, stratified random sampling was used to determine the male and female respondents. Key study instruments were questionnaires and interview guides. Questionnaires were administered to selected male and female respondents along the food production chain while interview guide was used to collect data from key informants. Data was collected by Research Assistants under the supervision of the researcher. Data collected was analyzed both descriptively and inferentially. Computer statistical package for Social Scientists (SPSS) was used to analyze the quantitative data and graphical presentations generated. Qualitative data checklists was developed based on the research themes and interpreted along those thematic areas. The findings of the study indicate that with an exception of access to information and education, there exists gender inequalities in land ownership and control, access to health services, access to paid employment and access to credit facilities. The findings show further that the extent of influence of land ownership and control, access to information and education, access to health services, access to paid employment and access to credit facilities varies in male and female headed households. The study found that there was a significant association between land acreage in Male Headed Households and food security as indicated by $x^2_{(2)} = 26.948$, $p = 0.000<0.05$. However, in FHHs, there was no significant association between land acreage and food security as indicated by $x^2_{(2)} = 4.465$, $p = 0.107>0.05$. This implies that whereas land ownership was a determinant factor of food security in Male Headed Households (MHHs), it was not a factor in Female Headed Households (FHHs). In terms of access to information and educations, the study found that there was no significant association between level of education attained and food security in MHHs. Thus, [$x^2_{(1)} = 3.608$, $p = 0.058 >0.05$]; implying that level of education was not a determining factor for food security in MHHs. However, in FHHs, there was a significant association between level of education attained and food security [$x^2_{(3)} = 13.863$, $p = 0.003<$ 0.05; implying that level of education was a determining factor for food security in FHHs. As regards access to health services, the study found that in both MHHs and FHHs, there was a significant association between access to health services and food security [$x^2_{(1)} = 48.166$, $p =$ 0.000< 0.05] and [$x^2_{(2)} = 6.968$, $p = 0.031< 0.05$] respectively; implying that accessibility to health services had a significant role in determining food security in both MHHs and FHHs. In terms of access to paid employment, the study found that there was a significant association between access to paid employment and food security in FHHs: [$x^2_{(1)} = 5.872$, $p = 0.015<$ 0.05]; However, there was no significant association between access to paid employment and food security in MHHs: [$x^2_{(1)} = 0.013$, $p = 0.909 >0.05$]. This implies that access to paid employment had a significant role in determining food security in FHHs but not in MHHs households. Finally, the study found that there was a significant association between access to

credit facilities and food security in both FHHs and MHHs. Thus, [$x^2_{(1)} = 7.017$, $p = 0.008 < 0.05$] and [$x^2_{(1)} = 21.429$, $p = 0.000 < 0.05$] respectively; implying that access to credit facilities had a significant role in determining food security in both FHHs and MHHs. The study recommends that the government, gender and human rights activists and development experts focus their attention on the implementation of legal measure that ensure men and women are entitled to equal rights to land, seek to support education for all, setup and widen access to reproductive health and seek to enhance credit programmes that target rural women farmers. More research is however needed to find out why access to land and not land ownership influence food security. Follow up research is also needed to find out the extent to which gender disparities in secondary and university education affect food security.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Achieving food security in its totality is perhaps one of the greatest global challenges today. Globally, there are one billion undernourished people (FAO, 2010). In every 7 people there is one undernourished person on the planet earth. One in every five children under the age of 5 years is underweight. Despite the relatively favourable food security conditions and outlooks in year 2013, 36 countries around the world still needed external food assistance (UN- OCHA, 2013). Food security on the African continent has worsened since 1970 and the proportion of the malnourished population has remained within the 33-35 % range. The prevalence of malnutrition within the continent varies by region, lowest being Northern Africa at 4% and highest in Central Africa at 40%. According to the 2017 Global Report on Food Crisis, there are 108 million people facing crisis level food insecurity globally. This represents a 35 percent increase compared to 2015 when the figure was almost 80 million. The number of food insecure people in Kenya increased from 1.3 million to 2.2 million in February 2017 pushing the government to declare the 2017 drought a national disaster (Global report on food crisis, 2017).

Key cause of food insecurity is inadequate food production (UNDP, 2012). African human development report argues that key driver of food security is sustainable food production. More productive agriculture will build food security by increasing food availability and lower food prices thus improving access. Higher productivity can also raise the incomes of millions of small scale farmers, elevating their living standards and improving health, education, thus expanding people's capabilities.

Quisumbing (2014) reviewing the econometric evidence on gender differences in agricultural productivity argued that production function is the technical relationship between inputs and outputs that specifies maximum level of output given the input level.. Maximizing agricultural production cannot be achieved without addressing the human resource input- labor. Women comprise, on average, 43 percent of the agricultural labor force in developing countries and make essential contributions to the rural economy of all developing countries' regions as farmers, laborers and entrepreneurs (FAO, 2011). Despite crucial role played by women in food production, one fact is strikingly consistent across countries and contexts: Women in agriculture

and rural areas have less access than men to productive resources and opportunities. The gender gap is found for many assets, inputs and services and it imposes costs on the agriculture sector, the broader economy and society as well as on women themselves. If no efforts are made to eliminate gender disparity in access to productive resources, women in agriculture will remain less productive to the extent that even other measures being taken to resuscitate agriculture will not benefit them. Neglecting the efforts of women in the food production system will adversely reduce the global potential to increase food production and thus ensure food security.

In many parts of Africa, women contribute greatly to their respective country economies as entrepreneurs and workers and are influential power for growth and development in families. However in many of these counties, women are hindered from contributing even greater to their countries and welfare by imbalanced access to property, labor market discriminations and other business related obstacles. If women have to be empowered and countries' full potential unlocked then, these obstacles must be removed. In Kenya, gender inequality is indeed a great challenge as was observed by Nalo.

> "*Gender inequality is a serious economic issue in Kenya. Addressing it will lead to improved outcomes not only for women themselves, but for families and the society as a whole."* Nalo (2006), Permanent Secretary, Ministry of Trade and Industry

In its effort to address gender inequalities, the Kenya Government created a National Commission on Gender and Development in 2004 and has always had a designate ministry that deals with gender issues. Further still, every minister has a gender desk. At the Ministry of Trade and Industry, Kenya has a gender Unit as an initiative of Organization of Women in International Trade (OWIT) which is quite active in the country unlike many African Countries. Kenya has an active local chapter of the Organization of Women in International Trade (OWIT) in private sector being among a few other African countries with such chapter.

(World Bank, 2009). Food Security, at the individual, household, national, regional, and global levels is achieved when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for a healthy and active life (FAO, 2011).

Since the year 2000, Africa has experienced several episodes of acute food insecurity with immense loss of livelihoods. More than one in four Africans is undernourished (UNDP, 2012). It is a harsh paradox that in a world of food surpluses, hunger and malnutrition remain pervasive on a continent with ample agricultural endowment. The specter of famine which has virtually disappeared elsewhere in the world continues to haunt parts of sub Saharan Africa. It is common

for famine to grab headlines but chronic food insecurity and malnutrition are more insidious, often silent daily calamities for millions of Africans yet with ample environment for growing food. The key cause of food insecurity is inadequate food production. UNDP in their 2012 African human development report argues that sustainable increase in agricultural productivity and better nutrition are the key drivers of food secure growth. More productive agriculture will build food security by increasing food availability and lower food prices thus improving access. Higher productivity can also raise the incomes of millions of small scale farmers, elevating their living standards and improving health, education, thus expanding people's capabilities.

There exists technical solutions and there are indeed, throughout Africa, good examples of higher-yielding and sustainable agriculture. But good practices have to spread throughout the continent, while at the same time social and economic measures, as well as political will, are indispensable ingredients. Improvements in agricultural productivity are necessary to increase rural household incomes and access to available food but are insufficient to ensure food security. Evidence indicates that poverty reduction and food security do not necessarily move in tandem. The main problem is lack of economic (social and physical) access to food at national and household levels and inadequate nutrition (or hidden hunger). Food security not only requires an adequate supply of food but also entails availability, access, and utilization by all men and women of all ages, ethnicities, religions, and socioeconomic levels (FAO, 2006). Gender-based inequalities all along the food production chain "from farm to plate" impede the attainment of food and nutritional security. Maximizing the impact of agricultural development on food security entails enhancing women's roles as agricultural producers as well as the primary caretakers of their families.

Women are crucial in the translation of the products of a vibrant agriculture sector into food and nutritional security for their households. They are often the farmers who cultivate food crops and produce commercial crops alongside the men in their households as a source of income. When women have an income, substantial evidence indicates that the income is more likely to be spent on food and children's needs. Women are generally responsible for food selection and preparation and for the care and feeding of children. Women are the key to food security for their households (Quisumbing et.al, 2014).

Although Kenya has had projects like the Kenya Agricultural Productivity project (KAPP) aimed at increasing food production though improved farming methods, the control of resources

for such projects and proceeds from the sector are biased in favour of men. The fact that women miss out on such complimentary inputs, their potential to become more efficient in agricultural production is reduced. Studies have shown that farms owned by male headed households have, on average, more than half of the equipment owned by female headed households (World Bank, 2011). Female farmers lack small scale technology for processing and storage (USAID, 2012)

Whereas Agriculture is the mainstay of the Kenyan economy accounting for more than 24 percent of the Gross Domestic Product (GDP), more than 50 percent of the total export revenues and 62 percent of overall employment, It has not benefited women farmers as much. Whereas women compose more than 70 percent of the agricultural labour force they are in most cases engaged as unpaid family workers (GoK, 2000). A study by Curry, Kooijman & Recke (1999) found that 80 percent and 50 percent of labour is provided by women in food and cash crop production respectively. Horenstein, (1999) argues that this is more so in marketing and agro processing. In addition, whereas women in Kenya are growing day by day into farm managers and head farm household (Kimenye 1999), they only hold about one percent of registered land title deeds in Kenya. Lack of title deeds has further limited women's capacity to access credit from financial institutions and are often unable to access memberships in cooperatives and markets (World Bank, 2004)

Studies have also revealed that women can have higher agricultural output than men if they had access to as much inputs as men. Day (1992) found that female farmers produced 7 percent more than male given equal access to agricultural services. In Burkin Faso Udry et el (1995) found that output increased by 10-15 percent if inputs such as fertilizer and manure were relocated from male to female plots in the same households. In Kenya, farm yield could increase by upto 23 percent if men and women had equal access to farm inputs. This would have doubled GDP in 2004 from 4.3 percent to 8.3 percent (World Bank, 2009)

The importance of gender equality in development is equally conceded by the government of Kenya. Over the years, the country has been working to strengthen gender equality through research and advocacy. Kenya is also a signatory to a number of international instruments, treaties and conventions which demonstrates her commitment to gender equality... This commitment has also been illustrated by numerous government pledges and policy pronouncements. The national policy urge for gender equality emanated when the country realized that they needed a clear and complete agenda for gender mainstreaming in all sectors

and ministries was a prerequisite to achieving efficiency (GoK, 2000). Gender inequality is identified as one of the key developmental challenge in Kenya's long term country strategy: Kenya Vision 2030 (GoK, 2007). In this strategy the country intents to achieve high quality of life and equal opportunities for men and women (GoK, 2007: 113). In ensuring that the available national resources are of equal benefit to both men and women, various strategies, programmes and projects that focus on opportunity and empowerment, capabilities and vulnerabilities are being undertaken.

1.2 Statement of the Problem

Despite immense contribution by women in agriculture and rural development as farmers, workers and entrepreneurs, empirical evidence confirm that women face a surprisingly consistent gender gap in access to productive assets, inputs and services that impede their productivity and limit their contribution to agricultural production and economic growth all of which affect food security of households, communities and the nation at large.

In developing countries including Kenya, when there is rising food prices and therefore food insecurity, the effect is more on women because they form more than two thirds of the world's poor and are also the majority of the world's small scale farmers. Unlike men, women rearly leave family farmland in search of employment. Their role include taking care of the family and gathering important resources for the household such as firewood and water, preparing meals and looking after small stocks like chicken, goats and sheep (Gender Action, 2011).

A study by World Bank conducted in Burkina Faso, Kenya Zambia and Tanzania revealed that when women farmers are provided with farm inputs such as fertilizer, land and labour in equal amount and quality and are educated on agriculture just as men, the national agricultural output and income would increase by between 10-20% in each country (World Bank 2005). Whereas gender equality is a basic human right, women lack secure land rights which excludes them from contract farming arrangements. Women work on the farms as men hold and benefit more from the contract (FAO, 2011). Additionally, without access to quality extension services, women are not able to adopt high yielding varieties (Doss, 2010).

Whereas studies show that when women have resources and income they tend to apply the same on improving family food consumption and welfare which ultimately will lessen child

malnutrition and enhance the overall security of the family (Brown, 2008), the Ministries responsible for Agriculture and development programmes continue to propagate gender-insensitive programmes that do not address structural challenges that reduce women participation in agricultural development but instead broadcast the marginalization of women farmers from discussion processes in food and farming. The programmes provide preferential treatment to male farmer without considering the relative numbers of men and women involved in farming and even the actual role of men and women on the farm. This study, therefore, sort to establish the influence of gender inequality on food security in Usigu Division of Siaya County in Kenya

1.3 Purpose of the Study

The purpose of this study was to investigate the influence of gender inequality on food security in Usigu Division of Siaya County in Kenya.

1.4 Objectives of the Study

The study was guided by the following objectives:

1. To examine the extent to which gender inequality in land ownership and control influence food security in Usigu Division of Siaya County in Kenya.
2. To assess how gender inequality in access to information and education influence food security in Usigu Division of Siaya County in Kenya.
3. To establish how gender inequality in access to health services influence food security in Usigu Division of Siaya County in Kenya
4. To analyze the level to which gender inequality in access to paid employment opportunities influence food security in Usigu Division of Siaya County in Kenya
5. To determine how gender inequality in access to credit facilities influence food security in Usigu Division of Siaya County in Kenya.

1.5 Research Questions

The study was guided by the following research questions:

1. To what extent do gender inequality in land ownership and control influence food security in Usigu Division of Siaya County in Kenya?
2. How does gender inequality in access to information and education influence food security in Usigu Division of Siaya County in Kenya?

3. In which way does gender inequality in access to health services influence food security in Usigu Division of Siaya County in Kenya?
4. To what level does gender inequality in access to paid employment opportunities influence food security in Usigu Division of Siaya County in Kenya?
5. How does gender inequality in access to credit facilities influence food security in Usigu Division of Siaya County in Kenya?

1.6 Significance of the Study

The findings of this study have theoretical and practical inference on the future of food security actions. Theoretically, the study provides additional literature that advance knowledge concerning the influence of gender inequality on food security to learners and other researchers. The study also has practical significance to the various stakeholders. The study may inform men and women in Usigu Division of their status as regards to access to and control over land, information and education, health services, paid employment and credit facilities. This may enhance their participation in rural development from informed position. Activists for gender equality and human rights may argue from an informed point based on evidence about the influence of gender inequalities on food security. Development experts in agriculture and related sectors now have evidence upon which they may base their programs and projects. These study findings may also provide the Government of Kenya with better insight to gender issues in the country. More particularly, National and County policy makers, may clearly discuss gender issues both at policy and implementation level with evidence. The recommendations of this study may be reference material for research related to gender, food security and rural development.

1.7 Assumptions of the Study

The study was anchored on the assumption that the instruments used in the study would elicit reliable responses and further that the results obtained would be representative enough to guarantee an accurate generalization of the findings. In addition, the study assumed that the administrative boundaries in Siaya County remained as they were in the year 2009, the year of nation population and housing census. The study presumes that households found to take 2 or less meals per day are exposed to hunger which in itself is an indicator for food insecurity. However households found to consume 3 meals or more per day were considered food secure.

1.8 Limitations of the Study

Gender related issues can be abstract. In this regard, respondents may have interpreted interview questions different from the intended purpose. In addition, this study was also limited by sample size which may reduce the generalization of the findings to the larger population. However, the researcher piloted the study to correct any anomaly that would have arisen from questionnaire interpretation. This study was also limited by time and budget that the researcher had at his disposal to undertake the study.

1.9 Delimitations of the Study

Food security in developing countries like Kenya is influenced by many factors that researcher could have had interest to study the relationship. These include questions on the influence of soaring global food prices, genetically modified foods, global warming, and wars and civil strives on food security. However, such questions were not pursued in this particular study because the focus of the study remained the influence of gender inequalities on food security, an area that has elicited interest in the recent past but not understood by many. Inclusion of these questions while interesting, was beyond the capacity of the researcher given time and funds available for conducting this research. It is for the same reasons that the research focused on a smaller geographic area- Usigu Division. Likewise the concept of food security is very complex and by extension its measurement. It includes food availability, access and utilization. For the purpose of this research, the analysis focused mainly on number of meals taken per day as a measure for food security.

1.10 Definition of significant terms used in the study

Food security: refers to situations where households consume at least three or more meals per day. Those that consume two or less meals per day were considered to be food insecure.

Gender inequality: refers to the disparity between men and women due to socially and culturally constructed roles and responsibilities.

Land ownership: refers to a situation where land is registered in individual(s) name, and therefore can make decision on its use and transfer.

Land control: An individual has control over land if he or she is in position to make decision on its use, sale and even transfer

Access to information and education: A state where information and education is readily available and affordable by both male and female entrants all the time and the entrants meet the necessary requirements and have no restrictions of entry

Access to health services: Health services are accessible when they meet the users' expectations, are readily available and affordable all the time.

Paid employment: the state of working for others to get paid for services so rendered. It is the reverse of self- employed in which case you work for yourself.

Percentage of women and men in paid employment: The proportion of women and men employed by others and remunerated for services rendered

Access to paid employment: Employment in which individuals are remunerated for services rendered is readily available and men and women have the prerequisite qualification for the employment.

Access to credit facilities: refers to a state where men and women have financial services readily available and affordable and they meet the necessary requirements for obtaining such services.

