HOUSEHOLD SOCIO-ECONOMIC FACTORS AND FEMALE PARTICIPATION IN AGRICULTURE IN UGANDA

SSERUBIRI JOEL

2013-M112-20028

UGANDA MARTYS UNIVERSITY

SEPTEMBER, 2016

HOUSEHOLD SOCIO-ECONOMIC FACTORS AND FEMALE PARTICIPATION IN AGRICULTURE IN UGANDA

A POSTGRADUATE DISSERTATION PRESENTED TO THE FACULTY OF SCIENCE IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE IN DEVELOPMENT ECONOMICS OF UGANDA MARTYS UNIVERSITY, NKOZI

SSERUBIRI JOEL

2013-M112-20028

SEPTEMBER, 2016

DEDICATION

I dedicate this piece of work to my mother Joyce Nantume.

ACKNOWLEDGEMENT

I wish to express my sincere gratitude to my thesis supervisor Mr. Kakungulu Moses for his in-depth review of my dissertation. I gratefully appreciate the support, guidance, time and effort he provided to me despite of your busy schedules.

I am also grateful to Mr. Mubinzi Geoffrey, for the technical support he provided.

I would like to extend my special thanks to my friends; Sarah Nabaggala, Dr. George Okello Candiya Bongomin (PhD) and the Treasury and investment Team of Housing Finance Bank Ltd for their support throughout my academic journey.

Lastly but not least, my gratitude to all my family members, facilitators and participants of Msc Development Economics of 2013/2014 intake.

May the all might God Reward them abundantly.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

The study used the UDHS 2011 dataset to investigate the socio-economic factors affecting female labour participation in Agriculture in Uganda. The analysis was done at three levels; univariate, bivariate, and multivariate. First; an assessment of independent variables in addition to female agricultural labour participation was done. Then, t-tests were used for measuring the relationship between continuous independent variables and the dependent variable while chi-square analysis was used for the categorical independent variables. At the multivariate level, a Binary Logistic Regression Model was fitted to measure the net effect of the independent variables on the dependent variable. The results showed that the highest proportion of women that were considered in this study were not participating in the agricultural labour (53.2%). While only 47 % of the women were engaged in agriculture. At the multivariate level all the five independent variables were significant at 5% significance levels, in explaining female participation in agriculture. Women with primary, secondary and tertiary education had reduced odds of participating in female agricultural labour force (OR=0.79: OR=0.41: OR=0.11 respectively) compared to those who had no education at all. While women residing in rural areas participated in agriculture (OR=3.4) compared to those residing in urban. In addition, women residing in female headed households were less likely to participate in agriculture (OR=0.88) than those residing in male headed households. Further, there was a positive relationship between age of the women and female labour agricultural participation (OR=1.02). The women that listened to the radio at least once in a week were more likely to participate in agriculture (OR=1.2) when compared to those who listened to no radio at all. The study recommends agricultural education that is relevant to women farmers and creation of platforms for women involved in agriculture to share experiences on a peer to peer basis.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter gives an overview of how household socio-economic factors affect female participation in agriculture in Uganda. The study investigates the effects of socio-economic factors on female participation in agriculture in Uganda. Under this study, the socio-economic factors are independent variables (Age, Education, Residence, Household Gender head and frequency of listening to radio (media) while female participation in agriculture is the dependent variable. This chapter presents the historical, theoretical, conceptual, and contextual background, statement of the problem, objectives of the study, research questions, hypothesis, significance of the study, the scope of the study, justification for the study, and operational definitions of terms and concepts used in the study.

1.1 Background to the Study

1.1.1 Historical Background

Historically, agricultural growth has been the way out of poverty for developed countries (World Bank, 2012). More recently, this has been true in China and India where agriculture led economic growth has reduced poverty. The World Development Report by World Bank (2012) states that GDP growth generated in agriculture is at least twice as effective in reducing poverty as growth generated by other sectors. This report further indicates that women make essential contributions to the agricultural and rural economies in all developing countries.

Indeed, most low-income women in developing countries live and work in rural areas, and agriculture is their primary source of employment. Women are the backbone of the development of rural and national economies. They comprise of 43% of the world's agricultural labour force, which rises to 70% in some countries. Women's employment is a critical factor in the progression towards economic independence, which is considered as an indicator of their overall status in society (Mammen and Paxson, 2008).

Evidently, in Asia and the Pacific region, female labour contribution to the overall economy is high, particularly in terms of labour input into agriculture. Bangladesh, Bhutan, Cambodia, China, India, Myanmar, Nepal, Pakistan and Vietnam have particularly high percentages of women employed in the agricultural sector, with estimates ranging between 60 and 98 percent (FAO, 2011). Indeed, in most Asian countries the number of women employed in agriculture as a percentage of the EAP is higher than that of men.

In Africa, 80% of the agricultural production comes from small farmers, who are mostly rural women. Further, in Uganda, it's estimated that female agricultural labour force produces up to 60% - 80% food for household livelihood (UBOS, 2012). Hence, women are responsible for an estimated 90 percent of Uganda's total food output. However, they lack the resources and support necessary to effectively produce crops on a sustainable scale, whether for home consumption or income generation (Feed the Future Uganda, 2013).

Drawing from above, it's worthwhile noting that agricultural sector worldwide has the potential to benefit women as employees, entrepreneurs, producers and consumers. Thus, enabling women to benefit from economic development through gainful participation in agriculture enables them

to achieve greater economic empowerment and potentially contribute to greater gender equality (DFID, 2014).

1.1.2 Conceptual Background

Previous studies have revealed that women participation in agriculture play important roles in household food security as income earners and managers of natural resources and biodiversity, although the success with which they execute these roles is often mitigated by restricted access to land, capital and technology (FAO, 2011).

Damisa et al., (2007) argued that various researches conducted on the contribution of women to agricultural development in the country suggest that women contribution to farm work is as high as between 60 and 90% of the total farm task performed. The contribution of the women ranges from such tasks as land clearing, land-tilling, planting, weeding, fertilizer/manure application to harvesting, food processing, threshing, winnowing, milling, transportation and marketing as well as the management of livestock.

In addition, Sharon (2008) also suggests that both women and men play critical roles in agriculture throughout the world, producing, processing and providing the food we eat. Women make up half of the rural population and they constitute more than half of the agricultural labour force. Rural women in particular are responsible for half of the world's food production and produce between 60 and 80 percent of the food in most developing countries. Yet, despite their contribution to global food security, women farmers are frequently underestimated and overlooked in development strategies.

Women work in agriculture as farmers on their own account, as unpaid workers on family farms and as paid or unpaid labourers on other farms and agricultural enterprises (Ahmed and Maitra, 2010). They are involved in both crop and livestock production at subsistence and commercial levels by producing food and cash crops and manage mixed agricultural operations often involving crops, livestock and fish farming (FAO, 2011). Indeed, women comprise an average of 43% of the agricultural labour force of developing countries. The female share of the agricultural labour force ranges from about 20% in Latin America to almost 50% in Eastern and Southeastern Asia and sub-Saharan Africa (FAO, 2011).