1.11 Organization of the Study

Chapter one of this study provides background of the study, an explanation on the statement and context of the problem and also gives the purpose, the objectives and the main research questions. It also contains the assumptions, limitations and delimitations of the study. Chapter two of the study discusses the concept of food security and gender inequality and presents a review of literature and relevant researches associated with the research questions. In Chapter three, research methodology is explained. It contains the research design, target population sampling and sampling procedures, data collection methods and tools. Ethical considerations are also discussed. In Chapter four data analysis and results of the survey are presented and discussed. Finally in Chapter five, a summary of the findings are presented and conclusions and recommendations made.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this Chapter, literature on influence of gender inequality on food security is reviewed thematically and methodologically. The concept of gender and food security is introduced and discussion on the inequalities in land and land resource ownership, information and education, access to health services, credit facilities and paid employment opportunities presented. This chapter also discusses other factors that influence food security; government policies, climate and environmental factors and consumption habits and trade issues.

2.2 The Concept of Food Security

Food security is a complex concept whose meaning goes far beyond just the number of people that can be sustained by the earth's limited food resources to include a broad range of other issues. These issues include environmental degradation, socio-economic status, , trade relations, land ownership rights, access to microfinance and access to healthcare services all of which are of concern to women, yet in most cases, the role of women in food security go undetected (IFRI 2004). Food security exists when every person has physical and economic access at all times to healthy and nutritious food in sufficient quantity.

According to FAO, food security has three components; food production, food access and food utilization. In each of the three areas, women have a role. In production, women are active food producers because they work on farms and in gardens to produce food and cash crops in addition to managing farm resources. Women's role as pertains to access to food is to ensure that that each family member has adequate share of food. In this respect also, women have primary responsibility of buying food. As regards their role in utilization, women are responsible for nutrition in most households. Women decide what type of food to buy and how and when to prepare it. In preparing food, women use substantial amount of time to assemble fuel and prepare ingredients. . Overtime food security as a concept has shifted from emphasizing self-sufficiency to how households are able to cope with vulnerability and risk in accessing food and nutrition (IFPRI, 2004). It is therefore important that measures that guarantee farm resilience are undertaken and attention paid to climate and other factors that are likely to hamper food security.

Food available at any one time is determined not only by domestic food production but also farmers' food stocks, commercial food imports, food aid as well as fundamental causes of each of these factors (Napoli et al. 2011). On the other hand, access to food is not only determined by what the suppliers provide in the market at a price but also what households produce from their own farms, their stocks and other sources. However all these factors depend on the amount of resources that households have. The amount of resources owned by households dictate the activities that households pursue to meet their income and food security objectives. The resources depend on physical, social and policy environment and therefore household's effectiveness in utilizing these resources will determine whether the food security needs are satisfied or not. Radical shift in environmental conditions like drought or even tribal skirmishes can interfere with household's food production capabilities and affect their access to food because these threats reduce household's productive resources including livestock. This normally has a long term impact on future food security status of the household.

Food utilization which is actually quantity and quality of dietary intake is manifested in the nutritional status of people as a result of their feeding practices (FAO, 2008). Poor nutrition implies there is poor households feeding practices and mostly as a result of poor access to food. For instance in households where children are poorly fed and have limited access to health services, they experience poor health and nutrition. Enhanced food utilization is not just useful for its own sake but also because it determines household productivity and therefore resource generation potential.

Generally food insecurity situations may be as a result of inadequate physical availability, inaccessibility by a particular group of people or insufficient utilization of food. In terms of order, food must be available for it to be accessible and it must be accessible for it to be utilized. The practice is that households obtain food from either their farms or stocks; buy at the market or receive as aid from various sources including friends, government and development partners. The factors that determine the source from which households obtain their food from vary from one region to another but include location and the socio-economic category of the group.

In rural areas of Kenya, women are preoccupied with household errands that include child care, collecting firewood, pounding grain and fetching water. Child care though so important loads women's labour time and makes them more constrained than men. Fetching water alone takes between 3 to 5 hours which is about 40 percent of a woman's day. Were & Kiringai (2003) found that this was so because only 30 percent of Kenyan households had piped water. Women

are therefore more preoccupied with household reproductive work than men and this reduces the time they spent on economically productive activities like businesses development (Blackden & Morris-Hughes, 1993). The World Bank (2006) found that increased weight on women in domestic, economic and collective circles causes instability in households and enhances tension and violence

Food security can be measured in many different direct and indirect ways yet no single measure can show the complexity of food security (Maxwell et. el, 1999). Some of the instruments based on questionnaire that can be used to measure food security directly include: Cumulative food security index, Food sufficiency status question, Food security core model, community child hunger identification instrument, Radimer/Cornell hunger and food security instrument (Jennifer et. el., 2003). These instruments are administered to persons responsible for food supplies in the households. On the other food security can also be measured indirectly using measures for poverty, financial hardship measures and dietary intake measures (Jenifer et. el., 2003).

In the developing countries, the indirect indicators are commonly used to gauge the prevalence and severity of food insecurity, however, the use of direct indicators are limited to several settings. There are different ways of assessing food security coherently. The first one is a food frequency assessment, which can be performed by simply asking people the number of meals eaten per day or even the frequency of consumption of different food items. These surveys are easy to conduct; however, focusing on the frequency and not on the quantity consumed makes calculating the calorie equivalent more complex (Jenifer et al 2003)

2.2.1 Gender Inequality in Land Ownership and Control and Food Security

There is direct relationship between the size of land and food produced and therefore made available (FAO, 2011). Land ownership can contribute to food security in two ways. Firstly, land can be used to produce food for consumption and secondly, it can also be a source of income that can be used to purchase food. In this way, land be leased out and rental income earned or be offered as a collateral for loans for non-agricultural business. In whichever way, secure land ownership can help neutralize the impact of volatile food prices on poor households Studies have shown that male headed households (MHHs) on average operate much larger land holdings than female headed households (FHHs). FAO (2011) found that land holding of MHHs was twice of those of FHHs in Bangladesh, Ecuador and Pakistan. Anriguez (2010) argues that

land ownership represents economic empowerment and is a cause for struggle for equity and equality. Although use and control of land is key to peoples' livelihoods, women's land rights are often violated (UNECA, 2003). FAO (2002) found that despite the central role land played as a source of livelihood for the majority of the rural people in, inequitable distribution and uncertain land tenure were key challenges of the land polices. Women are often though to only have secondary rights to land and are ever being discriminated against on property and land ownership.

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Secure land tenure enhances motivation for the owner to develop it and improve its quality. On the other hand insecure land tenure discourages investment as it reduces opportunities to access to financial resources and government programs particularly for women. Guaranteed land rights ensures optimal land use by instilling confidence in the user that they will not lose their investment. In Uganda for example, a study showed that when women farmers did not have independent and secure land rights they used land carelessly and not caring about its sustainability and future use because they were not sure of their future access to then land. This made the land less productive in the long run.

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The relationship between land rights and household food security is more pronounced when there is secure land tenure. If women have secure land rights their eminence is increased and therefore they can influence household decisions including food and nutrition decisions. Literature also shows that decision on what type of crop to plant are easily made by women who have secure land tenure. This is important as women tend to grow crops that supplement family food as men focus on crops that have more market value. Also when women have control over assets, they spend more than men on next generation Keyaman (2014)

The biggest challenge of acquiring land through inheritance is that sometimes social customs are inconsistent with legal reforms aimed at eliminating gender disparity. For instance the social customs may prohibit women from inheriting land and other assets despite existence of laws prohibiting that (ADB, 2013). In Peoples' Republic of China (PRC) for example, although there are laws that favour women's right to land, in rural communities customary practices still exist to the extent that sons and not the daughters are known to be the natural heirs of land (OECD, 2010). In other countries, women are as well denied inheritance by both laws and customs (ADB, 2013). For instance in countries dominated by Muslim communities, girls are only

allowed to inheritance half of the brother's share while a wife can only claim an eighth of property as the mother gets a sixth (Amativa, 2012).

Gender equality is on global agenda for human rights and basic freedoms. Gender equality in access to and control over productive resources is key for human development. The 1948 Universal declaration for Human Rights and many international instruments take care of gender equality. For instance, the Convention for the Elimination of All forms of Discrimination Against Women (CEDAW) forbids any form of exclusion, distinction or restriction based on gender that injures or invalidates women's rights and fundamental freedoms (CEDAW, 1995). The Beijing declaration emphasizes on equal access to economic resources for men and women. Accessing economic resources to women ensures women empowerment (CEDAW, 1995)

FAO as an organization that leads the fight against hunger globally also leads discussions around land policy issues. Through these discussions, International Law Commission (ILC) was initiated to focus on issues of women access to land (Adams, 2001). Chinkin (2001) explains that there is a gap between having rights and enjoying the rights effectively. The existence of this gap may mean feminization of poverty and reduced women access to resources. The basis for discussions around gender and land rights started around 1990 and has always influenced international discourse and policy on gender equality. It was on this basis that it was included in the Millennium Development Goals (MDGs) and now the Social Developments Goals (SDGs). In Kenya, it is on this basis that it was included in the Sustainable development and poverty reduction programs. However even with all these, there is still gender gap in land holding rights because the factors that influence women's access to and control over land in communities are varied (FAO, 2002). These include: socio-economic, legal and institutional factors.

Women's access to and control over land is not just a gender issue but also a human rights issue. It encompasses not just equity alone but also poverty reduction, food security, sustainable development and human rights (Mushunje, 2001). The extent to which human rights are not observed in a community are shown by the gap between the legal system and the customary practices. Women are not able to effectively participate in agriculture. For instance they are unable to access cash nor benefit from the extension services because they lack secure land rights (World Bank, 2003). Therefore women are not motivated to invest on their land to increase economic value and productivity.

2.2.2 Gender Inequality in Access to Information and Education and Food Security

Women farmers and those in business are faced with gender specific disadvantages compared to their male counterparts. In addition to facing the challenge of less access to productive resources, women also face the challenge of low mobility and less access to training and farm and market information. For this reason women tend to be active at the less lucrative value chain even as they increasingly enter into the national and international markets. Men have taken the production and marketing of the most lucrative value chains including those that were traditionally known to be "women's crops" (Carney, 1988). In addition, agricultural businesses owned by women receives fewer services than those owned by men. This has an overall effect of reducing women's effectiveness as actors in value chains as well as reduce agricultural and market effectiveness (Farmworth, 2008)

Quisumbing (2014) argues that among important factors for raising female productivity in agricultural sector include training and extension services especially if provided by female field extension workers. However it has been estimated that that in Africa, a trifling 11 percent of the all the extension workforce are female (FAO, 2011). In 2003 when free primary education was introduced in the country, gender disparity in primary school enrollment narrowed. However inequalities at high school and university level continued and is affecting inversely women's labor force and aptitude to find skills required to jump start and get involved in agriculture which is a prerequisite for achieving food security. The students enrolled at University and College level are 63 percent male and 37 percent female, a gap that continued between 2000 and 2004.

One reason why girls drop out of school is the cost of education (GoK, 2002). In a situation where the cost of education is high, families opt for boys schooling and not girls. This coupled with teenage pregnancy which occasional end in early marriages reduces the chances for girls' transition to secondary and tertiary education (Kimalu et al 2002). Girls not only face sexual abuse on their way to and from school, they also have comparatively greater domestic tasks burden than their male counterparts (World Bank, 2006). The effect of women's lower education is not just lower skills for women farmers but also lower labour force participation in agriculture as well as higher fertility

Evidence from literature indicates that if there is gender disparity in access to schooling, then productivity and output is constrained. Klasen (1999) concludes that economic growth is

adversely affected by gender disparity. His approach involved using expenditure on education as a proportion of Gross Domestic Product (GDP), initial fertility levels and changes that occur in levels of education and the female to male ratio of years of schooling. Klasen (2002) argued that Kenya underperformed between the period 1960-92 compared to high performing Asian countries because women did not on average complete as many years of schooling as men). Private rates of return to additional schooling for women have proved to be as large as those for men and sometimes higher implying potentially higher marginal returns of increased invest in female education (Schultz, 1991).

Gender disparity has effect on development goals (Klasen, 1999). Gender bias in education sector, labor and access to productive resources affects a country's economic growth. A study by Blackden et. al., (2006) found that gender disparity in education and formal employment contributed to low rates of growth. Studies have also revealed a bi-directional linkage between food security and education. Food security affects health especially of young children. When children exhibit malnutrition, their cognitive growth is affected and exhibit low educational achievement as children. This which is may also be extend to adulthood (Blackden et. al., 2013). The level of education will not only affect the future flow of income but is also critical in production, employment and earning (Becker, 1964). Education impacts on entire family and community at large through increased income, enhanced health and better decision making processes (McMahon, 2009)

The extent to which education influences food security depends on the existing situation. In rural areas for example, it would be through information on the best agricultural practices, nutrition and sanitation. This would in turn increase efficiency, enhance production and improve decision making (De Muro and Buruchi, 2007). Households with higher education levels have higher chances of being food secure through increased purchasing power. (Bashir and Schilizzi, 2013) found that higher educational attainment has positive effect on food security.

One of the primary constraints to increased productivity and profitability stems from the limited use of modern farming technology, equipment, and inputs. The use of modern equipment could also make harvests more efficient and help to move produce to market more quickly and in better condition. For instance increase in the use of Information and Communications Technology (ICT) has brought significant benefits to the agricultural sector, such as improving

households' agricultural production. Recent research shows that ICTs can play an important role in farmers' ability to access agricultural information and extension services. For example, in Kenya, personalized SMS messages that sent crop management tips and schedules to sugarcane producers were found to increase yields by an average of 11 percent. A number of ICT initiatives in Africa including the m-Pesa service, which allows mobile phone subscribers to transfer money via text message, was found to significantly improve rural populations' access to banking services in Kenya. Similarly, the Connected Farmer in Eastern Africa allows farmers to receive digital payments and receipts; this helps them establish a documented financial history and thus gain better access to credit. Patrick Herlant (2017):

Literature reveals that information and communication technology including mobile phone technologies can help address the problem of food security issues like market efficiency (IFPRI, 2014). Mobile phones for instance can help farmers to plan how much to plant in each season based on the market demand and supply factors. Mobile phones can also help gather information from relevant organizations including research organizations and cooperatives regarding market conditions and quality standards in those markets. In this way ICT can be used to reduce price variance. ICT can contribute to reducing the challenges faced by the traditional extension services. In traditional extension programmes specialists travel to remote areas to train and provide support to farmers. In most cases this would be a one-off business without any follow up. In an environment where the infrastructure such as roads are not well developed, it becomes very costly to visit such areas. In addition, such visits may not be quite reliable and there can be lack of accountability among the service providers. ICT can help reduce these challenges by eliminating the cost of extension visits while enabling more frequent two-way communication between farmers and service providers with improved accountability.

2.2.3 Gender Inequality in Access to Health Services and Food Security

In Kenya, health services are faced with a lot of challenges. Dispensaries which are the closest facilities to the public are managed by nurses and provide outpatient services only while health centres focus on preventive rather than curative services. Most private clinics are also managed by nurses. Whereas health centres are supposed to cover non specialized cases, in most cases due shortage of staff and equipment services are never available and are referred to hospitals which usually are far away and costly

Gender disparity can be lead to food insecurity if there is bias in the allocation of resources for health services.. Accessing health services means that the services are available, affordable and acceptable and represent empowerment of individuals to use health care. It is also a reflection of individual's ability to benefit from services given her circumstances and experience in relation to health care. Literature indicates that female gender have a barrier in accessing health care services because they lack resources to pay for health care services. Women are also restricted by culture to move and seek health services and indeed they have to deal with their multiple roles which further reduces the time they would have utilized to generate additional income thus exposing them to stress and related illness.

The cost of healthcare services and medication both continue to present a major barrier for women, who have limited opportunities for paid employment and lack control over household resources (NGEC, 2013). Despite efforts by the Kenyan government to introduce cost-reducing measures, including exemption schemes, most health service providers continue to charge user fees. Other barriers include distance to health facilities, limited availability and fragmentation or poor quality of services. Negative attitudes among health workers and insufficient respect for patients' rights, particularly in relation to reproductive health, further alienate women from the health system and consequently limit their opportunities for treatment. Knowledge/Information: Access to information and resulting knowledge on HIV prevention has been found to be significantly lower among women than among men (NACC, 2016). Young women are also far less likely than young men to know where to obtain condoms. Women living in rural areas or urban settlements face particular difficulties in accessing health information.

2.2.4 Gender Inequality in Access to Credit Facilities and Food Security

FAO (2011) found that gender inequalities in access to credit is biased against women farmers and therefore they cannot access critical input as fertilizer and water. Cooperatives which are more accessible in rural areas are dominated by men. Agarwal (2011) while examining efficiency in use of potato digging equipment found that women were more productive than men in all measures. In a piece of work that took men 185 hours, women only took 69 hours and in plots measuring 20 metres women's average yield was 23.9 kg compared to 18.2 kg for men

In economies where collateral is a requirement for accessing credit from formal banking system, women fail to grow their businesses because they are unable to meet such requirement. This is

irrespective of the fact that women compose almost half of all medium, small and micro enterprise owners. GoK (2009) estimated that women access less than 10 percent of the available credit. In absence of credit rating bureaus, good loan repayment histories of women is not maintained and therefore services such as factoring and leasing are not readily available for them. Although microfinance can significantly contribute to poverty reduction, it cannot help women grow their business beyond micro level. Those women who wish to elevate their enterprises are faced with difficulty of accessing big commercial loans of Kenya shillings one million and above.

Although the proportion of female ownership of small and micro enterprises in emerging markets is 30-37 percent, they still have unmet financial needs.(World Bank, 2014). This remains a major hindrance to their growth and development. Allowing women to access credit will trigger economic opportunities for them. This can be accelerated if banks allowed women to access financial services as much as men do. However women in business whether agricultural or any other face more challenges than men in accessing financial services (World Bank, 2014). The main reasons that hinder women from accessing financial services are their lower literacy levels, lack of recognition by financial institutions due to inconsistent relations with banking institutions even if women had good track record. Sometimes women are also unaware of then terms for accessing the financial services

Research based on global index has shown that women are less likely than men to have bank formal accounts and even if the banks relaxed their terms, women still lack access to other financial services such as insurance, digital payments and savings. All these are attributed to inadequate education for women on finance and business related information. This simply means that women cannot benefit from the financial services as much as men. Sometime women have financial services only in name when actually the user and beneficiaries of such finances are men. For instance it Pakistan it was found that men were the decision makers on how fund accessed by women were utilized. (World Bank, 2014). All these can be reversed if women are trained in financial and business skills and letting policies favour men and women equally.