Kutiwaet al., (2010) and Mougeot (2000) observed that agriculture provides women the opportunity of earning a second

ary income, improve nutritional value of the household diets, and participate actively in budgeting and decision making processes. Kutiwaet al., (2010) further observed that women participate in agriculture more actively than men due to three main reasons. The primary reason is that agricultural activities go hand in hand with daily household activities of women. On the other hand, the responsibility in providing food and welfare to the household is on the shoulders of women in most of the societies around the world (Adedayo and Tunde 2013). Thus, the role of women in agriculture is undoubtedly decisive in strengthening the household economy while ensuring the food security of the family.

However, although the share of women in the agricultural labour force in most countries and regions has remained fairly steady at between 40% and 50%, it is substantially declining in some

countries. A study by Charles and Willem (2008) revealed that the importance of the role played by women in agricultural production is limited by exclusion and widespread failure in formal extension services as well as social justice.

1.1.3 Theoretical Literature Review

The theoretical basis and framework for this study was rooted in Neoclassical Theory of Time Allocation, Liberal Feminism Theory and Civic Voluntary participation theory. These theories explain why women participate in the labour market while others do not. Thus, this study is guided by the Neoclassical Theory of Time Allocation and Liberal Feminism Theoretical foundation to articulate female participation in agriculture.

1.1.4 Contextual Background

Agricultural production is an important activity of any economy, especially in developing countries Uganda inclusive. In the 1950s until independence in 1962, British Colonial Office policy promoted agriculture in Uganda by encouraging the development of co-operatives for subsistence farmers to partially convert to selling their crops: principally coffee, cotton, tobacco, and maize (Ogilvie, 2000). David Gordon Hines as Commissioner of Co-operatives from 1959 to independence in 1962 and then as a civil servant until 1965, developed the movement by encouraging eventually some 500,000 farmers to join co-operatives (Ogilvie, 2000). Under the British administration, in each political district, there was a co-operative "union" which built stores and, eventually, with government money, processing factories. The number of farmers involved rose exponentially as the co-operatives made the profits that the Asian traders had previously made. The roads, other infrastructure and security were better in this colonial period

than in the late 1900's, thus, allowing relatively efficient transport and marketing of agricultural products, hence increased agricultural activities.

Cognizant to above, the responsibility to promote agricultural activities in any economy remains with the government and its programme (e.g. NAADS) since it's the backbone of GDP growth in most developing countries, Uganda inclusive.

During Obote I regime, the agricultural sector flourished during his first term. According to Ogenga-Latigo (2012), rapid agricultural transformation of the 1960's was hinged on holistic national and sub-sector foci, clarity of development goals and set policy objectives and targets, and commitment of real resources to the sector. The agricultural share of the annual budget ranged from 16 to 25 percent annually, as compared to 2 to 4 percent annually under the current (NRM) regime over the last twenty years.

However, when Amin took over, the agricultural sector suffered from "poor service delivery, shortage of agricultural inputs, market deterioration, and delayed payments to farmers" under Amin (Anderson and Masters, 2009). The monetary agricultural sector was hit particularly hard, however, the subsistence agricultural sector experienced steady growth. Despite massive economic failures at a national level, individual households actually experienced relatively high rates of food security during this period, which could explain some of the nostalgia for the Amin era among select rural agricultural households in Uganda today (Andersonand Masters, *ibid*).

Women were largely excluded from politics, economic, and social activities during both Obote and Amin's regimes. It was not until the NRM took over power that women gained noteworthy involvement in Uganda's politics, economic, and social activities. In 1987, the NRM government accepted a policy package from the IMF and World Bank as part of a formal economic recovery program. Agricultural growth increased to 3.7 percent a year between 1987 and 2004 following these reforms (Anderson and Masters, 2009). Thus, while agriculture remains an essential part of Uganda's economy, its dominance as a percentage of the country's GDP has steadily declined since independence.

According to Anderson and Masters (2009), in the late 1960's, the agricultural sector contributed 46 percent. This fell to 31 percent in 2004 and approximately 20 percent today. Many agricultural indicators suggest economic growth has not positively impacted the majority of the population. Real growth in agricultural output decreased from 7.9 percent in 2000/01 to 0.7 percent in 2007/08118. The number of people who are food insecure has reportedly increased from 12 million in 1992 to 17.7 million in 2007 (Joughlin and Kjoer, 2010).

Furthermore, Joughlin and Kjoer (2010) suggests that the lack of structural transformation despite economic growth can be attributed to unequal access by women to land, education, employment, long marketing chains, and high transaction costs due to, among other things, poor rural infrastructure. However, while women still struggle to attain equal rights to men in Uganda, things appear to be moving in a positive direction under the NRM's regime. The current government continues to publicly emphasize the importance of agriculture and involvement of women in Uganda's social-economic growth, despite meager budget allocation to the sector.

1.2 Statement of the Problem

Recently, most developing countries have displayed a greater concern and understanding of women issues and thus, proposes a multi-pronged approach to women's integration in development, with emphasis on areas such as nutrition, employment, environment, agriculture, etc (World Bank, 2007).

Evidence indicates that agriculture is one of the sectors, which employs the largest percentage of female labour in the world (FAO, 2011; World Bank, 2007).However; there has been a recent noticeable drop in their participation in the sector. This is evident in some countries such as Malaysia and the Philippines (FAO, 2011).

In Uganda, existing data indicates that the level of women participation in agriculture declined from 71% in 2006 to 34% in 2012 (UBOS, 2012). Besides, in the most recent National Population Census Report released by UBOS, it is evident that most male population (81%) are involved in agriculture compared to the female population (UBOS, 2016). Yet it's estimated that female agricultural labour force produces up to 60% - 80% food for household livelihood in developing countries (UBOS, 2012).

Thus, the declining trends in female participation in agriculture in the world and particularly in Uganda calls for an investigation into factors leading to the decline in female participation in agriculture. This could be attributable to socio-economic factors, which calls for inquires through research.

1.3 Objectives of the Study

1.3.1 Major Objective

The study examined the effect of socio-economic factors on female participation in agriculture in Uganda.

1.3.2 Specific Objectives

i) To determine the effect of Age on female participation in agriculture in Uganda.

ii) To examine the effect of Education on female participation in agriculture in Uganda.

iii) To determine the influence of Residence on female participation in agriculture in Uganda.

iv) To determine the effect of Household gender on female participation in agriculture.

v) To find out how frequency of listening to radio agricultural programs affects female participation in agriculture in Uganda.

1.4 Research Hypothesis

The following null hypotheses were tested with respect to respective specific objective;

i) Age does not significantly affect female agricultural participation in Uganda.

ii) Education does not significantly affect female agricultural participation in Uganda.

iii) Residence does not significantly affect female agricultural participation in Uganda.

iv) Household Gender Head does not significantly affect female agricultural participation in Uganda.

v) Frequency of listening to radio agricultural programs does not affect female participation in agriculture in Uganda.

1.5 Scope of the Study

1.5.1 Geographical Scope

This study covers data obtained from districts used in the Uganda Demographic Health Study (2006-2012). The study covered all the regions in Uganda, thus making it a national survey. The survey was conducted by UBOS in collaboration with the Ministry of Finance, Economic Planning and Development. Thus, the Demographic survey Reports which this study used is collected from all districts of Uganda. This is because it contains information about female participation in agriculture. Thus, data about age, education, residence, household gender head, and frequency of listening to radio agricultural programs extracted from reports was considered to be representative of the whole country as it was collected from all districts of Uganda.