There are attempts by a number of organizations such as National Association of Self-employed Women (NASEW) and Kenya Women Finance Trust to focus (KEFT) specifically on women needs but they cannot achieve much as they are all micro finance institutions. Although there

are as many as 5,000 micro finance institutions, savings and credit cooperatives remain the largest micro financier in Kenya (Coetzee, Kabbucho, & Minjama, 2012). However these Micro financiers are detached and have varied approaches. They focus on varied markets, use varied procedures to access loans and have totally different objectives. Many of them lack ability to serve differentiated markets especially those that do not operate banks and when women businesses grow beyond the ability of MFIs then they face even greater challenges.

Ouma and Groote (2011) studying the factors affecting adoption of improved maize seeds varieties in the maize growing zones of Kenya concluded that access to credit was important in explaining the adoption of improved maize seeds and fertilizer. Likewise the ability to access hired labor, proxy to wealth, was positively associated with adoption of improved maize varieties and fertilizer. In addition he concluded that education of household heads and the number of extension contacts played a critical role in the adoption of improved maize varieties. Mavimbela (2010) in a study to establish the contribution of SACCOs on smallholder food production in Swaziland found that those whose members used loans increased their productivity through increased use of farm tools. Mavimbela (2010) established that credit access is a vital aspect for consideration in agricultural sector development. Agricultural productiveness relies on credit facilities to raise the capital required to initiate and sustain production activities. Inputs such as seeds, fertilizer are purchased at the beginning of the production session but returns are realized only at the end of the session, Mavimbela argues that agricultural credit play an important role in enhancing productivity.

According to UN report, 75 percent of the world's women cannot get bank loans because they lack permanent employment and collateral. A Study by European and Central Asia (ECA) region found that female managing firms were 5.4 percent less likely to get loan and are charged 0.6 percent higher interest rates than men (Muravyer et. el. 2007). Another ECA study found that women owned firms were 20 percent more likely to be charged at least 0.5 percent interest rates (Heindrick and Nicol, 2012). Some studies however do not support gender bias in access to credit. A study by Buvinic and Berger (2009) found that the difference in access to credit was because fewer women and men applied for loans and that higher collateral requirements and complicated procedures deterred women from applying. However women who applied received. Small size is often cited as the reason for fewer loans to women. Studies have examined the reasons for women's low business growth and found that women business remain small because women start with smaller start-up capital.

Other studies also suggest that there are more "discouraged" borrowed among women than me. In Papua New Guinea for example, it was found that fewer women apply for loans than men because women thought that their applications would not be considered (West et al, 2015). In Pakistan women were found to be shy to approach banks because of the unavailability of collateral, their inability to develop viable business plans and above all, social unacceptability of their interaction with the male bank professionals (West et al, 2015)

2.2.5 Gender Inequality in Access to Paid Employment Opportunities and Food Security

Several researches on Kenya economy indicates that the formal sector is controlled by men while in agriculture and informal business sector, women are the major actors. However, women are also employed in formal sector especially the service industry but in lower cadre jobs. (Manda, 2002). Nevertheless, the changes in the labour market are being realized and the tendency to employ higher skilled women in higher cadre jobs and in fast expanding sectors such as telecommunication industry is on the rise (GoK, 2005). Slow growth rate also aggravates gender inequality through impacting other dimensions in addition to education. It is therefore important that factors such as income, population growth, inequalities in access to education and macroeconomic openness are controlled (Klasen, 2009). Klasen (2009) argues that there is a statistically significant and positive correlation between female working in formal sector and economic growth. In this respect therefore, when cultural norms and biases discriminate female gender then inefficiencies arise in the economy's labour supply and demand. This implies that capable women workers may be discarded because of their sexual orientation.

The Human Development Report released in March 2017 and compiled on the basis of estimates for 2015 indicated that women make up 62.1 percent of the total labour force compared to 72.1 percent of the men surveyed during the same period. The same report indicated that while Kenyan men earned an estimated gross national income (GNI) per capita for males of $3,405 (Sh350,715) in 2015, this was far higher when compared to the $2,357 (Sh242,771) for females. And because they earn less than men and are less likely to control land, women pay less in taxes and are less likely to be leading in entrepreneurial activities. One of the biggest hindrance to equity in pay can be attributed to women having to take time away from work to have babies or what has been described as the 'child penalty' (the percentage by which women's pay falls behind men as they start bearing children.)

A study by the National Bureau of Economic Research on Children and Gender Inequality conducted in Denmark and released in January 2018 indicated that having children creates a gender gap in earnings of around 20 percent in the long run. This gap is driven in roughly equal proportions by labour force participation, hours of work, and wage rates. The study showed that while earnings did reduce with men after having the first child, the drop in earnings for women was steeper and more visible. While similar studies have not been conducted in Kenya, motherhood has a direct impact on women's earnings. Working mothers experience systematic disadvantages in pay, perceived competence, and benefits relative to childless women. Few companies are yet to provide breastfeeding stations for nursing mothers or make their workplaces "mother and baby friendly as stipulated in the Breastfeeding Mothers Act which was enacted by Parliament in June 2017

While men account for the largest proportion of wage employment in all sectors in Kenya, women account for only 30 percent of the modern sector wage employment. On the other hand the proportion of female engaged as casual employees were 10 points higher than those of their male counterparts. In addition, majority of the female were employed in less paying agriculture and education sectors while majority of the male were employed finance, insurance and real estates which were more paying sectors (GoK, 2009). This gender gap indeed affects women's chance of participating in economic development. While this is so, wage employment distribution by gender and income show that there were more male than female in all income groups. A further analysis indicating that 84 percent of male who engaged in wage employment earned an average monthly income of between 6,000 and 7,999 Kenya shillings compared to only 14 percent of female in this income bracket. Similarly, in the income bracket of Ksh. 25,000- 29,000, female only accounted for 33 percent (GoK, 2007)

In Africa, Asia and Latin America, literature has shown that if women have access to income and control over household expenditure decisions then, household food security is improved. It has also been found that more female than male spend significantly higher proportion of their income on food for the family. Women's income is not only used to buy food and other household assets but it is also used to buy farm inputs to increase food production. In this regard therefore, to enhance food production in households emphasis should be on enhancing women's participation in market production as well as other income from other businesses.

2.2.6 Climate, Environment and Food Security

Global food security is threatened by new challenges linked to climate change. Desertification, floods, and other sudden and intense climatic phenomena cause lower agricultural productivity and impact negatively on people's livelihoods. To rise to these challenges, a people-centered policy framework is necessary which supports the livelihoods of rural populations in developing countries and seeks to strengthen the resilience of food production systems. This calls for a combination of short, medium and long-term measures designed to strengthen rural institutions, facilitate the sharing of knowledge and information, and encourage people's participation. Climate change adaptation necessitates coordinated multidisciplinary actions involving multiple stakeholders and a social learning process (FAO, 2011).

Women are the most affected by the adverse effects of climate change because they form the largest proportion of those who are poor. The resources that women depend on for livelihoods and their roles as main users of natural resources exposes them to the risks of climate change. This is in addition to challenge of lack of land right and access to information that is vital for reducing the challenges associated with climate change (www.undp.org/climatechange). The worst of it is when women are excluded from decision making processes on climate change and on use and management of natural resources. Nevertheless, CEDAW has made attempts to highlight human rights dimension of climate change and justify the need for involving women in policies that affect them (Oxfam, 2008).

Many African projects that focus on agricultural production and food security are affected by climate variability and change. Climate change affect the crop seasons and even the yield of suitable agricultural areas that boarder the semi-arid and arid lands. When agricultural yields are affected, food and nutrition security is also affected. The Economic Commission of Africa (2009) explains that when this happens, some countries with rain fed agriculture would reduce yields by up to 50 percent by 2020. If yield from rain fed agricultural areas dropped by 50 percent and the length of the crop growing season is reduced by 20 percent, Economic Commission of Africa estimates that there would be 33 percent loss in cereal production in Sub- Saharan Africa (SSA). Again, livestock production would drop due to shortage of feed and fodder as fisheries resources decrease in large lakes due to rising water temperatures. When food is decreased at household level, the most affected are women and children (Dione, 2008)

2.2.7 Governance and Food Security

Vulnerability to hunger in Sub-Saharan Africa (SSA) has been associated with poverty and dis-empowerment. This brings sharp focus to formulation and implementation of policies. A more equitable approach to development means focusing on enterprises and environments that are relevant to the needs of the poor and vulnerable in society and which exploit the opportunities available in their environment. This entails, inter alia, pursuance of the ideals of good governance in order to enhance food security (Kamau et. al, 2011).

At independence, Kenya's food and agricultural policy was two-pronged. Attainment of food self-sufficiency was considered crucial to the success of the new government, since as an independent state the new government wanted to prove that it could run its affairs without relying on its former colonial masters; and the motivation to produce cash crops that was driven by the need to earn foreign exchange and provide raw materials for domestic Agro based industries. In 1981 the Kenyan government (in Sessional Paper No. 4 of 1981) set out a statement of national food policy with objectives of broad self-sufficiency in the main foodstuffs; security of food supply for the country; and foodstuffs distribution for a nutritionally adequate diet. The Kenyan food policy document was reviewed in Sessional papers No. 1 of 1986 and No. 2 of 1994 to improve focus and response to changing demand. However, key elements of the policy have remained the same and continue to revolve around food availability, accessibility and nutritional adequacy (Nyangweso et.al, 2005).

The Food and Nutrition Security Policy (FNSP, 2011) in Kenya provides an overarching framework covering the multiple dimensions of food security and nutrition improvement. It has been purposefully developed to add value and create synergy to existing sectoral and other initiatives of government and partners. It recognizes the need for multi-public and private sector involvement, and that hunger eradication and nutrition improvement is a shared responsibility of all Kenyans. The policy and associated actions will remain dynamic to address contextual changes and changing conditions over time. The policy is framed in the context of basic human rights, child rights and women's rights, including the universal 'Right to Food (GoK, 2011).

Klasen (1999) argues that when women are not part of the labor force, then average labour force quality is compromised because female were found to be more productive than the male. Similarly when women are not part of the workforce then only part of the able workforce is used amounting to wastage of economic resources. Gender equality is indeed demonstrated in

the growth of any economy by the participation of women in the labour force. When women are empowered through increased access to productive resources and education, a country's economic development is enhanced.

The most effective and sustainable ways of reducing poverty, hunger and disease is to prioritize gender equality and empowerment of girls and women (The Millennium Declaration, 2000). The MDGs did not only prioritized gender equality but also recognized its importance in achieving other targets as World Bank (2003) stated:

> *"Gender equality is not only a goal in its own right, but an essential ingredient for achieving all the other Millennium Development Goals. Attempting to meet the MDGs without promoting gender equality will both increase the costs and minimize the likelihood of attaining the goals".*

Some studies have shown that there is no statistically significant difference managerial efficiency by gender of the farmer as regards crop yields. While others have shown that there is significant effect at household level there is significant effect by gender of the plot manager (Saito, Mekonnen & Spurling, 1994). However, where there is lower yields on women farms, this has been attributed to lower access to productive resources.

A number of countries have put strategies in place to address women's access to productive resources in appreciation of the role women play in mitigating family hunger. These strategies include cash transfer schemes (World Bank, 2001). Such strategies were found to substantially reduce the gender gap in latin America. In India, the National Employment Guarantee Act (NREGA) which provides for 100 days of employment for at least one person in each household increased the proportion of female workers (Khera & Nayak, 2009)

The 2010 Constitution of Kenya prohibits discrimination on the basis of sex and women are granted the right to equal treatment and equal opportunities in the political, economic, cultural and social spheres (GOK, 2010). Although outdated, Transfer of Property Act (1948) is still valid. It limits the rights of married women to own property individually (GOK 1948b). Inheritance of land to women is rare (USAID, 2010). Women hold only about 1 percent of registered land titles, and 5 to 6 percent of registered titles are held in joint names (World Bank, 2004). This Women's lack of legal and cultural ownership of land has a negative effect on food

production since insecurity of ownership dominates their decision to grow crops for domestic consumption.

2.2.8 Consumption Habits, Trade and Food Security

Studies have found that it is not only poverty and food accessibility that determine food intake but also food practices and associated practices (Yongyout, 1962). In Thailand for example Food and Research Phase I (1985-1986) found that Taboos restricted women from accessing particular foods. Pregnant women for example, fed on rice and salt without animal protein in fear of having a large foetus that could cause difficulty during child birth and parasitic infections.

Kana Sop et al. (2010) studying nutrition status, food habit and energy profiles among adult Cameroonian University students found that the choice of food is not based on any particular knowledge but rather on feeding habits according to the availability and affordability of meals. The socio-cultural influenced eating habits and expenditure patterns on food affects food security of any society. What is food in one community may not be consumed by other communities and therefore making choices of what to eat and what not to eat which sometimes result from lack of exposure and appropriate information may in itself cause food insecurity.

Since the early 20th century, maize has been the main staple crop of Kenya. Historically, urban food security has depended on ensuring adequate supplies of maize at tolerable prices. Maize consumption in Kenya has been estimated to be 98 kilograms per person per year, and this figure has for many years served as the basis for the computation of food balance sheets and other estimates of national cereal import requirements (Nyoro et. al, 2004).

A study conducted by FAO in 2003 found that most of the calorie intake in Kenya, 87 percent, came from vegetable products while only 13 percent was from animal products (FAO, 2006). Overall western Kenya had a better food supply. This was associated with the good climatic conditions and soil fertility that are enjoyed in this region unlike other regions of the country. Even though in the surveyed parts, cassava did not play an important role in the populations' diet contributing to only 1.7 percent of daily calorie intake, it is one of the major staple food crops especially in the north western part of Kenya where it accounts for 12 to 45 percent of the per capita daily calorie intake. Maize is the major staple food crop and its importance id

inverse of the cassava. It accounts for 40 to 60 percent of the average daily calorie intake. Bananas account for only 3 percent of the daily calorie intake in Kenya (FAO, 2004)

The communities that depend on cassava are mainly from Teso and Rachuonyo where its dependency is between 40 to 60 percent. Although Busia was previously heavily dependent on cassava, the situation has since changed unlike Rachuonyo where the dependency was found to be increasing. In western Kenya, bananas are not as such important diets and form less than 10 percent of the populations' diets (USAID 2007). Although households in Western Kenya are generally food secure, they are not in abundance situation as it is in the case for central or Eastern Uganda. They are heavily dependent on one or two crops such that if there is failure in either or both of the crops they find themselves distressed. For instance the recent Cassava mosaic Disease left many households totally vulnerable and dependent on Maize which to maize loses.

FAO recorded that food for export price index for 55 products had risen nine times since 1990 reaching its peak in both nominal and real terms (FAO, 2011). While the food producers may be benefiting from this price increase, it is also a great contributor to poverty in most African countries. World Bank report indicates that because of food price increases since June 2010, 44 million people had been forced into poverty. (World Bank, 2011)

2.3 Summary and Research Gaps

The reviewed literature exposes a number of gaps. Although many studies have been conducted on gender inequalities in access to land, education and information, health services, credit services and employment opportunities, none of them addressed the question of to what extent these inequalities influence food security in female and male headed households. For instance, though the study by FAO (2011) focused on gender inequalities on land holding in many countries, it did not examine the extent to which these gender inequalities influenced food security in female and male headed households. Similarly, though Keyman (2014) study focused on gender inequalities in control of assets such as land and resultant income and its influence on future generations, it did not consider to what extent the gender inequalities in land holdings and resultant income influence food security. This study focuses itself to examining not just the gender inequalities in land holdings but going further to determine the extent to which this influences food security in male and female headed households. McMahon

(2009) studied the relationship between education and its influence on individual member households income, improved health but did not examine to what extent this influenced food security in the individual male and female headed household.

Oxfam (2007) study observed that women health suffer not just as a result of low access to health services but also as a result of multiple tasks women have to engage in. Nevertheless this did not consider how the limited access to health services influence food security within households. Agarwal (2011) study examined the gender inequalities in access to credit, extension services and critical farm inputs. The study examined further the productivity efficiencies of men and women but did not examine how these inequalities and productivity efficiencies influence food security in those households. Manda (2002) study focused on gender inequalities in access to employment but did not address the question of to what extent these inequalities influenced food security in the male and female headed households. This study goes beyond addressing the question of whether gender inequalities exist in land holding, access to information and education, access to health services, access to credit facilities and access to employment opportunities to examining to what extent these gender inequalities influence food security in male and female headed households.

2.4 Theoretical Framework

This study is founded on the structural theory of gender stratification as advanced by Rae Lesser Blumberg and Randell Collins (1993). Borne of feminist perspective, structural theory of gender stratification is illustrated by the unequal participation of women and men in labour market, paid employment, income, education and access to health services among others. The basic principles of the theory include: The amount of surplus in a society determines how much power there is for some individuals to hold over others, Women's economic power is shaped by their level of control over surplus and the relative importance of what they produce and determines their access to other kinds of power. In this theory it is argued that to achieve power in all spheres of life, one must achieve economic power (Dunn et. Al., 2000).

According to Blumberg (1984), gender stratification is based on four forms of power: political, coercive, economic and ideological. Economic power including the control of productive resources and income derived from labour constitute the central paradigm in the structural theory of gender stratification. Chafetz (2006) maintains that the more economic resources women produce and control, the lower is the level of gender stratification. The structural theory of gender stratification examines the institutional relationship between women and men in

society (Connell, 2012). It is a model for comparative study of gender equality. It identifies sources of male advantage over female in accessing productive resources. The model offers promising tools for examining forces that affect women's social and economic positions and reinforce social and economic policy recommendations. This study seeks to examine the influence of gender inequality on food security by comparing the gender equality in access to productive resource and the extent to which this affects food security in male and female headed households. The study further examines the reasons why male have advantage over female in accessing productive resource and makes recommendations to the government and key players for specific actions to reduce the gender gap and address food security issues in the target area. This theory is therefore relevant because it provides tools for examining forces that affected women social and economic positions in Usigu Division.

2.5 Conceptual Framework

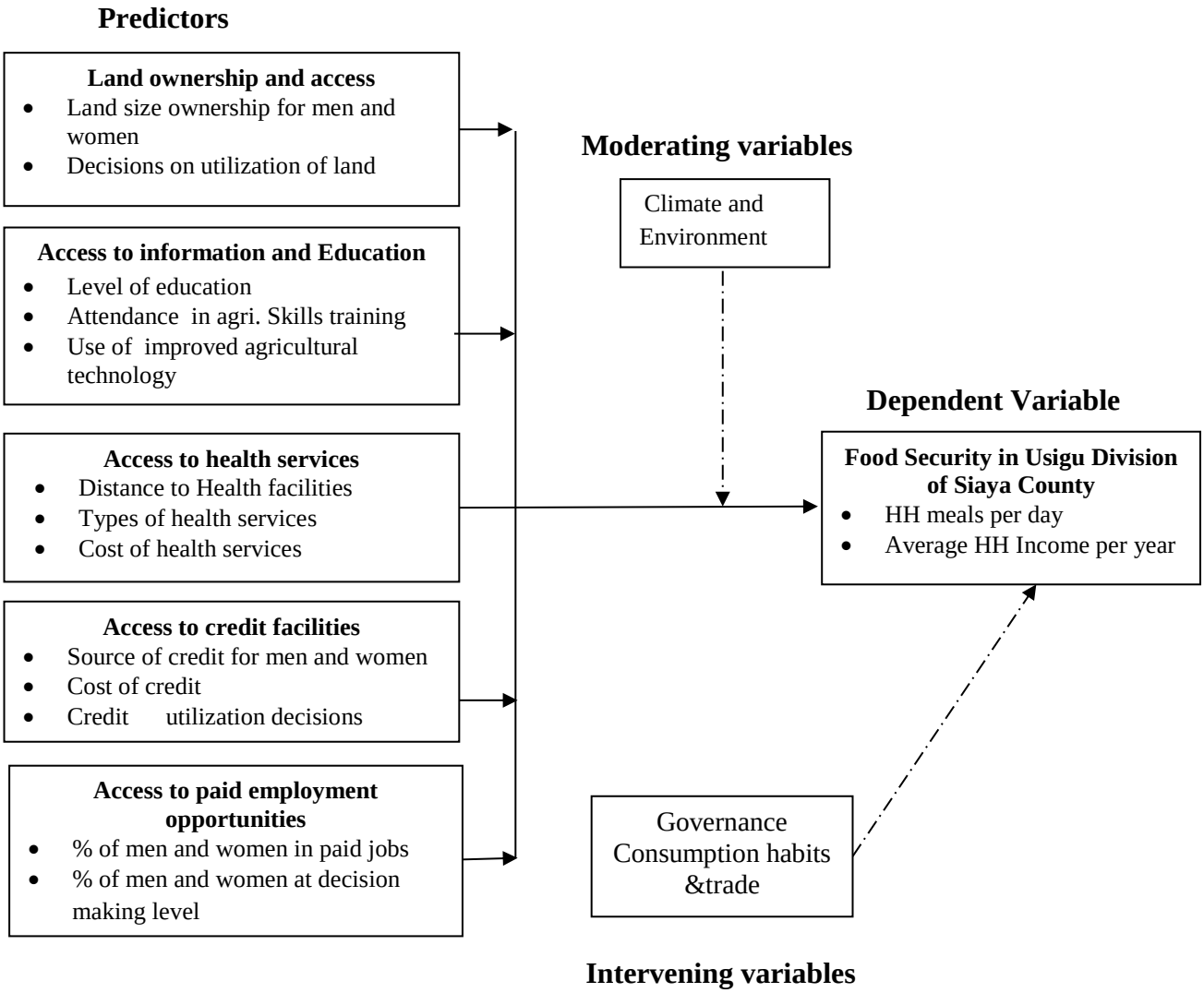

Figure 1: The Conceptual Framework

Access to land and land resources has direct influence not only on quantity but also quality of food produced. Households with larger farms are likely to produce more food depending on quality of soils and other environmental factors including availability of water. In most cases women are disadvantaged. In Kenya land is mostly owned by men and they control the use of other land resources. In addition, increased productivity is depended upon use of technology which in itself depends on access to education and information. Preoccupation of women with other domestic chores denies them opportunity to attend information dissemination meetings while adults yet at early ages, they are already disadvantaged by early school dropout or failing to acquire any formal education all together for the same reasons. Low education level rebuff women access to well-paid employment opportunities and therefore denying them opportunity to fully exploit their land and even access quality food. Governance measured by level of social mobilization and community empowerment which in themselves are measured through popular participation, transparency and accountability and priority setting are key in ensuring food security. Policies that allow popular participation for both gender and prioritize access and availability of food security for all is likely to achieve food security. Small scale farmers face constraints in accessing credit and often financial services but the share of female smallholder who can access credit is lower than their male counterparts. Improving women direct access to financial resources leads to higher investment in human capital in form of children health, nutrition and education

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter focuses on the study design, study area, target population, sampling strategies, research instruments, data collection procedures and methods of data analysis.

3.2 Research Design

This study adopted descriptive survey design. According to Agarwal (2008) descriptive study aims to describe the relationship between variables and other factors of interest as they exist in a specified population. Descriptive design is ideal for gathering information regarding people's behaviour, feelings and opinions about educational issues (Kombo & Tromp, 2006). Best (2008) argues that this survey method is widely used to obtain data useful in evaluating present practices and providing basis for decisions. In this respect therefore, descriptive design enabled the researcher to describe the various forms of gender inequalities and their influence on food security. It gathered information regarding socially constructed roles and how they influence food security. In addition, this research design was useful in evaluating the extent to which gender inequalities in Using Division influence food security providing the basis for decisions by the various stakeholders.

3.3 Target Population

The study population refers to all the members of real or hypothetical set of people, events or objects to which we wish to generalize the results of our research (Jackson 2009). In this study there were two categories of respondents; the informed respondents who are actually government, private sector and NGO staff involved in food security programmes in the target community. The second category of respondents was, the men and women along the food production chain in the target community. All households are involved either in food production, processing, distribution, sales or consumption. According to 2009 population census, Usigu Division had a population of about 55 692 (of which 51% are female) living in 13,384 households spread in 30 villages located in10 sub locations (GoK, 2010)..

3.4 Sample Size and Sampling Procedure

This section discusses the sampling techniques used in the study and the sample size.

3.4.1 Sample Size

Yamane (1967) provides a simplified formula to calculate sample sizes upon which the minimum for sample size of this study is based.

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

Where n = sample size of survey area,

N = population size of survey area, and

e = desired level of precision

The study assumption was a 95% confidence level and maximum degree of variability of 50% (0.5) which is the estimated proportion of an attribute that is present in the population. Our desired level of precision was be 5%.

Out of the 10 sub locations that exist in Usigu Division, the study sampled 10 sub locations that is:

Sample $n = \frac{N}{(1 + N (e)^2)} = 10/(1+10(0.5*0.5)$ =9.75 approx. 10 sub locations

Out of the 30 villages, the study sampled 28 villages; that is:

Sample $n = \frac{N}{(1 + N (e)^2)} = 30/(1+30(0.5*0.5)$ =27.90 approx. 28 Villages

There are 13,864 households in Usigu Division. The study sampled 389 households that is;

Sample $n = \frac{N}{(1 + N (e)^2)}$ = 13,864/1 +13,864 (0.05*0.05) = 388.7 approx. 389

The total sample size for the study was 389 households drawn from 28 villages of 10 sub locations.

3.4.2 Sampling Procedure

The study employed three main types of sampling procedures: purposeful sampling, multi-stage and stratified random sampling. Purposive sampling was applied to identify key informants for interview. Purposeful sampling is a sampling technique that allows a researcher to use cases that have the required information with respect to the objectives of the study. (Mugenda & Mugenda (2013). Purposeful sampling technique is used where the total population makes the sample size. The researcher purposefully identified the key informants for interview from

known critical players in food security and relevant to the study. These were County Agricultural officer, County Gender Officer, County Education Officer and the County Commissioner

The researcher employed multi-stage sampling procedure to identify sub locations, villages and households for interview. According to Kombo, and Tromp (2006), random sampling involves a sampling so that each person remaining in the population has the same probability of being selected for the sample while stratification increases precision without increasing sample size. Stratification of any target population did not imply any departure from the principles. The study therefore employed stratified sampling to select male and female headed households from the randomly identified villages for interview.

3.5 Research Instruments

In social sciences research, the most commonly used instruments are questionnaires and interview schedules (Orodho, 2004). In this study, questionnaires and interview guides were used. Questionnaire was chosen for data collection because it is relatively quick in collecting information while at the same time providing research with an easy accumulation of data while and presents an even stimulus potentially to large numbers of people simultaneously (Milne, 1999). It is also a good method for obtaining data about individuals attitudes, values, experiences and past behaviour in addition to giving respondents freedom to express their views, opinions and suggestions (Beiske, 2002)

Interview method on the other hand, was chosen because it gives an opportunity for in-depth data ensuring high response rates and it encourages naturalness of the situation since the researcher comes face to face with the respondent. McNamara and Carter (1999) argues that interviews are particularly useful for getting the story behind particular experiences. Interviews can pursue in-depth information and are useful as a follow-up to certain responses to questionnaires. Interviews can be modified to fit the needs of the situation; they can convey empathy, can build trust, collect rich data and provide a clear understanding of the respondents view points

In this study, questionnaires were administered to sampled female and male headed households along the food production chain while interview guides were used on the second set of respondents, the key informants: County Agricultural Officer, County Gender Officer, County

Education Officers and the County Commissioner all of which are known to play critical role in food security at the county level.

3.5.1 Pilot Testing

Muganda and Mugenda (2013) recommends that it is necessary to pilot-test the instruments so as to ensure that the items are clearly stated and can be understood by the respondents. The main reason for piloting was to determine validity and reliability of the research instruments. To test the validity and reliability of the instruments the researcher carried out a pilot study in the neighbouring Rarieda community. The selected location consists of similar characteristics to those of the study area. The instruments were administered by the research assistants after training and data so collected was analysed and necessary modification done to the instruments.

3.5.2 Validity of Instruments

According to Orodho (2005), validity refers to the extent to which an instrument measures what is was supposed to measure. The instruments were evaluated for content validity that is the extent to which the questionnaire contents included the use of appropriate vocabulary, sentence structure and whether the questions were suitable for the intended respondents. According to Huck (2000), content validity is done by expert judgment. My research supervisor provided expert judgement in this study. Additionally, the researcher sort the expertise of other researchers who had conducted similar studies to check if the instruments were feasible to collect the intended data. The validated instruments were used to address the objectives of the study.

3.5.3 Reliability of the Instruments

Instruments reliability measures the degree to which these instrument yields consistent results (Mugenda & Mugenda 2013). In this study, split half method was employed to test the reliability of the instruments. Split-half method is based on the co-efficient of internal consistency of questionnaire as a research instrument. This method divides study instrument into two halves in terms after it has been administered and scoring each half independent of the other and then matching the contents of each half to determine reliability. The score of the two halves will have a high positive association co-efficient (Orodho, 2005). The split-half method is preferred because of its ability to measure internal consistency of the instrument being tested. In this research, the study instruments were divided into two halves by assigning odd and even

numbers to one half of the test and even numbers to the other half. Correlation of the scores between the two halves were established using the Pearson r formula

$$r = \frac{2r}{1+r}$$

Where r = estimated correlation between two halves (Pearson r) (Kaplan & Saccuzzo, 2001)

The instruments were found to be reliable at 0.80 reliability index

3.6 Data Collection Procedure

As soon as this study was approved, written application was forwarded to the National Commission of Science, Technology and Innovations (NACOSTI) for authorization to conduct the study. Upon granting the permission, the study proceeded in the following order:
Sharing the NACOSTI authorization permit and briefing of the County Commissioner and Director of Education in Siaya County and subsequently obtaining their permission; Recruitment and training of Research Assistants on the study objectives, data collection process and study instrument administration; Pilot testing and revision of the data collection instruments; and finally data collection, coding and analysis.

3.7 Data Analysis Techniques

Qualitative and quantitative data collected was analysed both descriptively and inferentially. The quantitative data collected using structured questionnaires, was analysed using the Statistical Package for Social Scientists (SPSS). All the quantitative variables were chronologically arranged with respect to the questionnaire outline. This ensured that the correct code is entered for the correct variable. The data, in form of the coded variables, was then be entered into the SPSS sheets and edited to ensure that every data entered for each questionnaire in each variable was correct. Descriptive data analysis using the various SPSS tools was then conducted and various tables formulated. Chi-Square analysis was used to determine the nature and strength of the association between gender inequality in land ownership, access to education and information, access to health services, access to paid employment and access to credit facilities and Food security. For qualitative data, qualitative data checklist was developed. This was the principle guide in qualitative data analysis. The checklist were clustered along main themes of the research to ease consolidation of information and interpretation. The main themes

in the checklists included were based on research objectives. The checklist made it possible to put together scattered information under a particular theme. This in turn greatly aided in interpreting information under these main themes. For each question under every objective, a further gender analysis was conducted to establish the underlying causes of inequities and provide the basis for more understanding of the inequalities and their influence on food security in Usigu Division.

3.8 Ethical Consideration

Nachmias and Nachimias (1996) recommends that the kind of problems that the social scientists investigate and the methods used to obtain valid and reliable data determine the ethical issues to be considered in research. The researcher reflected on ethical issues and found that ethical issues were pertinent to this study because of the nature of the problem, the methods of data collection and the research participants. The researcher took cognizance of the fact that gender equality and food security issues are quite sensitive and can provoke hostility, insecurity and concealment of data. In this regard, participants were informed about their involvement in the study as voluntary and at all times had an option to choose whether to participate or not. On the methods of data collection, Stufflebeam & Shinkfield (2007) recommends that a researcher should strive to control bias, prejudice and conflict of interest. In this regard, information was obtained from different sources to authenticate information. Male and female farmers, agricultural officers, education officers, social and cultural officers and local administrators were used. Nachmias &Nachmias (1996) recommends that research involving human participants be performed with the informed consent of the participants. In this respect, the researcher obtained informed consent from all the respondents before undertaking the study. And to safeguard the participants' privacy, their names were not entered on the questionnaires. This anonymity was equally maintained during data analysis by separating information such as code numbers from the data itself.

3.9 Operationalization of variables

Objective	Type of variable	Indicators	Measurement scale	Data collection tools	Data analysis method
To examine the extent to which gender inequality in land ownership and access influence food security in Usigu Division of Siaya County in Kenya.	Independent Land ownership and access	Land size owned by Female and male headed households Decision on land utilization	Ordinal	Structured questionnaire and Interview guides	Descriptive data analysis and chi-square analysis
To assess how gender inequality in access to information and education influence food security in Usigu Division of Siaya County in Kenya.	Access to information and education	Level of education Attendance in agri-skill training	Ordinal	Structured questionnaire and Interview guides	Descriptive data analysis and chi-square analysis
To establish how gender inequality in access to health services influence food security in Usigu Division of Siaya County in Kenya	Access to health services	Distance to health facilities Cost of health services	Ordinal	Structured questionnaire and Interview guides	Descriptive data analysis and chi-square analysis
To analyze the level to which gender inequality in access to paid employment opportunities influence food security in Usigu Division of Siaya County in Kenya	Access to paid employment	% of men and women in paid employment % of men and women in decision making level	Ratio	Structured questionnaire and Interview guides	Descriptive data analysis and chi-square analysis

To determine how gender inequality in access to credit facilities influence food security in Usigu Division of Siaya County in Kenya	Access to credit facilities	Source of credit Cost of credit Credit use decision maker	Ordinal	Structured questionnaire and Interview guides	Descriptive data analysis and chi-square analysis
	<u>Dependent</u> Food security	Number of meals taken per day	Ordinal	Structured questionnaire and Interview guides	Descriptive and chi- square analysis

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND DISCUSSION

4.1 Introduction

This Chapter is organized as follows. First, an overview of the population is provided giving the demographic characteristics of the sample population. Second is the extent to which gender inequality in land and land resource ownership influence food security followed by how gender inequality in information and education influence food security. Fourth is how gender inequality in access to health services influence food security. Fifth is the extend of gender inequality in access to paid employment opportunities influence food security and lastly is how gender inequality in access to credit facilities influence food security.

4.2 Demographic Data of Respondents

The data used in this study was collected using household survey and key informant interviews. A total of 389 households were surveyed and 5 key informant interviews conducted giving a return rate of 100% and 83.4% respectively. The demographic characteristics of the survey respondents including gender, marital status occupation, residence, family size, and number of meals taken per day was collected and analysed as presented in the subsequent sections. Tables 4.1- 4.6 shows the demographic characteristics of the survey respondents

4.2.1 Gender of Respondents

The respondents were asked to indicate their gender. The results are shown in Table 4.1

Table 4. 1: Distribution of respondents by gender

Gender	Frequency	Percentage
Male	173	44.5
Female	216	55.5
Total	**389**	**100**

Table 4.1 shows that out of the 389 participants that took part in the survey 173 (44.5%) were male and 216 (55. 5%) were female.

4.2.2 Marital status of Respondents

The respondents were also asked to state their marital status. Table 4.2 presents respondents marital status by gender.