1.5.2 Time Scope

The study focused on the period 2003 to 2012. This is justified by the fact that this was the period when Uganda Demographic Health Study were carried out by UBOS, and the finding revealed declining trends in female participation in agriculture in Uganda.

1.5.3 Content Scope

The study examined the effect of household socio-economic factors on female participation in agriculture. The study looked at the effect of Socio-economic factors on female participation in Agriculture activities because women are considered to be the backbone of the agricultural sector and therefore their participation is critical to the agricultural sector growth and Economic growth at large. The study therefore focused on the extent to which Age, Education, Residence, Household Gender Head and Frequency of listening to radio (Media) affect female participation in agriculture in Uganda.

1.6 Significance of the Study

The study may add more knowledge to the already existing literature on the effects of socio-economic factors on female participation in agriculture;

The study findings may also enhance further research on the effects of socio-economic factors and female participation in agriculture locally and internationally;

The study may lead to the identification of better strategies that are critical for improving and boosting female participation in agriculture, especially in Uganda;

Regions used in the study may benefit from this research by improving on key socio-economic factors that may results into increased female participation in agriculture based on the results of the findings.

1.7 Justification of the Study

This study is justified by several reasons. First, there is high disparities and exclusion of women from economic activities in developing countries, Uganda inclusive. Women are left out from agricultural extension services, thus this may hinder their participation. Yet evidence indicates that they are the food-basket for livelihood in the communities.

Furthermore, there has been limited access to inputs and agricultural finance to rural women, therefore hindering their participation in agricultural production. Most financial institutions in developing countries, Uganda inclusive only give agricultural credit to men.

In addition, most women, especially those who live in the rural areas, do not have access to education, yet it is evident that education increases the ability to use modern technology to produce more output. Besides, it also enhances the ability of women to obtain input and analyses information. Thus, education changes the types and magnitudes of inputs to be used in

production (UNESCO, 2012). Furthermore, through education, women are able to acquire new improved and effective written material. Educated women are able to acquire more information in the form of written material such as magazines, newsletters and farming instruction pamphlets, booklets, and on packaged hybrid seeds, pesticides, fertilizers and many more (Penin, 1999).

1.8 Definition of key Terms

Agriculture: Agriculture is the science or practice of farming, including cultivation of soil for growing of crops and rearing of animals to provide food, wool, and other products. Further, agriculture refers to it as the cultivation of animals, plants, fungi, and other life forms for food, fiber, bio-fuel, medicinal and other products used to sustain and enhance human life.

Female labour in agriculture: Female agricultural labourer or cultivator involves activities such as sowing, transplanting, weeding and harvesting that often fit well within the framework of domestic life and child-rearing. Female in the agricultural sector, whether through traditional means or industrial, for subsistence or as an agricultural labourer, represents a momentous demographic group.

Female labour force participation: The concept of participation relates to who takes part in a set of society's activities and how they do it. The list of activities considered could be agricultural sector, formal sector employment, general and local elections, legislative work, household work, etc. As a consequence, participation can be seen as a measure of equality – both in opportunities (for example, participation in paid work) and outcomes (for example,

participation in the use of public services). Many women participate in agricultural work as unpaid subsistence labour.

Gender: Gender refers not only to women or men *perse,* but to the socially defined roles of each sex, as well as to the relation between them. Gender issues, therefore, form part of the development approach that puts people at the center and ensures their participation in the entire development process. According to the World Health Organization (WHO), gender refers to the socially constructed roles, behaviors, activities, and attributes that a given society considers appropriate for men and women, while sex refers to the biological and physical characteristics that define men and women.

Households: Households are those who dwell under the same roof and compose a family; it's a social unit composed of those living together in the same dwelling**.** It's, a domestic unit consisting of the members of a family who live together along with non-relatives such as servants. Thus, a household consists of one or more people who live in the same dwelling and also share at meals or living accommodation, and may consist of a single family or some other grouping of people. A single dwelling will be considered to contain multiple households if either meals or living space are not shared. The household is the basic unit of analysis in many social, microeconomic and government models, and it's important to the fields of economics and inheritance.

Labour force: World Bank refers to labour force as all people who supply labour for the production of goods and services during a specified period. According to ILO, labour force

comprises people ages 15 and older who meet the International Labour Organization definition of the economically active population. It includes both the employed and the unemployed. Thus, it simply means the people who are willing and able to work.

Socio-economic factors: Socio-economic refers to environmental, economic, social and institutional patterns, and their linkages that compose the context of development. Social and economic factors at various levels of social systems form an environment where people interact through roles and relationships defined by gender, age, ethnicity and other social variables.

Labour force refers to economically active population including persons aged 14-64 years, who are either employed or unemployed during the last seven days prior to the interview (UBOS, 2012).

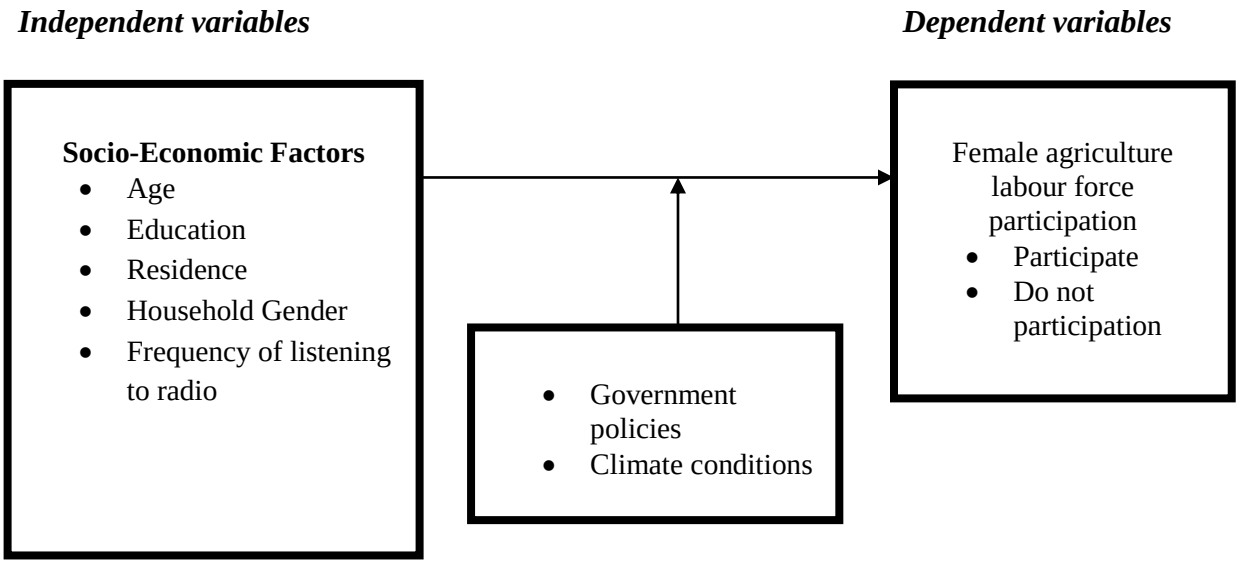
Labour force participation rate: This refers to the number of persons in the labour force expressed as a percentage of the working age population (UBOS, 2012).

According to the study, labour force refers to the total number of people who are eligible to work (i.e. either working or actively seeking work).