Table 4. 2: Distribution of respondents' marital status by gender

	Frequency		Percentage	
	Male	**Female**	**Male**	**Female**
Single	0	16	0	4.1
Married	173	172	44.5	44.2
Separated	0	8	0	2.1
Widowed	0	20	0	5.1
Total	**173**	**216**	**44.5**	**55.5**

According to Table 4.2, marital status of the respondents was as follows: 173 (44.5%) male and 172 (44.2%) female were married. There was no male respondent whose marital status was indicated as single, separated or widowed. However there were 16 (4.1%) female respondents who indicated their marital status as single. Female respondents who indicated their marital status as separated and widowed were 8 (2.1%) and 20 (5.1%) respectively. The fact that there were more female than male in the categories of single, separated and widowed implies that the likelihood of more food insecurity in FHHs than MHHs due to inaccessibility to productive resources.

4.2.3 Occupation of Respondents

The respondents were also asked about their occupation. Table 4.3 shows the occupation of the respondents by gender.

Table 4. 3: Respondents occupation by gender

Occupation	**Frequency**		**Percentage**	
	Male	**Female**	**Male**	**Female**
Farmer	106	156	27.3	40.1
Other	67	60	17.2	15.4
Total	**173**	**216**	**44.5**	**55.5**

There were more female 156 (40.1%) than male106 (27.3%) respondents who indicated their occupation as farmers. The remaining lot 67 (17.2%) male and 60 (15.4%) female indicated

that they were engaged in other productive activities. Those who said were engaged in other occupations other than farming listed their occupations as casual farm labourers, Fishing folks, small business people while others were hawkers. Usigu Division being a rural community most of the people are engaged in agricultural related activities from which they earn their livelihoods.

4.2.4 Number of children in the surveyed households

The respondents were asked to state the number of children in their households. Table 4.4 shows the number of children by gender in the surveyed households.

Table 4. 4: Number of children in the surveyed households by gender

Children	Number	Percentage
Male	971	54.4
Female	814	45.4
Total	**1785**	**100**

The total number of children in the households surveyed were 1785. Of these 971 (54.4%) were male and 814 (45.4%) were female. Considering that there were 389 households surveyed, the average number of children per household were therefore 5. The number of children is an indication for dependency burden. The dependency burden within the household is a strong predictor of food security. The probability of a household being food insecure increased with increased dependency burden

4.2.5 Number of meals consumed per day in respondents households

The respondents were asked to say the number of meals they took per day in their households. . Table 4.5 presents the average number of meals taken per day in households by gender

Table 4. 5: Number of meals taken per day in households by gender

Number of meals per day	Frequency		Percent	
	Male	**Female**	**Male**	**Female**
≤ 2	85	60	21.8	15.6
3	81	136	21.0	35.3
4	8	16	2.1	4.2
Total	**174**	**212**	**44.9**	**55.1**

Majority MHHs 85 (21.8%) reported taking ≤ 2 meals per day. While majority of the FHHs 136 (35.3%) reported taking 3 meals per day. FHHs who reported taking ≤ 2 meals per day were 60 (15.6%) while MHHs who reported taking 3 meals per day were 81 (21.0%). The households that were taking ≥ 4 meals per day were 8 (2.1%) male and 16 (4.2%) female. This question was deemed necessary to assess the household food security situation. Food security assessment can also be performed by simply asking people the number of meals eaten per day or even the frequency of consumption of different food items (Maxwell, 2009). In this respect majority of MHHs were food insecure while majority of FHHs were food secure. The FHHs that were food secure were reported to be recipients of food subvention from government and development agencies that targeted vulnerable households. Food availability in given household is partially determined by food aid (Napoli et al. 2011)

4.3 Gender inequality in land ownership and control and food security

The first objective of this study was to examine the extent to which inequalities in land ownership and control influence food security in Usigu Division of Siaya County in Kenya. To address this objective, four fundamental questions were asked. First, both male and female respondents were asked to state the amount of land they owned in acres. Secondly, they were asked to state who decides on land use. Thirdly they were asked to state who decides on sale of land and fourthly they were asked to state who decides on land transfer upon death. The results of the finding are presented in sections 4.3.1 – 4.3.4

4.3.1 Land ownership

The survey assessed land ownership by gender. Table 4.6 shows respondents land ownership by gender.

Table 4. 6: Land ownership by gender

How much land do you own	Frequency		Percentage	
	Male	**Female**	**Male**	**Female**
None	32	56	8.2	14.4
Less than 1	0	80	0	20.6
1-5	76	80	19.5	20.6
more than 5	65	0	16.7	0
Total	**173**	**216**	**44.4**	**55.6**

Table 4.6 shows that 56 (14.4%) female did not own any land at all as compared to 32 (8.2%) male. This table further reveals that no female owned more than 5 acres of land while on the other hand 65 (16.7%) male owned more than 5 acres. Furthermore, majority of the female 80 (20.6%) owned less than one acre of land which is the same number as those female who owned between 1-5 acres. On the other hand, majority 80 (19.5%) male owned between1-5 acres. Generally, it was found that more MHHs owned larger pieces of land then FHHs. This finding is consistent with another study finding that male headed households (MHHs) operate much larger land holdings on average than female headed households (FHHs). It also consistent with another finding that land holdings of male headed households are almost twice those of female household heads (FAO 2011: 23-24; Anriquez, 2010). The size of land owned, directly affects the quantity of food produced and therefore made available to a household. The implications of this gap include among other things, women's limited access to productive resources. Land is acritical agricultural resource also recognized as primary source of wealth, social status and power to those who have access to and control over it.

4.3.2 Decision on land use

The survey assessed further decisions on land use. Table 4.7 presents decision on land use by gender.

Table 4. 7: Decisions on land use by gender

Who decides on land use	Frequency		Percentage	
	Male	**Female**	**Male**	**Female**
Myself	85	64	22.5	17.0
My spouse	0	48	0	12.7
both of us	88	92	23.3	24.4
Any family member	0	0	0	0
Total	**173**	**214**	**44.8**	**55.2**

Table 4.7 shows that more male 85(22.5%) than female 64 (17%) made decisions on land use. Contrariwise, only female 48 (12.7%) reported that their spouses made decisions on land use. Further, 88(24.4 %) female and 92 (23.3%) male respondents reported that decisions on land use were made by both spouses. The decision on land use is a contributory factor to food insecurity in households. Keyman (2014) argues that when women have direct control over

assets such as land and resultant income, they are more likely than men to produce more. Women in Usigu Division have a relatively a limited level of involvement in land resource management. Their bargaining power to improve the quality of participation in matters of land use is met with a lot of resistance from their male counterparts. While it is clear that lack of women participation in decision making in agricultural programmes is an indicator of failure (Vallimore, 2014), men and women in this community still ascribe to a large extend to the traditional values that demean women and reduce their participation in development and more so in agriculture. Land tenure here is dependent on patrilineal social system. In this respect, women only have access to land if married through their husbands, if not through their brothers (depending on their goodwill). Widows access land through their brothers' in-law or through their sons. The proliferation of this explains food insecurity in FHHs.

4.3.3 Decision on sale of land

Respondents were asked further on who makes decision on sale of land. Table 4.8 shows the results of who decides on sale of land by gender.

Table 4. 8: Decision on sale of land by gender

Who decides on sale of land	Frequency		Percentage	
	Male	**Female**	**Male**	**Female**
Myself	62	48	16.4	12.7
My spouse	0	36	0	9.5
both of us	92	116	24.4	30.8
Any family member	19	4	5.0	1.1
Total	**173**	**204**	**45.8**	**54.2**

According to Table 4.8, none of the male would allow their spouses to make decisions on the sale of land while 36 (9.5%) female reported that their spouse would make such decisions. More male 62 (16.4%) than female 48 (12.7%) reported that they would make decisions on the sale of land by themselves. On the other hand, 116 (30.8%) female and 92 (24.4%) male respondents said that decisions on sale of land would be made by both spouses. This inequality in land rights counts for food insecurity in households. Household power dynamics often dictate decisions that can support or undermine food security. When women enjoy secure rights to the land they cultivate, they gain improved status within the household, which leads to greater influence over

allocation of household resources. Such influence is significant in allocating resources including cash for food as argued by Keyman (2014).

4.3.4 Decision on land inheritance

Respondents were asked further to state who makes decision on land inheritance. Table 4.9 shows the results on who decides on land inheritance by gender.

Table 4. 9: Decision on land inheritance by gender

Who inherits land if death occurs	Frequency		Percentage	
	Male	**Female**	**Male**	**Female**
To my sons	119	128	31.2	33.6
To my daughters	0	24	0	6.3
To my spouse	54	48	14.2	12.6
To other family members	0	8	0	2.1
Total	**173**	**208**	**45.4**	**54.6**

When asked about change of land ownership in case of death, majority 119 (31.2%) male and 128(33.6%) female said their land will be taken over by their sons. None of the male respondents said that their land would be taken over by their daughters. However 24 (6.3 %) female said that the land in this case would change to their daughters. More female 54(14.2%) than male 48 (12.6%) said the land would change to their spouses. These findings on land ownership and control, attests to the finding that despite their central role in agriculture production, women are often excluded from property and land ownership. They are frequently believed to only have secondary rights to land (UNECA, 2009).

The Deputy County Commissioner explaining the scenario in Usigu noted that whereas the laws on inheritance were quite clear that both men and women had equal rights, acquisition of land through inheritance in Usigu community was still pegged on social customs which are inconsistent with legal reforms that was sought to achieve gender equality. This is in line with other study which found that traditional norms and status of women in society may restrict women from inheriting land or other assets even if formal laws are gender neutral (ADB, 2013). Without enforcing secure land rights for women as provided by the constitution and sensitizing the community of these rights women farmers fail to have confidence required to make investments needed to sustain agriculture.

4.3.5 Influence of gender inequality in land ownership and control on food security

Chi-square test was undertaken to determine the association between land ownership and food security. The results are shown in Table 4.10.

Table 4. 10: Association between land ownership and food security by gender

Chi-square test results for the association

Gender		Chi-square Value	df	Asymptotic Significance (2-sided)
Male	Pearson Chi-Square	26.948[b]	2	.000
	N of Valid Cases	173		
Female	Pearson Chi-Square	4.465[c]	2	.107
	N of Valid Cases	212		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 24.31.
b. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 15.54.
c. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 15.85.

Table 4.10 reveals that there was a significant association between land acreage in MHHs and the number of meals taken per day as indicated by $x^2_{(2)} = 26.948$, $p = 0.000<0.05$. However, in FHHs, there was no significant association between land acreage and the number of meals taken per day as indicated by $x^2_{(2)} = 4.465$, $p = 0.107>0.05$. This implies that whereas land ownership was a determinant factor of food security in MHHs, it was not a factor in FHHs. The local Agricultural officer in explaining this scenario, argued that whereas women did not own land due to cultural reasons, they still had access to family land which they used to produce food for their households. Women were also engaged in other productive activities that earned them an income upon which they relied for food security. MHHs which were found to hold larger land acreage than FHHs tended to have at least three meals per day while those with fewer or no land at all, tended to have fewer meals per day. This finding is in agreement to another study which found that the size of land owned, directly affects the quantity of food produced and therefore made available (FAO, 2011).

A further Chi-square test for the significance of association between decision making on land use and food security across gender was undertaken. The results are shown in Table 4.11

Table 4. 11: Association between decision on land use and food security

Gender		Value	df	Asymptotic Significance (2-sided)
Male	Pearson Chi-Square	2.573[b]	1	.109
	N of Valid Cases	173		
Female	Pearson Chi-Square	39.897[d]	2	.000
	N of Valid Cases	204		

b. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 41.27.
d. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 12.08.

There was significant association between decision on land use and food security in the FHHs: [$x^2_{(2)} = 39.897$, $p = 0.000 < 0.05$ but in no significant association in MHHs [$x^2_{(1)} = 2.573$, $p = 0.109 > 0.05$]. This implies that in FHHs, the aspect of who makes decision on the use of land determines food security in the household, unlike in MHHs where the reverse was true. In explaining this scenario, the gender officer argued that lack of control of the land for FHHs removed the incentives for the owner to invest in improvements to the land which affected its quality, health, and the sustainability of its productivity. In addition, this reduced the opportunities to access financial services for FHHs. This affirms Keyman (2014) finding that when women have direct control over assets such as land and resultant income, they are more likely than men to spend the income on the next generation.

4.4 Gender inequality in access to information and education and food security

The second objective of this study was to assess how the gender inequalities in access to information and education influence food security in Usigu division of Siaya County. To address this objectives respondents were asked to respond to seven questions. First, both male and female respondents were asked to state the number of children by gender attending school. Secondly the respondents were asked to say their educational level. Thirdly, they were asked to state whether they had attended any trainings in agriculture, nutrition, health business, ICT or any other. Fourthly, they were asked to state the purpose of the training they had attended; where the training was conducted and how long the training took. Finally, they were asked to state the language used in the training. The findings of these are presented in sections 4.4.1 through to 4.4.7

4.4.1 Number of children more than 5 years attending school by gender

The respondents were asked to state numbers of children above 5 years by gender in their households attending school. The findings were provided in Table 4.12

Table 4. 12: Number of children attending school by gender

Gender	Number	Percentage
Male	632	49.6
Female	642	50.4
Total	1274	100

Table 4.12 reveals that there were almost equal number of male and female children attending school in the study area. The male children more than 5 years attending school were of 632 (49.6%) compared to 642 (50.4%) female. This is a manifestation that there is currently no inequality in access to education in this community. The Local education officer gives the explanation that this is due to the current education policies which emphasises education for all

4.4.2 Education level by gender

The respondents were further asked to state their highest level of education attained. Table 4.13 shows the results.

Table 4. 13: Education level attained by gender

Highest level of education	Frequency		Percentage	
	Male	**Female**	**Male**	**Female**
None	0	20	0	5.1
Primary	87	140	22.4	36.0
Secondary	73	56	18.8	14.4
Tertiary	13	0	3.3	0
Total	**173**	**216**	**44.5**	**55.5**

Table 4.13 shows that those who had not acquired any formal education were 20 (5.1%) and only female. There were more female 140 (36.0%) than male 87 (22.4%) with highest level of education attained as primary school. However, there were more male 73 (18.8%) than female 56 (14.4%) with highest level of education attained as secondary school. No female reported attaining tertiary level of education. Nevertheless, there were 13 (3.3%) male who had attained

tertiary level of education. Although gender inequality in school enrolment has narrowed in this community most likely due to Free Primary Education (FPE) and Free Day Secondary Education (FDSE), the impact of previous inequalities in access to education and information is still being felt. Sustaining these education policies will guarantee improved productivity of farmers and enhance food security within households. Women's lower education levels result in their lower formal labor force participation, as well lower levels of skills for women farmers. The implication of this is that such FHHs are likely to experience food insecurity.

4.4.3 Training attendance by gender

Respondents were then asked to state whether they had attended any form of training. Table 4.14 shows the categories of training attended by gender

Table 4. 14: Training attended by gender

Training	Frequency		Percentage	
	Male	**Female**	**Male**	**Female**
Agriculture	126	106	33.8	28.4
Nutrition	16	43	4.3	11.5
Health	31	8	8.3	2.1
Business	12	6	3.2	1.6
ICT	4	2	1.1	0.5
Other	18	1	4.8	0.3
Total	**207**	**166**	**55.5**	**44.4**

It emerged that out of those who had attended some form of training, there were more male 126 (33.8%) than female 106 (28.4%) who had attended agricultural training. Similarly, there were more male than female who had attended training in Business, ICT and even other forms of training. However, there were more female 43 (11.5%) than male 16 (4.3%) who had attended nutrition training. Previous research (Nhung Thi Hong VU et. el, (2015) found training and extension services as determining factors in raising female productivity. Less access to training, less access to farm and market information makes women farmers to lose income and control as a product moves from the farm to the market, and make it harder than for men to carve out new roles in value chains as argued by Carney (2008). This is therefore likely to be a causative factor for food insecurity in FHHs.

4.4.4 Purpose of training

Respondents were asked about the purpose of the trainings they had attended. Results are provided in Table 4.15.

Table 4. 15: Purpose of training by gender

Purpose	Frequency		Percentage	
	Male	**Female**	**Male**	**Female**
I do not know	0	0	0	0
Build new skills and knowledge	138	196	38.7	54.9
Train others	19	4	5.3	1.1
Other	0	0	0	0
Total	**157**	**200**	**44.0**	**56.0**

Table 4.15 shows that there were more male 19 (5.3%) than female 4 (1.1%) who reported to have attended training for trainers of trainers (ToT). The majority 138 (38.7%) male and 196 (54.9%) female indicated that they had attended training whose purpose were to build participants new skills and knowledge in the respective areas. Farmer to Farmer extension education is known to improve agricultural productivity. Having less women trained as Trainers limits the extent to which extension would benefit women farmers and thus reduce their productivity and thus a likelihood of food insecurity.

4.4.5 Training venues

The respondents were further asked say where the venue of the training was. This is shown in Table 4.16.

Table 4. 16: Training venues

Training venue	Frequency		Percentage	
	Male	**Female**	**Male**	**Female**
In my home	20	4	5.4	1.1
Within the village	40	132	10.7	35.4
1-5 away	79	32	21.2	8.6
More than 5km away	34	32	9.1	8.6
Total	**173**	**200**	**46.4**	**53.6**

The results show that, 20 (5.4%) male and 4(1.1%) female had been trained in their homes while 40 (10.7%) male and 132 (35.4%) female indicated that they had been trained within their villages. However 79 (21.2%) male and 32 (8.6%) female reported to have been trained at least between 1-5 kilometres away from their homes. Conversely 34(9.1%) male and 32(8.6%) female had attended trainings at least 5 kilometres away from home. It is evident that a number of trainings were conducted away from respondents' residence. Conducting training away from home limits women participation. This means that women miss out new skills including use of technology in farming, equipment and inputs which constrain their productivity and profits. IFFRI, 2014 claims that training in information and communication technologies (ICT) – and especially use of mobile phones help address market efficiency issues and investment decisions.

4.4.8 Training language

The respondents were then asked to state the language used to facilitate the training. Table 4.17 illustrates the results.

Table 4. 17: Training language

Language	Frequency		Percentage	
	Male	**Female**	**Male**	**Female**
Local /Dholuo	67	84	18.0	22.5
English	15	12	4.0	3.2
Kiswahili	8	8	2.1	2.1
All the three	83	96	22.3	25.7
Total	**173**	**200**	**46.4**	**53.6**

Table 4.17 reveals that 84(22.5%) female and 67 (18.0%) male said that local language (Dholuo) was used. Those who said English was the language used were 12 (3.2%) female and 15(4.0%) male. While those who said Kiswahili was the facilitation language were 8 (2.1%) female and 8(2.1%) male. Those who said all the three languages were used were 83(22.3%) male and 96(25.7%) female. Women education level is known to be generally low and therefore facilitating trainings in non-local dialects is likely to affect the intended outcomes of the training. In this case, training conducted in English may have worked to the disadvantage of the female participants.

4.4.12 Influence of access to education and information on food security

The Chi-square test results in table 4.18 illustrates the significance of association between level of education of the head of the household and food security.

Table 4. 18: Association between education level attained and food security

Chi-square test result

Gender		Value	df	Asymptotic Significance (2-sided)
Male	Pearson Chi-Square	3.608[a]	1	.058
	N of Valid Cases	173		
Female	Pearson Chi-Square	13.863[b]	3	.003
	N of Valid Cases	204		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 41.76.
b. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.49.

The results indicate that in MHHs, there was no significant association between level of education attained and food security [$x^2_{(1)} = 3.608$, $p = 0.058 > 0.05$]; implying that level of education was not a determining factor for food security in MHHs. However, in FHHs, there was a significant association between level of education attained and food security [$x^2_{(3)} = 13.863$, $p = 0.003 < 0.05$; implying that level of education was a determining factor for food security in FHHs. This finding is consistent with another study that found that individuals and households with higher levels of education were more likely to be food secure because of their increased purchasing power (Bashir and Schilizzi, 2013). It is also in line with another study that found that disparities in secondary and university education negatively affect both women's labor force participation and their ability to acquire the skills needed to start and engage in agriculture which is the backbone of food security (GoK, 2013). Gender disparities in education and information explains the food insecurity in affected FHHs. This reaffirms the fact that although gender inequalities in school enrolment has narrowed probably due to FPE and FSE, the impact of previous disparities is still being felt. Gender inequalities in access to schooling constrain productivity and output (Klasen, 2009).

4.5 Gender inequality in access to health services and food security

The third objective of this study was to establish how gender inequalities in access to health services influence food security in Usigu Division of Siaya County. To address this objective,

five questions were asked. First, both male and female respondents were asked to state the type of health facilities found within 5 kilometres radius. Secondly, they were asked to state the ownership of those health facilities. Thirdly, they were asked to state the type of health services available in the health facilities. Fourthly, they were asked to state the proportion of people they thought were accessing the health services from the stated health facilities found within 5 kilometres radius. Finally, they were asked to say the reasons they thought explained why other people were not accessing the health services from those health facilities. The findings are presented in sections 4.5.1 through 4.5.5 below.

4.5.1 Types of health facilities

The respondents were asked to say the types of health facilities within 5 kilometres radius. The results are presented in Table 4.19

Table 4. 19: Types of health facilities within 5 kilometers radius

Type of health facilities	Frequency	Percent
Community duka	44	11.3
Dispensaries health centre	253	65.0
Hospitals	92	23.7
Total	**389**	**100**

It was established that within the radius of 5 kilometres, there were dispensaries and health centres. Although there were community Dukas, they were managed by unqualified personnel. The only hospital here was at Bondo town which was outside the five kilometre radius for most respondents. Ideally all health centres are supposed to cover non specialized cases however due to staff and equipment shortages most services were not available. Specialized cases are offered in hospitals and referral facilities. In this respect therefore most of the members here have limited access to health services.

4.5.2 Ownership of health facilities

The respondents were then asked to state the ownership of these facilities. Table 4.20 illustrates the findings.

Table 4. 20: Ownership of health facilities

Health facilities	Frequency	Percentage
Private	95	24.4
Public	290	74.6
Mission	4	1.0
Total	**389**	**100.0**

When the respondents were asked further the ownership of the health facilities within the 5 kilometres radius, majority 290 (74.6%) said that the health facilities available within the radius were public. Only 95 (24.4%) said there were private health facilities and paltry 4 (1.0%) said there were mission health facilities. Government facilities are cost friendly compared to public facilities however they may not offer quality services due to large numbers. Private facilities although few in most cases are managed by unqualified personnel, they lack management systems, are driven by profits and sometimes their range of services are limited. Services such as HIV ART and VCT, Family planning and nutrition are better provided in the public facilities which were said to be less equipped to offer comprehensive reproductive health services.

4.5.3 Types of health services available

Respondents were asked further to state the health services available in the health facilities. The findings are presented in Table 4.21.

Table 4. 21: Services offered at the health facilities

Health services	Frequency	Percentage
Family planning	210	21.9
HIV services + ART and VCT	237	24.7
Nutritional Services	162	16.9
Other curative services	217	22.6
None	67	7.0
Not sure	66	6.9
Total	959	100

Table 4.21 reveals that most services were available. These services include family planning, HIV services including ART and VCT, nutritional services, and curative services. However it is important to note that 7% were not aware of the services offered at the health facilities.

Although most services were said to be available the issue of quality services were raised as a concern by many. This together with the cost of services were said to be the main hindrances to health service access. It was reported that health services here were not being accessed by the majority of the people. The cost of healthcare services and medication both was thought to be a major barrier for access to health services by women, who have limited opportunities for paid employment and lack control over household resources.

4.5.5 Why people do not accessing health services

Respondents were asked to state reasons why people were not accessing health services. Table 4.22 provides the findings.

Table 4. 22: Reasons why people do not use health facilities

Reason	Frequency	Percentage
No specialized services for women	39	5.8
Lack of drugs	154	22.9
Inadequate service provider	134	19.9
it is far away	113	16.8
it is expensive	122	18.2
cultural/religious belief	110	16.4
Total	**672**	**100**

Table 4.22 illustrates that majority 154 (22.9%) were not accessing the services because the health facilities lacked enough drugs while 143 (19.9%) said they were not accessing the services because there were inadequate service providers while 113 (16.8%) and 122 (18.2%) said that the health facilities were far away and expensive respectively. Further 39 (5.8%) reported their reason for not access the health services as lack of specialized services for women as 110 (16.4%) reported cultural or religious beliefs as the reasons for not accessing health services.

4.5.6 Influence of access to health services on food security

A chi-square test was undertaken to establish the association between health facilities and food security. The results are presented in Table 4.23.

Table 4. 23: Association between access to health facilities and food security
Chi-square test results for the association

Gender		Value	df	Asymptotic Significance (2-sided)
Male	Pearson Chi-Square	48.166[a]	1	.000
	N of Valid Cases	173		
Female	Pearson Chi-Square	6.968[b]	2	.031
	N of Valid Cases	212		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 17.48.
b. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 2.26.

The Chi-square results indicate that in both MHHs and FHHs, there was a significant association between access to health services and food security [$x^2_{(1)} = 48.166$, $p = 0.000 < 0.05$] and [$x^2_{(2)} = 6.968$, $p = 0.031 < 0.05$] respectively; implying that accessibility to health services had a significant role in determining food security in both MHHs and FHHs. This finding approves Brody, Demetriades & Esple, (2008) conclusion that women's health suffer as a result of their existing lower access to health services, reduced nutritional status, and the requirement on them to juggle multiple roles. These multiple tasks also limit the time women and girls have to engage in income-generating activities and as a result affect the food security status of their households.

4.6 Gender inequality in access to paid employment and food security

The fourth objective of this study was to analyse the level to which gender inequalities in access to paid employment opportunities influence food security in Usigu Division of Siaya County. To address this objective, four interrelated questions were asked. Firstly, both male and female respondents were asked to state whether they were salaried employees or not and if they were, they were further asked to state their average monthly pay and the level at which they were employed. Secondly, where the respondents stated that they were not employed, they were asked to state their main sources of income. These respondents were then asked to state the average income from non-paid employment. Finally they were asked to state who makes the decisions on the use the earned income. The findings of these are presented in section 4.6.1 through to section 4.6.6

4.6.1 Paid employment

Respondents were asked to state whether they were in paid employment or not. The findings are presented in Table 4.24.

Table 4. 24: Paid employment status

Are you on paid employment	Frequency		Percentage	
	Male	**Female**	**Male**	**Female**
Yes	32	84	8.4	22.0
No	133	132	34.9	34.7
Total	**165**	**216**	**43.3**	**56.7**

Table 4.24 shows that more female 84 (22.0%) than male 32(8.4%) were in salaried employment. While more male 133 (34.9%) than female 132 (34.7%) were not in salaried employment. Women were majorly employed in agricultural sector as labours. This finding is consistent with a study that found that although women are major actors in the economy, particularly in agriculture and the informal business sector, men tend to dominate in the formal sector (Manda, 2012). Most of the women here were found to be engaged as casual laborers and in small fishing related businesses.

4.6.2 Average monthly pay

For those who responded that they were in employment, were asked further to state their average monthly pay. Table 4.25 presents the average monthly pay for those who indicated that they were employed by gender.

Table 4. 25: Average monthly pay by gender

Average monthly pay	Frequency		Percentage	
	Male	**Female**	**Male**	**Female**
≤5000	0	24	0.0	20.7
5001-10000	0	32	0.0	27.6
10000-25000	32	0	27.6	0.0
>25000	0	28	0.0	24.1
Total	32	84	27.6	72.4

Table 4.25 shows that for those who stated they were employed, All 32 (27.6%) male had an average monthly pay of between Ksh.10, 000 – 25,000. However, majority female, 32 (27.6%) had an average monthly pay of between Ksh. 5,000-10,000 which pay is lower than that of majority male.. There were no male respondents in other pay brackets. However 28 (24.1%) female reported earning an average monthly pay of more than Ksh. 25,000 while 24 (20.7%) female reported earning a monthly pay less than Ksh. 5,000. Majority of the female here are falling within the pay bracket of Ksh. ≤ 10,000 when Majority of male fall within the bracket of Ksh. ≥10,000.

Previous studies have found that improvements in household food security and nutrition are associated with women's access to income and their role in household decisions on expenditure (FAO, 2011). With majority of women earning less pay than their male counterparts in Usigu Division, FHHs are more likely to experience food insecurity than MHHs. Women's purchasing power may not only be used to buy food and other basic assets for themselves and their families, but also to pay for the inputs used in food production. Since food crops are consumed, the inputs for these have to be provided from income earned in other agricultural enterprises or non-farm income generating activities. Thus, to improve food production for the household, greater priority has to be given to increasing women's participation in market production as well as other income-generating ventures.

4.6.3 Level in employment

Again for those who had stated that were employed, they were further asked to state at what cadre of employment they were engaged. Table 4.26 shows the respondents' employment levels by gender.

Table 4. 26: Level in employment

Level	Frequency		Percentage	
	Male	**Female**	**Male**	**Female**
Low cadre staff	0	60	0.0	51.7
Medium supervisory level	30	24	25.9	20.7
High level managerial level	2	0	1.7	0.0
Total	**32**	**84**	**27.6**	**72.4**

The results in Table 4.26 show that, 30 (25.9%) male in paid employment were engaged at medium supervisory level while 2 (1.7%) male were in high level managerial positions. Majority female 60 (51.7%) were engaged as low cadre staff. 24 (20.7%) female were engaged at medium supervisory level. No female respondents were engaged at high level managerial positions. This inequality in employment affects income and ultimately the household food security. This is consistent with an analysis by gender that showed the proportion of working females in the rural areas as higher than that of males (GoK, 2009). This difference is explained by the fact that a majority of the women who reside in the rural areas are engaged mostly in agricultural activities which has been found to have low labour ratios, which is mainly attributed to the low wages prevailing in the sector

4.6.4 Main source of income for the non-employed

Those who said they are not salaried were further asked to state their main sources of income. The findings are shown in Table 4.27

Table 4. 27: Main sources of income for non-employed

Main source of income	Frequency		Percentage	
	Male	**Female**	**Male**	**Female**
Casual farm labour	55	92	16.7	28.0
Fishing	70	4	21.3	1.2
Small business	16	56	4.9	17.0
Hawking	0	12	0.0	3.6
Other	16	8	4.9	2.4
Total	**157**	**172**	**47.8**	**52.2**

Table 4.27 shows that there were more female 92 (28%) than male 55 (16.7%) working as casual labourers. Similarly, there were more female than male hawking and doing small business as main source of income. On the other hand, there were more male than female working as fishing folks. Fishing is a major economic activity here and forms the most lucrative business around this lake community. Fishing although lucrative involves working through the night and down the value chain dealing with crafty brokers. This disparities seriously limits women's economic opportunities and thus food security in those households.

4.6.5 Average income from non-paid employment

The respondents who were not salaried were then asked their average monthly income. Table 4.28 shows the average income from non-paid employment.

Table 4. 28: Average income from non-paid employment

Average income	Frequency		Percentage	
	Male	**Female**	**Male**	**female**
<=5000	60	96	19.2	30.6
5001-10000	82	32	26.2	10.2
10001-25000	0	20	0.0	6.4
>25000	15	8	4.8	2.6
Total	**157**	**156**	**50.2**	**49.8**

Table 4.28 indicates that there were more male 15 (4.8%) than female 8 (2.8%) in the higher income brackets of those with an income of Ksh ≥25,000. However, there were more female 96 (30.6%) than male 60 (19.2%) in the income bracket of those earning Ksh. ≤ 5,000. Whereas the majority of the female had their average income from non-paid employment in the bracket of ≤ 5,000, majority of their male counterparts had their average income in the bracket of Ksh. 10,001- 25,000 which is higher than that of their female counterparts.

4.6.6 Decision on use of earned income

The respondents were then asked to say whoever makes decision on the use of earned income. Table 4.29 shows the results of who makes decision on use of earned income.

Table 4. 29: Decision Maker on use of earned income

Decision maker	Frequency		Percentage	
	Male	Female	Male	Female
Myself	66	4	21.3	1.3
My spouse	0	160	0.0	51.6
both of us	40	40	12.9	12.9
Total	106	204	34.2	65.8

Table 4.29 shows that a paltry 4 (1.3%) female make decisions on how their earned income is utilized as compared to 66 (21.3%) male who made decisions on how their earned income is utilized. Conversely only 0 (0.0%) male reported that their spouses would make such decisions however 160 (51.6%) female reported that such decisions would be made by their spouses. There was no significant difference between male and female who reported that such decision would be made by both spouses. This finding affirms a study by Esteban Ortiz and Max Roser (2018) that found women to have limited influence over important household decisions, including how their own personal earned income is spent. A large fraction of women are not involved in household decisions about spending their personal earned income. Esteban Ortiz and Max Roser (2018) also found that Women's control is greater in wealthier households because richer households enjoy greater discretionary income beyond levels required to cover basic expenditure, while at the same time, in richer households women often have greater agency via access to broader networks as well as higher personal assets and incomes. It is therefore important to seek to create more wealth for households to address the gender gap issues.

4.6.7 Influence of access to paid employment on food security

Pearson Chi-square was computed to test for the significance of association between accessibility to paid employment and food security across gender. The results are as shown in Table 4.30.

Table 4. 30: Association between accesses to paid employment and food security

Chi-square test results for the association

Gender		Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Male	Pearson Chi-Square	.013[c]	1	.909		
	Continuity Correction[b]	.000	1	1.000		
	Fisher's Exact Test				1.000	.532
	N of Valid Cases	165				
Female	Pearson Chi-Square	5.872[d]	1	.015		
	Continuity Correction[b]	5.141	1	.023		
	Fisher's Exact Test				.019	.011
	N of Valid Cases	212				

b. Computed only for a 2x2 table

c. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 15.71.

d. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 23.77.

Table 4.30 indicates that there was there was a significant association between paid employment and food security in FHHs: $[x^2_{(1)} = 5.872,\ p = 0.015 < 0.05]$; however, there was no significant association between accessibility to paid employment and food security in MHHs: $[x^2_{(1)} = 0.013,\ p = 0.909 > 0.05]$. This implies that accessibility to paid employment had a significant role in determining food security in FHHs but not in MHHs households. Table 4.21 below presents the association between access to paid employment and food security. This finding is an affirmation of the fact that labor market is changing: higher-skilled women are increasingly being employed—including at senior levels—in high-growth sectors such as telecoms and mobile phones (Government of Kenya, 2010). In addition, compared to men, women tend to earn lower incomes but tended to allocate more of their budget to basic goods for themselves and their children while on the other hand men spent more on entertainment and themselves Carol and Levin (2009).

4.7 Gender inequality in access to credit facilities and food security

The fifth objective of this study was to determine how gender inequalities in access to credit facilities influence food security in Usigu Division of Siaya County. To address this objective, five key questions were asked. First, both male and female respondents were asked to state the sources of credit that they were familiar with. There were further asked to state the sources of credit that were easily accessible to them. Thirdly, they were asked to state the requirements of accessing the stated sources of credit. Fourthly they were asked to if they had ever accessed the credit. For those who stated that they had ever accessed credit, were further asked to state the amount they had received, the repayment period and interest rate. Fifthly they were further asked to state who decided on how the credit so acquired was utilized. Finally, for those who stated that they had not accessed any credit, they were asked to state the reasons why they had not accessed credit. The findings of these are presented in sections 4.7.1 through to section 4.7.6

4.7.1 Familiar sources of credit

Respondents were asked to indicate the sources of credit that they were more familiar with. Table 4.31 presents the finding on familiar sources of credit by gender.