1.9 Conceptual Framework

Scholars such as Endris (2014), Nnadi and Akwiwu (2008), Faridet al., (2009), Nxumalo and Oladele (2013), FAO (2011) have argued that socio-economic factors such as age, education, marital status, and residence determine female/women participation in agriculture. In addition, Etwireet al., (2013) observed that access to credit is expected to have a positive influence on women participation in an agricultural project. Besides, Revinder et al., (2009) also revealed that, socio-cultural factors also play a role in hindering women participation in agriculture. Therefore, the conceptual frame work below is developed from review of existing literature and findings on the impact of socio-economic factors on female participation in agriculture.

Figure 1: Conceptual framework



Source: Adopted from Robison J (2005)

Figure 1: The conceptual framework above showing how socio-Economic factors affect female participation in agriculture

The conceptual framework looked at how age, education, residence, household gender head and frequency of listening to radio as independent variables and female participation in agriculture as dependent variable. Government policies and climate conditions were treated as moderating variables.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The literature reviewed in this chapter is based on the impact of socio-economic factors on female agricultural participation in Uganda. It involved analysing socio-economic factors of Age, Education, Residence, Household Gender head and frequency of Listening to Radio-Media and their effects on female participation in agriculture. It's mainly based on literature reviewed in developing countries. The review of the literature examined practical and empirical evidence on the impact of socio-economic factors on female participation in agriculture in relation to the Uganda situation.

2.1 Neoclassical Theory of Time Allocation

The neoclassical theory of time allocation posits that individuals choose to allocate time to the labour market based on the comparison of the real wage and their reservation wage. The real wage is the wage that can potentially be earned in the labour market. This is determined by firms' labour demand and a combination of education, labour market experience, training and relevant skills on the supply side. The reservation wage is the value that the individual places on non-market time. If the individual finds that the wage rate is greater than the reservation wage, she will choose to enter the labour market. Similarly, if the individual finds that the reservation wage is greater than the wage rate, she will choose not to enter the market (Blau, et al., 2006).Additional factors influence patterns of participation. This can be a determinant in female labour participation in the agricultural market. The neoclassical economists have shown that human capital investments shape labour supply decisions and participation, while Rubery and Fagan considered social employment systems, which include the impact of labour market

conditions, social attitudes, working-time arrangements, career paths, and training systems as major determinants of participation (O'Reilly, 1996). Therefore, human capital theory indicates that inputs such as education, training, skills, and experience increase participation. Linking human capital theory to women participation, women who have attained education, training, skills, and experience engage in agricultural activities by investing their valuable time because of the benefits/earnings that they derive from labour provision in the agricultural market.

2.1.1 Liberal Feminism Theory

Liberal feminism is rooted in the tradition of 16th and 17th century liberal philosophy, which focused on the ideas of equality and liberty Wollstonecraft, (1792). Western feminist theorist, Mary Wollstonecraft argued, that women's capacity to reason was equal to that of men and that biological sex differences were irrelevant in granting any rights (Wollstonecraft 1792). She argued that the reason women appeared to be intellectually inferior was due to their inferior education and therefore, was a result of inequality, rather than justification for it. Liberal feminist see women subordination as resulting from gendered norms, rather than biological sex, and aim to change these norms. Liberal feminists focus on equal opportunity for men and women in education and all sphere of life. The theory further postulates that the same education as provided to a man will allow a woman to assume responsibility for her own development and growth. But unless society provides equal education with the same civil liberties and economic opportunities a man has, she will exercise her hard won autonomy only within the private or domestic realm. These feminists are also concerned with ensuring that laws and policies do not discriminate against women. Liberal feminists are looking forward to removal of barriers that prevent women operating effectively in public spheres on equal terms with men. This theory advocates for

equality between men and women in all economic activities including agriculture, where women should not be discriminated. Thus, women and men alike should have equal economic opportunity to develop and grow. Further, the strength of this theory is evident in the fact that, in most households, women engage more than men in agriculture and other farm activities in order to provide livelihood/food for the family.

2.1.2 Civic Voluntary Participation Theory

In the Civic Voluntarism theory (CVT), resources are paramount in influencing individual participation in activities, although the individuals' psychological attitudes and mobilization play an important role in explaining participation as well. The Civic attitudes are rather more important although it is true to say that resources are the determinant factors in explaining participation (Verba, Schlozman & Brady,1995).The Civic Voluntary participation theory has been applied to the task of providing a cross-natural explanation of participation to examine the difference in participation engendered by different institutions and cultural settings. The theory has been widely cited and replicated, and is probably the most important theory of participation in literature today. This theory is relevant to this study because it highlights the highest form of participation where people have to be involved in decision making in agricultural programs and how resources are to be allocated to increase participation.(http;//en.wikipedia.org/wiki/civic engagement).

2.2 Empirical Literature Review

2.2.1 Age and Female Agriculture Participation

Grantham (2012) observed that women participation in agriculture is determined by the productive age group to which a woman belongs. A younger woman is likely to participate in an agricultural activity because younger farmers are usually innovative, risk loving and may want to try new concepts. Alternatively, older farmers are usually more experienced and endowed hence they may have either experienced or observed the benefits of participating in an agricultural activity. Also older farmers may not be resource constrained to participate in an agricultural activities.

Several studies have observed a positive relationship between age and participation in an agricultural project (Nnadi and Akwiwu, 2008; Faridet al., 2009; Nxumalo and Oladele, 2013). Kahn et al., (2012) observed that as a woman's age increases, she becomes physically weak and therefore her ability to participate in agricultural activities diminishes. A study by Endris (2014) among women in Ambo District in Ethiopia revealed that 42% of the women in the age group of 15 – 30 participated more in agriculture than those in the other age group. However, Oladejoet al., (2011) did not find any significant relationship between age and participation in agricultural activities.

2.2.2 Education and Female Participation in Agriculture

Education is one of the significant factors affecting the participation of women in agricultural development. According to FAO (2011), one of the rationales for improving women participation in agriculture is that when a woman is educated, her children tend to be better fed and healthier.

Education is believed to affect productivity at least in two ways. First, education increases the ability to use modern technology to produce more output. Second, education enhances the ability of farmers to obtain input and analyses information. Thus, education changes the types and magnitudes of inputs to be used in production(UNESCO, 2012).Education is expected to positively influence a woman's ability to source and decipher information including information on available agricultural projects and the benefits of participating in such projects. Besides, through education, farmers are able to acquire new improved and effective written material. Educated farmers are able to acquire more information in the form of written material such as magazines, newsletters and farming instruction pamphlets, booklets, and on packaged hybrid seeds, pesticides, fertilizers and many more (Penin, 1999).

Rad et al., (2009) argued that education is one of the important factors that help development to be realized. The purpose of education (formal and informal) is to communicate accumulated wisdom and knowledge from one generation to the next. Secondly, education enhances active participation in innovation and the development of new knowledge. Ani et al., (2004) further argued that education enhances the ability to derive, decode and evaluate useful information for agricultural production. The Food and Agricultural Organization/United Nations Educational,

Science and Cultural Organization (FAO/UNESCO) (2002) note that better education and training have become essential for sustainable development and for rural economies to survive.

Manuh (1998) is of the view that the lack of education and training has been identified as a key barrier to women's advancement in the society. She argues that in Africa, female illiteracy rates were over 60 percent in 1996 compared to 41 percent of men. Certain countries have extremely high rates of low education on women. In many African countries parents still prefer to send boys to school, seeing little need for sending girls. Hence, illiteracy is still evident in most African countries (Ravinder et al., 2009).