Table 4. 31: Familiar sources of credit by gender

Familiar credit sources	Frequency		Percentage	
	Male	**Female**	**Male**	**Female**
Banks	40	31	9.4	7.3
Group revolving funds	56	166	13.1	38.9
SACCO	36	0	8.4	0.0
Micro finance institution	86	12	20.1	2.8
None	0	0	0.0	0.0
Other	0	0	0.0	0.0
Total	**218**	**209**	**51.1**	**48.9**

When asked about the sources of credit they were familiar with, most female respondents 166 (38.9%) were most familiar with group revolving fund. However, there were more male 40 (9.4%) than female 31 (7.3%) who were more familiar with banks as sources of credit. Similarly, there were more male 86 (20.1%) than female 12 (2.8%) who were more familiar with micro finance institutions as credit sources. All those who were familiar with SACCOs were 36 (8.4%) and were all male. Banks normally give credit to those with collaterals and literature has shown that there are more male than female with collateral. In a largely collateral-based banking system where women's lack of property rights restricts their ability to access formal financing, lenders that target women must be ready to accept social capital (group guarantee) as collateral. However, Kenya does not have a credit bureau that could capture women's excellent repayment histories, and products like leasing and factoring are not widely available. For this reason women are more likely not to access credit as much as their male counterparts.

4.7.2 Credit sources accessibility by gender

The respondents were then asked to indicate which of the sources of credit were easily accessible by them. The results are as shown in table 4. 32.

Table 4. 32: Accessible sources of credit by gender

Accessible sources of credit	Frequency		Percentage	
	Male	**Female**	**Male**	**Female**
Banks	48	31	13.0	8.4
Group revolving fund	70	145	19.0	39.3
SACCO	0	0	0.0	0.0
Micro finance institution	39	12	10.6	3.2
None	16	8	4.3	2.2
Other	0	0	0.0	0.0
Total	**174**	**196**	**46.9**	**53.1**

Table 4.32 illustrates that most female 145 (39.3%) were more accessible to group revolving fund. However, there were more male 48 (13%) than female 31 (8.4%) that identified banks as more accessible source of credit. Similarly, there were more male (10.6%) than female (3.3%) who identified micro finance institutions as easy to access source of credit. Except for group revolving fund, all other sources of credit were more accessible by male than female respondents. Group revolving fund although popular, offers only small amount of money as credit limiting the activities that recipients can engage in. On the other hand, banks which are known to offer big loans require collateral which most women do not have. Although SACCOs are common sources of finance, they are mainly for those in employment. However the few SACCOs that exist here are for the fish mongers which actually are dominated by men.

4.7.3 Credit accessibility requirements

Respondents were asked to state requirements to access credit. The responses are as presented in Table 4.33.

Table 4. 33: Requirements for accessing credit facilities

Requirement for accessing Credit	Frequency		Percentage	
	Male	**Female**	**Male**	**Female**
None	35	8	9.4	2.1
Group guarantee	71	144	19.0	38.6
Collateral	15	16	4.0	4.3
Financial statement and business plans	36	8	9.7	2.1
Others	0	40	0.0	10.7
Total	**157**	**216**	**42.1**	**57.9**

Table 4.33 shows that majority, 71 (19.0%) male and 144 (38.6%) female reported group guarantee as a common requirements for credit accessibility. This is normally a requirement for group revolving loans and for micro financial institutions. Those who identified collaterals as a requirement for credit were male 15 (4.0%) and female 16 (4.3%). While those who identified financial statements and business plans as requirement for credit accessibility were 36 (9.7%) and female 8 (2.1%). There significant proportion 40(10.7%), all female, who said that there were still other requirements for accessing credit. Two fundamental and linked issues are exposed here. Low literacy level for women that was exhibited in section 4.4 coupled with lack of collateral were indeed limiting factors for women gaining access and benefiting from financial services. Low literacy level affect women ability to prepare financial statements and business plans and therefore they cannot access credit where this is a requirement. We saw in section 4.1 that although women have access to land, they do not own land which in many cases are required and preferred as collateral by financial institutions.

4.7.4 Level of credit accessed

Respondents were asked to say whether they had accessed any credit. Table 4.34 presents the number of the respondents by gender of who had ever accessed credit

Table 4. 34: Credit access by gender

Credit access	Frequency		Percentage	
	Male	**Female**	**Male**	**female**
Yes	122	204	31.4	52.4
No	51	12	13.1	3.1
Total	**173**	**216**	**44.5**	**55.5**

Table 4.34 shows that more female 204 (52.4%) than male 122 (31.4%) had ever accessed credit. However most of the women who had accessed credit had done so from the group revolving funds which are known to offer very little amounts of credit. Those who had responded that they had ever accessed credit were further asked to state how much credit they had accessed. Table 4.35 presents the finding.

Table 4. 35: Amount of credit accessed by gender

Credit amount	Frequency		Percentage	
	Male	**Female**	**Male**	**Female**
100-10,000	106	144	32.5	44.2
10,000-50,000	0	32	0.0	9.8
50,000-100,000	20	16	6.1	4.9
More than 100,000	8	0	2.5	0.0
Total	**134**	**192**	**41.9**	**58.1**

Whereas the Table 4.34 illustrates that more female (52.4%) than male (31.4%) had ever accessed credit, Table 4.35 indicates that much of the credit accessed by both male and female ranges between Kenya shillings 100 -10,000/=. It also reveals that more female than male recipients had credit amounts below Kenya shillings 50,000. However, there were more male than female recipients for loans over Kenya shillings 50,000. This finding affirms the finding by ECA (2012) that female firms were less likely to get loans. Most loans especially where group guarantee is the collateral, are directly proportional to the amounts saved. Women have little savings and also earn less. In this regard, whether in cooperatives of other forms of lending institutions, women are likely to access less credit. Without credit women would not expand the farming enterprises and remain food insecure.

4.7.5 Credit repayment conditions

On credit repayment respondents were asked to state the interest rates payable on credit and repayment period for the credit. The findings are presented in Tables 4.36 and Table 4.37

Table 4. 36: Interest payable on credit

Interest payable on credit	Frequency		Percentage	
	Male	**Female**	**Male**	**female**
Less than 10%	55	148	17.5	47.1
11-15%	51	20	16.2	6.4
15-25%	16	20	5.1	6.4
More than 25%	0	4	0.0	1.3
Total	**122**	**192**	**38.8**	**61.2**

Table 4.36 shows that majority female, 148 (47.1%) credit recipients had interest payable on credit of less than 10%. Equally, majority male, 55 (17.5%) had interest payable on credit of less than 10%. Those who reported to have received credit at between 11-15% interest rate were male 51(16.2%) and female 20 (6.4%). However 16 (5.1%) male and 20 (6.4%) female recipients reported that they had interest payable on credit of 15% and above. This finding is consistent with the finding by Heidrick et el (2012) which found that women managed firms as more likely to pay higher interest rates than men because their loans are considered high risk in absence of collateral.

The respondents were also asked about credit repayment period condition. Table 4.37 presents the findings.

Table 4. 37: Credit repayment period

Credit repayment period	Frequency		Percentage	
	Male	**Female**	**Male**	**female**
Less than 6 months	82	108	28.0	36.7
7-12 Months	16	48	5.4	16.3
13-24 Months	0	0	0.0	0.0
Over 24 Months	16	24	5.4	8.2
Total	**114**	**180**	**38.8**	**61.2**

As for the repayment period, 108 (36.7%) female compared to 82 (28.0%) male reported receiving credit with a repayment period of less than 6 months. While 48 (16.3%) female compared to 16 (5.4%) male reported receiving credit with a repayment period of 7-12 months. Only 24 (8.2%) female as opposed to 16 (5.4%) male reported receiving credit with repayment

period of more than 24 months. Most of the credit received by female were repayable within short period of 6 months or less. This coupled with the fact this credit is in small amounts as revealed in section 4.7.1, reduce its effectiveness. Such loans cannot be of benefit to a season depended female farmer.

4.7.6 Credit facilities utilization

Respondents were asked to state who made decision on credit utilization. Table 4.38 presents the findings.

Table 4. 38: Decision on credit facilities utilization

Decision maker on credit money utilization	Frequency		Percentage	
	Male	Female	Male	Female
Myself	66	4	21.3	1.3
My spouse	0	160	0.0	51.6
Both of us	40	40	12.9	12.9
Total	106	204	34.2	65.8

From Table 4.38, Only 4 (1.3%) female reported that they made decisions on how credit money is utilized as compared to 66 (21.3%) male who made decisions on how credit money is utilized. No male reported that their spouses would make such decisions. However a whopping 160 (51.6%) female reported that such decisions would be made by their spouses. There was no difference between male and female who reported that such decision would be made by both spouses. This is consistent with another study that found that, although accounts may be opened in than name of women, the decision making authority around the use of credit funds often lies with a male relative (World Bank, 2014). The county Cooperative officer argues that this situation can be improved by supporting business skills and financial capability training for women which will be in line with building the business case for equal economic opportunities for men and women.

4.7.7 Reasons for not accessing credit facilities

The respondents were asked why they were not able to access credit and the findings are as shown in table 4.39

Table 4. 39: Reasons for not accessing credit facilities

Reasons for not accessing credit	Frequency		Percentage	
	Male	**Female**	**Male**	**Female**
I Fear loans	35	0	44.3	0.0
No collateral	0	16	0.0	20.2
My spouse cannot accept	0	8	0.0	10.1
Not sure of the conditions	0	12	0.0	15.2
Lenders not accessible	0	4	0.0	5.1
Cultural restriction	0	4	0.0	5.1
Other	0	0	0.0	0
Total	**35**	**44**	**44.3**	**55.7**

According to Table 4.39, majority male 35 (44.3%) were not accessing credit because they simply fear loans. Other than fear for credit, the male had no any other reason for not accessing credit. On the other hand, majority female 16 (20.3%) reported lack of collateral as the reason for not accessing credit. Other reasons for not accessing credit for female in order of intensity include not being sure of the credit conditions 12 (15.2%), refusal by the spouse 8 (10.1%), cultural restrictions 4 (5.1%) and inaccessible lenders 4 (5.1%). This is affirm the finding by World Bank, (2014) which found that women's lower access to finance among other factors was due to: financial literacy, lack of clarity of bank terms of access, lack of consistent relations with financial institutions or recognition by Financial Institution's despite positive track record of female clients. Cultural restrictions and refusal by spouses emanate from the fact that when women access credit they become empowered and the position of male as head of the household is endangered. Men are ever fighting to keep the status quo and will do everything possible to frustrate women effort to access credit argues the county gender officer.

4.7.8 Influence of access to credit facilities on food security

The Pearson Chi-square results for test of significance of association between decision-making on credit utilization and food security across gender is shown in Table 4.40.

Table 4. 40: Association between access to credit facilities and food security

Chi-square test results for the association

Gender		Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Male	Pearson Chi-Square	7.017[c]	1	.008		
	Continuity Correction[b]	5.954	1	.015		
	Fisher's Exact Test				.012	.007
	N of Valid Cases	106				
Female	Pearson Chi-Square	21.429[d]	1	.000		
	Continuity Correction[b]	19.680	1	.000		
	Fisher's Exact Test				.000	.000
	N of Valid Cases	200				

b. Computed only for a 2x2 table
c. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 14.34.
d. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 12.00.

Table 4.40 shows that in both FHHs and MHHs there was significant association between access to credit and food security [$x^2_{(1)} = 7.017$, $p = 0.008 < 0.05$] and [$x^2_{(1)} = 21.429$, $p = 0.000 < 0.05$] respectively; implying that access to credit had a significant role in determining food security in both female-headed households and male-headed households. Mavimbela (2010) found that those who used loan increased their productivity through increased use of farm tools. Literature has revealed access to credit as important in explaining the adoption of improved agricultural technology. Agricultural productiveness relies on credit facilities to raise the capital required to initiate and sustain production activities. In this regard those who had access to credit enjoyed food security through increased production.

CHAPTER FIVE: SUMMARY OF THE FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

In line with the objectives of the study, this chapter highlights the summary of the findings, conclusions made on the findings and recommendations drawn from the findings which are meant to ensure gender gap is reduced to address food security question.

5.2 Summary of the findings

This section summarises the findings as per the study objectives. The findings were as follows:

5.2.1 How gender inequality in land ownership and control influence food security in Usigu Division of Siaya County in Kenya

The first objective of this study was to examine the extent to which land ownership influence food security in Usigu Division of Siaya County in Kenya. To achieve this objective, a comparison of land ownership between MHHs and FHHs was done and a further inferential statistics i.e. chi-square was undertaken to establish the influence of land ownership and control on food security. It was found that there exists gender inequalities in land ownership with male headed households (MHHs) owning much larger land holdings than female headed households (FHHs). However, land ownership influence the food security in MHHs but not FHHs.

5.2.2 How gender inequality in access to information and education influence food security in Usigu Division of Siaya County in Kenya

The second objective of this study was to assess how access to information and education influence food security in Usigu Division of Siaya County in Kenya. To achieve this objective, a comparison between access to education and information in MHHs and FHHs was done and further chi-square analysis undertaken to establish the influence of access to information and education on food security. It was found that whereas currently there was no inequality in access to education, the impact of previous inequalities in access to education and information is still being felt. Even though, level of education was only a determining factor for food security in FHHs but not MHHs.

5.2.3. How gender inequality in access to health services influence food security in Usigu Division of Siaya County in Kenya

The third objective of this study was to establish how access to health services influence food security in Usigu Division of Siaya County in Kenya. The objective was achieved by

undertaking a comparison between access to health services in MHHs and FHHs and further analysis of association between measures of access to health services and food security determined by undertaking chi-square test to establish the influence of access to health services on food security. It was found that there were gender inequalities in access to health services yet accessibility to health services had a significant role in determining food security in both MHHs and FHHs

5.2.4 How gender inequality in access to paid employment opportunities influence food security in Usigu Division of Siaya County in Kenya

The fourth objective of this study was to analyze the level to which access to paid employment opportunities influence food security in Usigu Division of Siaya County in Kenya. To achieve this objective a comparison between access to paid employment in MHHs and FHHs was done and further chi-square analysis undertaken to establish the influence of access to paid employment on food security. It was established that whereas there existed gender inequalities in access to paid employment, accessibility to paid employment had a significant role in determining food security in FHHs but not in MHHs households.

5.2.5 How gender inequality in access to credit facilities influence food security in Usigu Division of Siaya County in Kenya

The fifth objective of this study was to evaluate how gender inequality in access to credit facilities influence food security in Usigu Division of Siaya County in Kenya. To achieve this objective a comparison between access to credit facilities in MHHs and FHHs was done and further chi-square analysis undertaken to establish the influence of access to credit facilities on food security. It was established that there were inequalities in access to credit with more female than male accessing credit even though more male than female had access to high amounts of credit. Nevertheless it was established that decision-maker on credit utilization had a significant role in determining food security in female-headed households but not in male-headed households.

5.3 Conclusions

Based on the research findings, the study concludes that although there exists gender inequalities in land ownership in Usigu Division of Siaya County, land ownership does not influence food security in individual households. However women manifest an impressive resilience and multifaceted array of talents, but they also face a range of constraints particularly in their access to productive resources such as land, information and education, training, credit

and financial services which prevent them from becoming equally competitive economic players, capable of creating better lives for themselves and their families, and contributing fully to the growth of their communities and countries. This study has a proof that closing this gender gap in access to productive resources and in other aspects of food insecurity mechanisms could bring about significant developmental advance. Simply by giving women the same access to and control of productive resources as men have, yields on women's farms would increase significantly, and substantial progress would be made in lifting millions out of food insecurity. Moreover, bridging this gap would put more resources in the hands of women and strengthen their voice within the household a scenario that may have multiplier effects on the food security, nutrition, education and health of their children.

5.4 Recommendations

On the basis of the findings of this study, the following recommendations, which are related to influence of gender inequality on food security are made:

1. The government needs to focus now its attention much more on implementation of the various articles of the constitution that guarantee women rights to land to reinforce legal measures to ensure that men and women are entitled to equal rights in land, before marriage (in cases of inheritance), during marriage and during its dissolution and after the death of the spouse for easier decision making for the use of land to enhance for security.
2. Gender and Human Rights Activists need to step up their lobbying the government for equality in educational opportunities and seek to support and sustain education for all. This study has revealed the link between women's resource ownership and control and improved household food security. Therefore improving women's education is probably the most important policy instrument Kenya Government can use to increase agricultural productivity, reduce poverty, and promote better health.
3. Kenya Government and Development Experts need to step up and widen access to reproductive health services and more so on Family planning services for rural folks: The goal of achieving food security will be difficult if population growth rates cannot be reduced. While poverty and natural disasters are the most common causes of food insecurity, rapid population growth overburdens already strained financial and natural resources (including land). Access to reproductive health services will help to reduce the population growth rate for instance.

4. Kenya Government and Development Partners must seek to enhance credit programmes that specifically target rural women farmers and more so those that will employ the group revolving fund approach that rural women are more familiar with. Improving agricultural productivity and incomes, especially of women farmers most of whom reside in rural areas, access to affordable financial credit is important to enable them acquire new farming technology which is a necessary input in realizing the higher productivity goal.

5.5 Suggestions for further research

As a result of this study, some areas which require further investigation in order to have more insight into the influence of gender inequality on food security as well as enrich the present knowledge include:

i. Whereas this research found that male headed households (MHHs) owned much larger land holdings on average than female headed households (FHHs), land ownership did not influence the food security of FHHs. Access to land by FHHs but not ownership was thought to be the factor behind this. Further research is required to establish to what extend access to land influence food security.
ii. This study found that level of education was a determining factor for food security in FHHs, the extent to which disparities in secondary and university education affected both women's labor force participation and their ability to acquire the skills needed to start and engage in agriculture need to be investigated further.

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Appendix I: Consent Letter

P.O. Box 2429-00621

Village market, Nairobi

January 9, 2018

Dear Sir/Madam,

I am a post graduate student of University of Nairobi carrying out a research on the influence of gender inequalities on food security. The study will involve an interview in which your views about the various gender issues and food security will be sought. Your views in the interview will be held strictly confidential and will not be used for any other purpose except for this research. Only the researchers will have access to the information and all records of views shared will be stored in a locked place under the researcher's control.

Your participation in this research is voluntary and you may refuse to answer any question or participate in any activity. If you feel uncomfortable participating in this exercise you may withdraw at any time without penalty.

If you agree to participate in this project, please sign and tear the consent slip below and return it to the interviewer before you start

Sincerely,

Charles Oranga

.....

Consent

I have and understood the above information and all the questions pertaining to this project have been answered to my satisfaction. I also understand that by signing and returning this consent form I have agreed to participate in the study voluntarily

Name..... Signature.....

Date.....

Appendix II: Household Questionnaire

Tick or fill in as appropriate

PART A: Demographic Data

1 Indicate your Gender (i) Male, [ ] (ii) Female [ ]

2 What is your marital status?

Single ( ) Married ( ) separated ( ) widowed ( )

3 What do you do for a living?

Farmer ( ) other specify----------

4 Number of children below 20 years Male _____ and female_____

6 Number of meals per day_____

PART B: Land and land resource ownership and food security

7 How much land do you own (registered in your name) in acres

(i) None, [ ] (ii) less than 1, [ ] (iii) 1to 5 [ ] (iv) more than 5[ ]

8 Who decides on the use of land?

(i) Myself [ ] (ii) my spouse [ ] (iii) both of us [ ]

(iv) Any family member [ ]

9 If you were to sell off the land who would decide

(i) Myself [ ] (ii) my spouse [ ] (iii) both of us [ ] (iv) Any family member [ ]

10. If death occurs how would your land change ownership?

(i) To my sons [ ] (ii) To my daughters [ ] (iii) To my spouse [ ]

(iv) To other family members [ ]

PART C: information and education and food security.

12 What is your education level?

(i) None [ ] (ii) Primary [ ] (iii) Secondary [ ] (iv) Tertiary [ ] Any other (specify) _____

13 Have you ever attended any training in the following areas?

(i) Agriculture [ ] (ii) Nutrition [ ] (iv) Health [ ] (iii) Business [ ]

(v) ICT [ ] any other.....

14 What was the purpose of the training?

(i) I do not know [ ] (ii) build new skills and knowledge [ ] (iii) train others

(ToT) [ ] (iv) Other specify.....

15 Where was the training conducted?

(i) In my home [ ] (ii) within the village [ ] (iii) 1-5 Kms away, [ ]

(iv) more than5 Kms away [ ]

b) How long was the training?

(i) less than 1 week [ ] (ii) 1-3 weeks [ ] (iii) 3 weeks- one month [ ]

(iv) Less than 1 month [ ]

c) Who conducted the training (a man or a woman?)

(i) Male facilitators [ ] (ii) Female facilitators [ ]

(iii) Both male and female facilitators [ ]

PART D: access to health services and food security.

20 What type of health facilities are in 5 kilometre radius?

(i) Community Dukas [ ] (ii) Dispensaries/Health centre [ ] (iii) Hospitals [ ] (iv) None [ ]

21 Who owns the health facilities?

(i) Private [ ] (ii) Public [ ] (iii) Mission [ ] (iv) Not known [ ]

22 What type of services are available (Tick as appropriate):

(i) Family planning [ ] (ii) HIV services including ART and, VCT, [ ]

(iii) Nutritional services [ ] (iv) Other Curative Services [ ] (v) None [ ]

(vi) Not sure [ ]

24 Why do you think others do not access these services? (Tick as appropriate)

(i) No specialized services for women [ ] (ii) lack of drugs [ ]

(iii) Inadequate service providers [ ] (iv) it is far away [ ] (vi) it is expensive [ ]

(vii) cultural/religious beliefs [ ]

PART E: Access to paid employment and food security

25 Are you on salaried employment?

(i) Yes [ ] (ii) No [ ] (iii) Not Sure [ ]

b) If yes why is your average monthly pay in Kenya Shillings?

(i) 1- 5,000 [ ] (ii) 5001-10,000 [ ] (iii) 10001- 25,000 [ ] (iv) > 25,000 [ ]

25 At what level are you employed?

(i) Low cadre staff [ ] (ii) Medium supervisory level [ ]

(iii) High level managerial level [ ]

b) If you are not employed, what is your main source of income?

(i) Casual farm labour [ ] (ii) Fishing [ ] (iv) small business [ ]

(v) Hawking [ ] (vi) Other specify.....

26 What is your average income from non-paid employment?

(i) 1- 5,000 [ ] (ii) 5001-10,000 [ ] (iii) 10001- 25,000 [ ] (iv) > 25,000 [ ]

27 Who decides how to use your earned income?

(i) Myself [ ] (ii) My spouse [ ] (iii) Both of us [ ]

(iv). any family member [ ]

PART F: access to credit facilities and Food security.

31 What sources of credit are you familiar with?

(i) Banks [ ] (ii) Group revolving funds [ ] (iii) SACCO [ ]

(iv) Micro finance institution [ ] (v) none [ ] (vi) Other specify.....

31 Which sources are easily accessible by you?

(i) Banks [ ] (ii) Group revolving funds [ ] (iii) SACCO [ ]

(iv) Micro finance institution [ ] (v) none (vi) Other specify.....

32 What are the requirements by these credit sources?

(i) None [ ] (ii) Group guarantee [ ] (iii) Collateral, security, title deed, [ ]

(iv). Financial statements and business plan, [ ] (v) guarantors [ ]

(vi). others specify.....

33 Have you been able to access the credit?

(i) Yes [ ] (ii) No [ ]

b) If yes how much did you get. What is the largest range of funds have you ever accessed

(i) 100- 10,000 [ ] (ii) 10,000- 50,000 [ ] (iii) 50,000- 100,000 [ ]

(iv) Less than100, 000 [ ]

34 What were the repayment conditions on interest rate-?

(i) Less than10% [ ] (ii) 11-15% [ ] (iii) 15-25 % [ ] (iii) more than25%

b) Repayment period

(i) Less than six month [ ] (ii) 7-12 months [ ] (iii) 13-24months [ ]

(iv) Over 24 months [ ]

35 Who decided how the loan you received was to be utilized

(i) Myself [ ] (ii) My spouse [ ] (iii) Both of us [ ] (iv)

The lending institution [ ]

b) If not, what are the reasons why you have not accessed the credit?

(i) I fear loans [ ] (ii) No collateral [ ] (iii) My spouse cannot accept [ ]

(iv). Not sure of the conditions [ ] (v) Lenders not accessible [ ]

(vi). Cultural restrictions [ ] (vii) other specify_____

THANK YOU

Appendix III: Key Informants Interview Guide

Preamble

I am a post graduate student of University of Nairobi carrying out a research on the influence of gender inequalities on food security in Usigu Division. Please feel free to answer the questionnaire as frankly as possible. The information you provide will be treated as confidential and will not be used for any other purpose except for this research

1. Gender inequality in land and land resource ownership and food security

    a) In your opinion do you think men and women in this community have equal access to and control over land and land resources?,
    b) If no, what would you say are the reasons why?
        i. Cultural factors ii. Political factors iii. Economic factors iv. technological factors v. other factors
    c) What are the various forms of inequalities that you see in this community?
    d) What do you recommend should be done to enable men and women have equal access to and control over land and land resources?

2. Gender inequality in information and education and food security

    a) In your opinion do you think men and women have equal access to information and education? If no,
    b) What would you say are the reasons?
        i. Cultural factors ii. Political factors iii. Economic factors iv. technological factors v. other factors
    c) What forms of inequalities do you see in access to information and education in this community?
    d) What do you recommend should be done to enable men and women have equal access to information and education?

3. Gender inequality in access to health services and food security

    a) In your opinion do you think men and women have equal access to health services? If no,
    b) What would you say are the reasons?

ii. Cultural factors ii. Political factors iii. Economic factors iv. technological factors v. other factors

c) What forms of inequalities do you see in access to health services in this community?

d) What do you recommend should be done to enable men and women have equal access to health services in this community?

4. Gender inequality in access to paid employment opportunities and food security

a) In your opinion do you think men and women have equal access to paid up employment?

b) If no, what would you say are the reasons why?

iii. Cultural factors ii. Political factors iii. Economic factors iv. technological factors v. other factors

c) What forms of inequalities do you see in paid up employment in this community?

d) What do you recommend should be done to enable men and women have equal access to paid up employment in this community?

5. Gender inequality and access to credit facilities

a) In your opinion do you think men and women have equal access to credit facilities?

b) If no, what would you say are the reasons why?

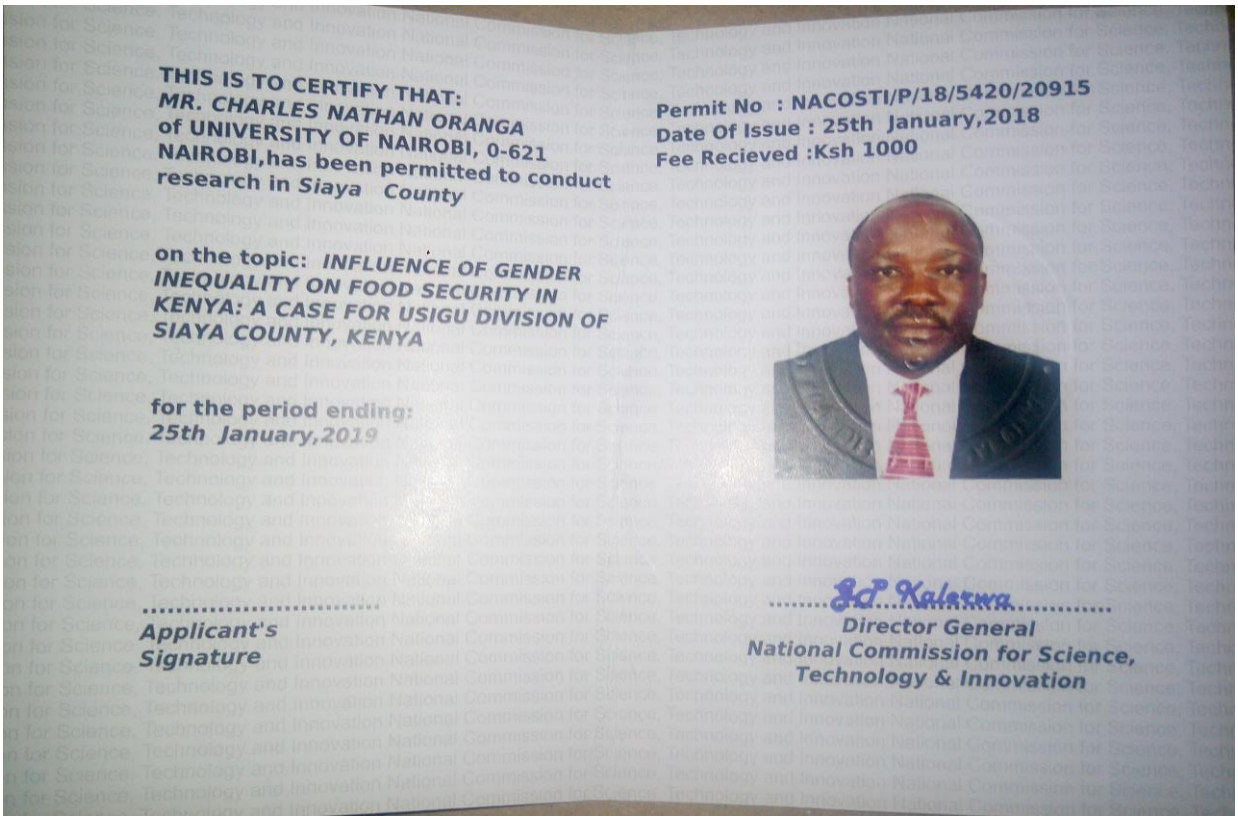
iv. Cultural factors ii. Political factors iii. Economic factors iv. technological factors v. other factors

c) What forms of inequalities do you see in access credit facilities in this community?

d) What do you recommend should be done to enable men and women have equal access to credit facilities in this community?

Thank you

Appendix IV: NACOSTI Research permit



THIS IS TO CERTIFY THAT:
MR. CHARLES NATHAN ORANGA
of UNIVERSITY OF NAIROBI, 0-621
NAIROBI,has been permitted to conduct
research in *Siaya County*

on the topic: *INFLUENCE OF GENDER INEQUALITY ON FOOD SECURITY IN KENYA: A CASE FOR USIGU DIVISION OF SIAYA COUNTY, KENYA*

for the period ending:
25th January,2019

.....
Applicant's
Signature

Permit No : NACOSTI/P/18/5420/20915
Date Of Issue : 25th January,2018
Fee Recieved :Ksh 1000

Director General
National Commission for Science,
Technology & Innovation

Appendix V: Research Authorization Letter

NATIONAL COMMISSION FORSCIENCE,
TECHNOLOGY ANDINNOVATION

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

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

Ref No. NACOSTI/P/18/5420/20915

Date: 25th January, 2018

Charles Nathan Oranga
University of Nairobi
P.O. Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Influence of gender inequality on food security in Kenya: A case for Usigu Division of Siaya County, Kenya"*** I am pleased to inform you that you have been authorized to undertake research in **Siaya County** for the period ending **25th January, 2019.**

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

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

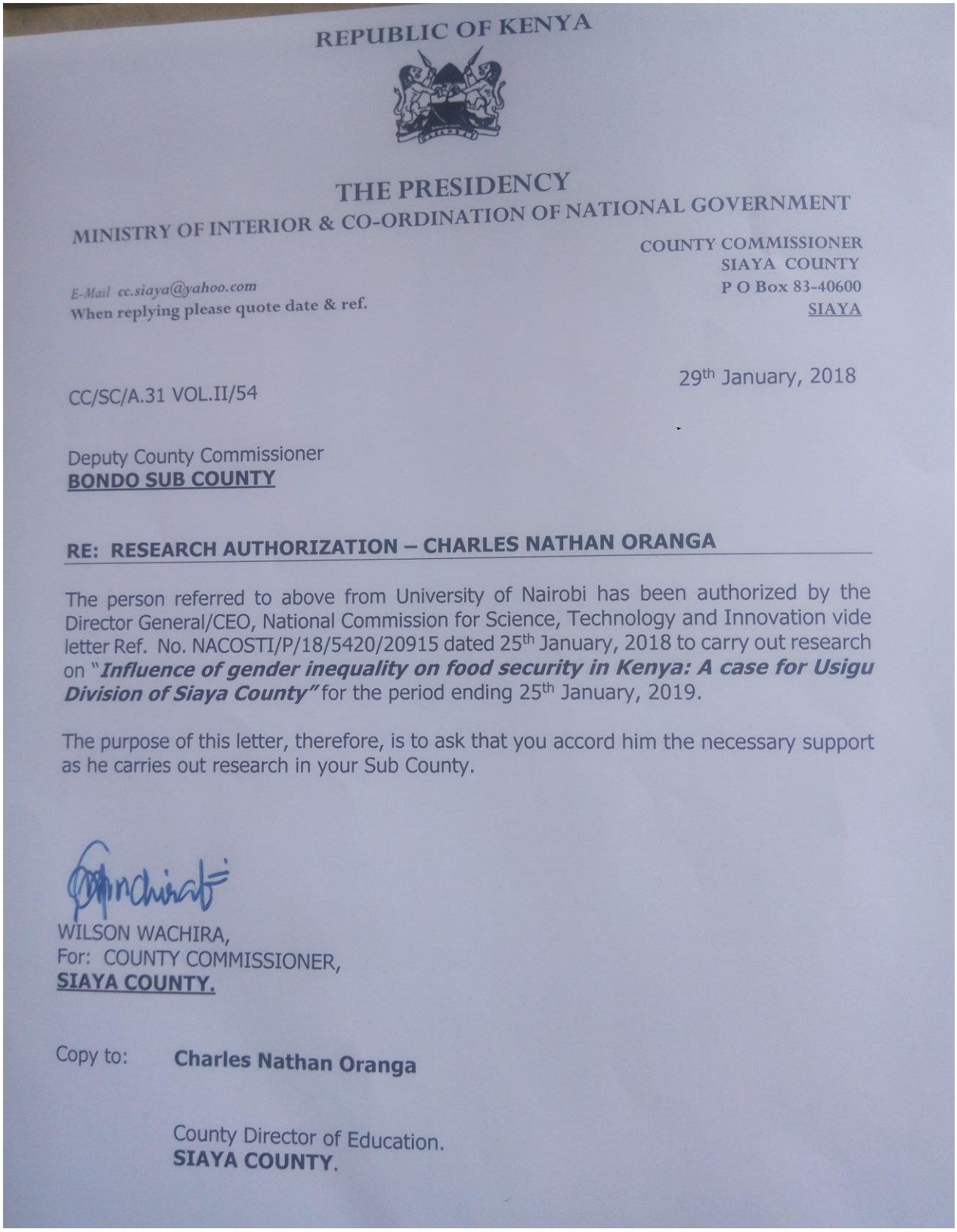
GODFREY P. KALERWA MSc., MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Siaya County.

The County Director of Education
Siaya County.

Appendix VI: Permission from Siaya County Commissioner



REPUBLIC OF KENYA

THE PRESIDENCY

MINISTRY OF INTERIOR & CO-ORDINATION OF NATIONAL GOVERNMENT

COUNTY COMMISSIONER
SIAYA COUNTY
P O Box 83-40600
SIAYA

E-Mail cc.siaya@yahoo.com
When replying please quote date & ref.

CC/SC/A.31 VOL.II/54

29th January, 2018

Deputy County Commissioner
BONDO SUB COUNTY

RE: RESEARCH AUTHORIZATION – CHARLES NATHAN ORANGA

The person referred to above from University of Nairobi has been authorized by the Director General/CEO, National Commission for Science, Technology and Innovation vide letter Ref. No. NACOSTI/P/18/5420/20915 dated 25th January, 2018 to carry out research on ***"Influence of gender inequality on food security in Kenya: A case for Usigu Division of Siaya County"*** for the period ending 25th January, 2019.

The purpose of this letter, therefore, is to ask that you accord him the necessary support as he carries out research in your Sub County.

WILSON WACHIRA,
For: COUNTY COMMISSIONER,
SIAYA COUNTY.

Copy to: **Charles Nathan Oranga**

County Director of Education.
SIAYA COUNTY.