Furthermore, a study conducted by the Natural Resources Management and Environment Department (2010), reveals that, illiteracy is a major constraint facing women in development. Women are unable to understand and utilize technical information because they lack basic formal education on. This department also reveals that, because of their illiteracy, women farmers are unable to read and understand the written material provided by extension programs that educate farmers. Penin (1999) supports the latter sentiment by arguing that, education has a relationship with farm progressiveness. The reason is that there is positive correlation between education and farming.

In addition, as noted by Anselm and Taofeeq (2010), education plays a significant role in positively influencing the status of women in farm decision-making. He states that highly educated women are likely to make a higher contribution to farm decision-making than uneducated ones. A study conducted by Ani et al., (2004) on the relationship between socio-

economic characteristics of rural women farmers and their adoption of technology in Nigeria showed that educated women farmers adopts farm technologies at a higher rate than less educated people who continue to use more rudimentary technology.

Nnadi and Akwiwu (2008) revealed that educated women farmers are more likely to participate in agricultural projects in order to put into practice the knowledge they may have acquired in school. However, Faridet al, (2009) and Kahn et al., (2012), observed a negative relationship between education and women's participation in agricultural activities. In addition, Oladejoet al.,(2011) and Nxumalo and Oladele (2013) did not observe any significant relationship between education and the decision to participate in an agricultural activities.

Indeed, low levels of education among women negatively impact their ability to engage in agriculture. On the ground, women have difficulty keeping track of expenditures or yields, reading fertilizer or seed instructions, or engaging in monetary transactions without some level of education. At a policy level, there aren't enough women with sufficient education to participate in policy-making decisions that affect agricultural production. Therefore, the education of rural women is important for their progressive participation in sustainable development.

2.2.3 Residence and Female Participation in Agriculture

Rural women show high labour force participation rates compared to urban women. Women in the rural areas are more likely to be working compared to those in urban areas. On the average, over 83% of the women live in rural areas. It is also evident that residence in peri-urban areas put an individual in a better position to participate in a formal sector than the informal one; to which agriculture is pre dominant (Drife, 2012). This means that individuals residing in urban areas have lower relative probability of participating in informal employment.

Female inactivity due to household duties is higher for urban areas (34%) than for rural area (25%). This could be explained by higher costs of child care in urban areas which results in mothers deciding to stay at home to reduce the marginal cost of child care. Unlike in rural areas, the jobs that women can do for example agricultural work allow them to mix child rearing and work (Goldin, 1990). Much as this might justify the high participation of women in agriculture in rural areas compared to urban areas, the research is insufficient in addressing the high agricultural participation in bigger rural households where child rearing would somewhat be a straining factor.

Kofi (2003) further noted that participation of women in the labour market especially in the informal economy and particularly in the rural areas is likely to be influenced by the way the families are organized. Families in Africa are mainly organized and managed on the basis of informal rules that hinge on patriarchal and genealogical leadership. Further, a time series and cross section models for Turkey by Tansel (2002) revealed that unemployment had a notable discouraging effect on female participation in agriculture. Besides, Ntuli (2007) also found that residing in urban areas has a positive effect on female participation in agriculture.

2.2.4 Gender of household and Female Agricultural Participation

According to Brydom and Chant (1989), beliefs that usually emerge based on religion and other cultural aspects are crucial in determining the male and female roles in society. Differing gender roles for men and women in agriculture play a significant role in the world's food security and income generation for sustainable livelihoods. FAO (2011) suggests that closing the gender gap

in agriculture would produce significant gains for society by increasing agricultural productivity, reducing poverty and hunger, and increasing economic growth.

Bravo-Baumann (2000) argued that female-headed households are as successful as male-headed households in generating income from their animals, although they tend to own smaller numbers of animals, probably because of labour constraints. Ownership of livestock is particularly attractive to women in societies where access to land is restricted to men. An Oxford Poverty and Human Development Initiative (OPHI) by DFID and USAID revealed that women play a critical role in agricultural growth in developing countries yet face persistent obstacles and economic constraints, limiting further inclusion in this sector (DFID, 2012).

Indeed, while women are technically included in the agricultural sector in many developing countries, this inclusion is characterized by unequal power relations and limited control of resources. Scholarly research indicates that women face significant challenges using rural agriculture to create sustainable livelihoods or generate income. Okali (2011) neatly summarizes current framing and narratives associated with women in agriculture in an expert paper prepared for UN Women. Key elements of this narrative include the ideas that:

- Women undertake the majority of agricultural work in addition to domestic or reproductive work and have limited control over their own labour.
- Women are altruistic, putting their children and household food security first, engaging in food crop production for subsistence using unimproved technology.

- Women's work burdens have increased following the out-migration of men seeking other income earning opportunities, and as access to water and fuel has deteriorated with environmental change.
- Women lack secure access to land and are unable to provide the collateral that would secure access to credit for their independent agricultural activities. They are also ignored by some service providers.
- Women have limited control over the outputs from their labour and therefore lack incentives to increase their production.

However, while these statements broadly generalize women's place in rural agriculture, they capture the current thinking in much of the field of women in agriculture and subsequently influence policy, development practice, and research. Kevane (2004) further points to other challenges for women in agriculture, citing the possible inefficiencies in the interaction between economic factors and gender roles as constraints to improvements in productivity and well-being in Sub-Saharan Africa. Women are constrained by gender roles that don't allow them to participate in income-generating activities, including agriculture.

Quisumbing and Pandolfelli (2010) identify women's domestic responsibilities as one of the key constraints to participation in more productive agricultural activities. Other scholars focus on lack of access to land (Goldstein, 2005), poor health and nutrition (King, Klasen, and Porter, 2007), lack of decision-making power in the household (Udry, 1996), inability to access financial services (Kabeer, 2005), failure to access or utilize new technology (Paris, 2001), and difficulties in accessing markets (Barham and Chitemi, 2008) as key difficulties for women participation in agriculture.

Besides, women often face constraints to agricultural production due to gender roles. Typically, women in developing countries are expected to be in charge of childcare and household responsibilities like cooking and cleaning in addition to any livelihood activities they are involved in. Given high fertility rates, particularly in Sub-Saharan Africa, childcare and household responsibilities place severe time constraints on women looking to engage in agricultural production for income-generation, or even household food security (Quisumbing and Pandolfelli, 2010). Women may also have to travel long distances to access water or firewood. These time burdens are continually increasing as water and fuel become scarcer due to climate change (USAID, 2011). The more time women spend collecting water and firewood, the less time they have to engage in agricultural or other income-generating activities.

Women also face difficulties associated with expected gender roles for agricultural production and marketing. In general, women lack access to markets, meaning they may participate in crop production, but not benefit from income associated with these crops. As Barham and Chitemi (2008) states, in addition to typical production and market risks, such as theft and inadequate information about current market prices, female farmers face many gender specific barriers to accessing markets. Modes of transportation may be culturally inappropriate for women. Market or health officials often harass women who market their wares just outside market boundaries owing to the high cost of permits. Time burdens constrain women from seeking the best prices for their output, and marital conflict may ensue if fluctuating prices incite husbands to suspect their wives are withholding money. Without access to markets, women have little control over income use in the household. Women are generally expected to participate in agricultural

production for the household, but once a crop becomes marketable, men are involved in the sale (World Bank, 2009).

In all regions of the country men have a clear advantage over women in access to and control over resources while cultural practices also bestow men with more power than women in different aspects. The current national constitution includes elements of economic and social rights that help to underpin efforts to mainstream gender equality in policies and programmes but high levels of poverty and resilience of patriarchal social constructs play a big role in constraining impact of many well intentioned policies (UNESCO, 2012). Thus, women often devote more time and resources under their control towards improving household concerns related to food security as compared to men and their involvement was significant in term of decision making authority (Saito &Weideman, 1990; Thomas, 1990 & Quisumbing et al., 1995).

2.2.5 Frequency of listening to radio and female agricultural participation

Anifowose (2013) asserted that communication involves the process by which information and understanding are transferred from one person to another. It is the basis for all human interaction for all group functioning. Radio remains a medium in agricultural development communication employed by the development officers or experts. He further argued that radio can be multifaceted as among other things. It can serve to pass message, improve the capacity of calling upon and organising farmer groups and organisation, enlarge the forum for social dialogue, provide effective capacity building of the community to raise awareness and knowledge of community issues, bring people's voice to the higher level of their political structure and commonly to tackle issues.

Omenesa (1997) observed that radio programs are usually timely and capable of extending messages to the audiences no matter where they may be as long as they have a receiver with adequate supply of power or no power. The absence of such facilities as road, light and water are no hindrance to radio. Similarly, such obstacles as difficulty topography, distance, time and socio-political exigencies do not hinder performance of radio.

In a study carried out by Ariyo et al., (2013) on the role of mass media in the dissemination of agricultural technologies among farmers in Kaduma north local government area of Kaduna state revealed that radio, television, telephone, internet and newspaper. Radio was found to be more accessible (46.3%) and also the major source (60.19%) of agricultural technologies to farmers.

The Uganda media all products survey (UMAPS) 2013 by IPSOS, a Uganda-based research from, indicates that nationally, radio regularly reaches 93% of rural households; it affordable, accessible to illiterate, can use local languages and can give voice to end-users which is critical for effective agricultural extension and advisory services.

The use of radio in agricultural extension and advisory services is more effective when it complements and triggers demand for better performance from existing extension services and other agricultural support services. Radio is more effective if programmes are developed with and farmers; "farmers' first, farmers throughout and farmers last" approach.

The Uganda causes of agricultural (2008/2009) further confirms that radio and (farmer to farmer) discusses were the most important sources through which most agricultural HH(S) received information on agriculture. The biggest proportion of agricultural households that got

information or weather (85%), farm machinery (43.8%) and credit facility (50.2%) receive it over the “radio” while the highest proportion of Ag HH(S) that got information or crop variety (43.0%), new practices (39.5%), plant diseases and pests (45.4%) and marketing (50.7%) received it through ‘farmer to farmer’.

2.3 Summary of Literature Review

Conclusively, from the literature reviewed the researcher appreciated that women’s contribution to agriculture is seldom recognized in spite of their active role in the agriculture as well as household activities in both developed and developing world. Women comprise about 43 percent of the global agricultural labour force worldwide. Their roles vary considerably between and within regions and are changing rapidly in many parts of the world, where economic and social forces are transforming the agricultural sector, especially among the rural women. Rural women often manage complex households and pursue multiple livelihood strategies. Their activities typically include producing agricultural crops, tending animals, processing and preparing food, working for wages in agricultural or other rural enterprises, collecting fuel and water, engaging in trade and marketing, caring for family members and maintaining their homes (FAO, 2011). However, although women make important contributions to the agricultural and rural economies of all regions of the world, the exact contribution both in terms of magnitude and of its nature is often difficult to assess and there is a high degree of variation across countries and regions.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter covers the research design, area of study, study population, sampling procedure, sampling size, sampling techniques, data collection methods and instruments, quality control methods, data management and processing, data analysis, ethical considerations and limitations as well as delimitations of the study.

3.1 Research Design

The research used a cross sectional approach. This was because it observed all population or a representative subset at one specific point in time. Besides, it also allowed large amount of data to be collected over a short time period. Furthermore, since it observed a representative subset at one specific point in time, problems arising from recurrent mistakes in data collection instruments were also minimized as it didn't suffer from unavailability of sample used in previous observation as in longitudinal study.

3.2 Area of Study

The study used the UDHS 2011 dataset that covered the entire country. The 2011 UDHS was conducted under the Uganda Bureau of Statistics, Act 1998. The data collection was carried out from June to December 2011 in all districts of the country.

3.3 Study Population

The study comprised of a representative sample of households of the entire country. For the particular dataset being used in this study- women questionnaire, in each household any women of reproductive age (15-49 years of age) were interviewed.

3.4 Sampling Procedures and Sample Size Determination

3.4.1 Sampling size and determination

A representative sample of 8,674 females was selected for the 2011 UDHS. The sample was selected in two stages. In the first stage, 404 enumeration areas (EAs) were selected from among a list of clusters sampled in the 2009/10 Uganda National Household Survey (2010 UNHS). This matching of samples was done in order to allow for linking of the 2011 UDHS health indicators to poverty data from the 2009/10 UNHS. The clusters in the UNHS were selected from the 2002 Population Census sample frame. In the second stage, households in each cluster were selected based on a complete listing of households. In all clusters new lists of the households were generated for the purpose of updating the sample list. Households were systematically selected from the household's listed during the listing exercise. All women age 15-49 who were either permanent residents of the households or visitors who slept in the household on the night before the survey were eligible to be interviewed.

3.5 Data Collection Methods and Instruments

Three types of questionnaires were used for the 2011 UDHS: the Household Questionnaire, the Woman's Questionnaire, and the Man's Questionnaire. These questionnaires were adapted from model survey instruments developed for the MEASURE DHS project and the UNICEF Multiple

Indicator Cluster Survey (MICS) to reflect the population and health issues relevant to Uganda. Questionnaires were discussed at a series of meetings with various stakeholders from government ministries and agencies, nongovernmental organizations (NGOs), and development partners. The Woman's Questionnaire was used to collect information from all eligible women of reproductive age (15 to 49 years). The "Woman's Questionnaire" contains information on woman's work and husband's background characteristics, marriage and sexual activity, knowledge and use of family planning methods, fertility preferences, child mortality and birth, breast feeding and infant feeding practices, gender based violence, background characteristics (age, education, media exposure) and antenatal and post care practices.

3.6 Quality Control Methods

This encompasses reliability as well as validity of the research instruments. Pre-test fieldwork was conducted in two clusters in seven districts each with one rural and one urban cluster. The majority of pre-test participants attended the main training and served as field editors and team leaders for the main survey. A second pre-test was undertaken with the overall objective to test the management and implementation of the Computer Assisted Field data Editing (CAFÉ) program, and more specifically, to develop data editing guidelines for the 2011 UDHS. UBOS recruited and trained 146 individuals for the main survey. The training consisted of instructions regarding interviewing techniques and field procedures, a detailed review of the questions in the questionnaires, followed by tests, instruction and practice in weighing and measuring children, mock interviews and role plays between participants in the classroom and in the neighbouring villages.

In addition to the data collection teams, a data validation team was formed for each of the 10 regions. Each data validation team included a field supervisor and three interviewers. An

independent quality control team looking at survey protocol issues also visited the data collection teams. Data collection took place over a six month period, from June to December 2011.

3.6.1 Reliability of the Research Instruments

Reliability refers to the consistency or repeatability of the measure (Miller, 2008). The questionnaire was pretested outside the target population to ensure reliability. This exercise detects vague, ambiguous, sensitive, as well as double barred questions in case they exist. . These questionnaires were adapted from model survey instruments developed for the MEASURE DHS project and the UNICEF Multiple Indicator Cluster Survey (MICS) to reflect the population and health issues relevant to Uganda. The questionnaire used is discussed and approved internationally for use to collect the UDHS datasets.

3.6.2 Validity of the Research Instruments

Validity refers to how accurately instruments capture data that gives meaningful inferences (Mugenda & Mugenda, 2003). Validity of the instrument was obtained through subjecting the data collection instrument to scrutiny from experts (academics and practitioners) to establish relevance of the questions/ items in instrument using the Content Validity Index (CVI).

$$CVI = \frac{\text{Number of items declared valid by judges}}{\text{Total number of items}}$$

CVI= n/N, where n= items that rated relevant; N= total number of items.

The content validity of all questionnaires in the UDHS study was established by experienced researchers who read the tool before it was pretested ,the pretested in seven districts on two different clusters of urban and rural setting.

3.7 Variables and their Measurements

Female agricultural labour participation, the dependent variable, denotes whether a woman participates in agricultural labour or not. The variables were evaluated in the study using two outcomes namely a woman participates in agricultural labour or not as shown below.

$$Y = \begin{cases} 1 & \text{Woman participates in agricultural labor} \\ 0 & \text{Woman does not participate in agricultural labor} \end{cases}$$

The independent variables considered in this study are age, educational level, residence, sex of the household head and frequency of listening to radio. Table 3.1 presents a description of these variables.

Table 3.1: Description of variables

Variable	Description	Coding	Data type
Y	Female agricultural labour participation	0 – No 1 – Yes	Nominal
X_1	Age of respondent	Count	Continuous
X_2	Education level of the woman	0 – None 1 – Primary 2 – Secondary 3 – Tertiary	Ordinal
X_3	Residence	1 – Urban 2 – Rural	Nominal
X_4	Gender of house hold head	1 – Male 2 – Female	Nominal
X_5	Access/frequency of listening to radio	0-Not at all 1-Atleast once a week 2-Almost every day	Categorical

3.8 Data Management and Processing

The data was sorted, cleaned, recoded, regrouped in excel, and then imported to STATA 13 for analysis.

3.9 Data Analysis

The data was analysed using STATA 13. The analysis was done at three levels; univariate, bivariate, and multivariate.

3.9.1 Univariate Analysis

First, an assessment of independent variables in addition to female agricultural labour participation was done. This analysis entails description of a single variable and its attributes. Hence, frequency tables and summary statistics were used to present data and give a descriptive analysis of the variables. Measures of central tendency and dispersion were used for the continuous variables while frequency tables were used for the categorical variables.

3.9.2 Bivariate Analysis

The dependent variable is categorical and the independent variables are both continuous and categorical in nature. T-tests were used for measuring the relationship between continuous independent variables and the dependent variable while chi-square analysis was used for the categorical independent variables and the dependent variable. The significance level at the bivariate level was set at 5%.All variables with a relatively small probability value ($p < 0.5$) were incorporated for further analysis at the multivariable stage. However, some variables that are considered important to the study, though having a p-value greater than 0.5 were further investigated at multivariable analysis (Hilbe, 2009).

3.9.3 Multivariate Analysis

At the multivariate level, all the independent variables that tested significant at bivariate level were fitted in the binary logistic regression model to measure their net effects on the dependent

variable. The binary logistic regression model was adopted as the data for the dependent variable was categorical and with two outcomes in nature whereas that for the independent variables were both continuous and categorical in nature. The significance level for the multivariate stage was set at 5%. Thus, the likelihood of either participating in agricultural labour or not was modelled using a logit regression.

3.10 Model Specification and Estimation

From the conceptual framework and the empirical model can be modified as:

$$\ln\left[\frac{p_i}{1-p_i}\right] = \beta_0 + \beta_1 X_1 + \ldots + B_k X_k \qquad 3.2$$

Where

P_i = represents the probability of participating in agricultural labour;

$1-p_i$ Represents the probability of not participating in agricultural labour

The X_i are the independent variables which include;

- X_1 Age of respondent
- X_2 Education level of the woman
- X_3 Residence
- X_4 Gender of house hold head
- X_5 Access/frequency of listening to radio

3.11 Ethical Considerations

According to UBOS, in recognition of the challenges in collecting data, the interviewers in the 2011 UDHS were given special training. The training focused on how to ask sensitive questions, ensure privacy, and build rapport between interviewer and respondent. Rapport with the

interviewer, confidentiality, and privacy are all keys to building respondents' confidence so that they can safely share their experiences with the interviewer. In addition, the following protections were built into the survey or the questionnaire in keeping with the World Health Organization's ethical and safety recommendations for research (WHO, 2001): As a means of obtaining additional consent, beyond the initial consent at the start of the interview, the respondent was informed that the questions could be sensitive and was reassured regarding the confidentiality of her/his responses. The UDHS 2011 data set used in the study can be accessed online (http://dhsprogram.com/what-we-do/survey/survey-display-399.cfm).

3.12 Limitations of the Study

In light of the fact that secondary data is adopted in the investigations, certain variables that were of interest to this study may not be available in the data set. Variables such as accessibility to job opportunities, amount of income earned and availability of labour. In particular, the main limitation of the UDHS is that no data on earnings or willingness to pay for extension services that would have enabled us to make analysis into the earning of individuals. As a consequence, access to infrastructure as a proxy for participation in the formal activities has been used.

CHAPTER FOUR

PRESENTATION, ANALYSISAND DISCUSSION OF FINDINGS

4.0 Introduction

This Chapter presents results on the socio economic determinants of female agricultural labour force participation in Uganda. This chapter covers the presentation, analysis and discussion of the research findings. The results are presented in a logical and coherent manner as per the objectives of the study. Accordingly, it is presented at the three levels of; Univariate, Bivariate, and Multivariate analysis.

4.1 Univariate (Descriptive) Analysis

This section presents the descriptive analysis for all the variables (age of the woman, education level, residence, gender of the household head and frequency of listening to radio).Summary statistics are noted for continuous variables while frequency tables are made for all the categorical analysis at this particular level.

4.1.1 Descriptive statistics of quantitative variables.

The study sought to ascertain the demographic profile of the women. To this effect, this section presents demographics of the continuous variables of age of the woman, and education attained in years, these include the mean, minimum, maximum and standard deviation of these continuous variables are presented in Table 4.1.

Table 4.1: Descriptive statistics of continuous/quantitative variables

Variable=8674	Mean	Standard deviation	Minimum	Maximum
Age	27.86	9.35	15	49
Education level in years	5.78	4.15	0	18

Source: UBOS, ICF International, 2011

Table 4.1 shows that the mean age of the woman was 28 years where the youngest is15 and the oldest was 49 years old. This is not surprising since the survey collected data for only women who were in the reproductive age (15-49 yrs.). Further, the mean number of education years attained by the woman is 6 with a minimum year of 0 and maximum years of 18. Thus, this implies that the youngest women involved in the study had no education while those who were 18 years and above had attained tertiary level of education.

4.1.2 Descriptive statistics of qualitative variables

There are a number of factors that influence female agricultural labour participation however for this section only categorical variables were considered. Table 4.2 represent a distribution of these factors.

Table 4.2: Descriptive statistics of categorical or qualitative variables

Categorical Variables(N=8674)	Frequency	Percentage	Cumulative percentage
Categorized education level			
None	1332	15.36	15.36
Primary	4820	55.57	70.92
Secondary	1972	22.73	93.66
Higher	550	6.34	100.00
Residence			
Urban	2562	29.54	29.54
Rural	6112	70.46	100.00
Sex of household head			
Male	5868	67.65	67.65
Female	2806	32.35	100.00
Frequency of listening to radio			
Not at all	1347	15.53	15.53
Less than once a week	1050	12.11	27.63
At least once a week	1523	17.56	45.19
Almost every day	4754	54.81	100.00
Dependent variable-			
Agricultural labour participation			
Not participating in agriculture	4614	53.19	53.19
Participating in agriculture	4060	46.81	100.00

Source: UBOS, ICF International, 2011

Results from Table 4.2 shows that the highest proportion of women have up to primary education (56.4%), followed by those with up to secondary education with a 22.7 percent; women with no education at all are 15.4 percent while women with tertiary education are the least with a percentage of six. Since education is a key determinant of an individual's stock of human capital (UBOS and ICF International, 2011) there is a lot to be desired regarding the education distribution of women. This implies that most of the women used in the study had attained primary level of education. This means that they are able to read and write.

For place of residence, results from Table 4.2 show that the highest proportion of women are residing in rural areas (70.5%) while the rest are residing in urban areas (29.5%). Further, the results from Table 4.2 show that the highest proportion of women are living in male (67.6%) headed families at the time of the census while only 32.4 percent of the women are in female headed families. This implies that majority of the women used in the study resides in rural areas. This means that most of the women who participate in agriculture are rural-based. Besides, majority of the women used in the study lived in male headed households. This means that most women who participate in agriculture grow food to feed their household members.

For the access/ listening to the radio by the woman; it is noted that slightly more than half of the women (54.8%) listened to the radio almost every day, followed by those who listened at least once a week (17.6%), those who did not listen to the radio at all (15.5%) and lastly those who listen to the radio less than once a week (12.1%). This implies that most women who participated in agriculture listened to the radio. This means that they received more useful and valuable information about agriculture from the radio and this might have impacted on their participation.

Lastly, the results show that the highest proportions of the women that are considered in this study are not participating in the agricultural labour (53.2%). It should be noted that those women that were not working were considered as not participating in agricultural labour in this study. This implies that most women used in the study did not participate in agriculture. This means that they were engaged in other activities other than agriculture. Further, it should be noted that only 47% of the women are currently engaged in agricultural. The results slightly diverge from reports by UBOS, 2011 that showed that the agricultural sector remains the main employer, with 57 percent of women age 15-49 engaged in work in agriculture. This implies that most women in the active age group participated in agriculture. This means that these women still have enough energy that can be used in agricultural farm labour. These figures are further lower than those in the 2006 UDHS, when 75 percent of women and 68 percent of men were employed in agricultural occupations.

4.2 Bivariate analysis

The Bivariate analysis tests the significance of the relationship between each of the independent variables and the dependent variable; accordingly, t-tests were used to determine the relationship between the continuous independent variable and the categorical dependent variables, whereas chi-square was used for the categorical independent variables. These tests were premised on the hypothesis that "no significant relationship existed between the dependent variable and each of the independent variables'.

Notably, t-tests were used for the dummy dependent variable. The continuous independent variables are age of the woman, education level in years, household size and number of children ever born.

Table 4.3: Bivariate analysis using t-tests

Variable	**Not participating in Agriculture**		**Participating in Agriculture**		**t-test value**	**p-value**
	Mean	**SD**	**Mean**	**SD**		
Age	26.54	8.95	29.39	9.57	-14.20	0.000
Education level in years	7.01	4.35	4.36	3.39	31.35	0.000

Table 4.3 shows that there is significant difference between groups for age of the woman, and education level in years. Notably, for age, the mean age of the woman for those that do not participate in agricultural labour is about twenty six years while for the women who participated in agricultural labour is about twenty nine years. The average difference for age across the groups is statistically significant (p-value = 0.0000). Meaning that; the older women are more likely to engage in agricultural labour while the younger ones are less likely to participate in agricultural labour. This is justified by the fact that they are married and they need to provide food for their household members including the children. Agriculture acts as source of livelihood to their households. Besides, agriculture acts as a source of employment since they are already out of school.

Further, for education level attained in years, the mean number of years attained by a woman for those that do not participate in agricultural labour is about seven years while for the women who participated in agricultural labour is about four years. The average difference for education level attained in years across the groups is statistically significant (p-value = 0.0000). Meaning that; the less educated women are more likely to engage in agricultural labour while the more educated are less likely to participate in agricultural labour. This implies that the less educated women cannot get white-collar jobs while the more educated women can be employed in white-collar jobs. This means that the less educated women are not professional enough to be employed in white-collar jobs other than agriculture.

Table 4.4: Bivariate analysis using chi-square results

Variables **N=8674**	**Not participating**	**Participating**	**Chi-square**	**P-value**
Categorized education level			844.945	0.000
None	9.84	21.63		
Primary	48.92	63.13		
Secondary	30.39	14.04		
Higher	10.86	1.21		
Residence			949.21	0.000
Urban	43.69	13.45		
Rural	56.31	86.55		
Sex of household head			28.17	0.000
Male	65.15	70.49		
Female	34.85	29.51		
Frequency of listening to radio			47.68	0.000
Not at all	14.35	16.87		
Less than once a week	10.32	14.14		
At least once a week	18.60	16.38		
Almost every day	56.74	52.61		

Table 4.4 shows that there is a significant relationship between education level attained, residence, sex of the household head, access/frequency of listening to radio and female agricultural labour force participation ($p<0.05$).

Regarding education level, there is a significant relationship noted (χ^2=844.9; p-value = 0.0000). The percentage of women who do not participate in female agricultural labour force attained up to tertiary level(91.1), on the other hand the percentage of women that participate in female agricultural labour force attained no education at all (65.9). Women that are educated are more likely to be engaged in other office works than engage in agricultural labour force. Also, none educated women tend to engage in agricultural labour since most of the time no skills are needed (UBOS, 2010).

For residence, there is a strong significant relationship noted with a very significant p-value (χ^2=949.2; p-value = 0.0000). The percentages of women who do not participate in female agricultural labour force are residing in the urban areas (78.7) while the percentages of women who participate in female agricultural labour force are residing in the rural areas (57.5). This is justified by the fact that majority of the women who participate in agriculture lives in the rural areas. This means that agriculture is the main source of employment for rural women with availability of enough land for agricultural activities.

There is a strong significant relationship noted regarding the gender of the household head with a significant p-value (χ^2=28.17; p-value = 0.0000). The percentage of women who do not participate in female agricultural labour force are residing in households headed by females (57.3), on the other hand the percentage of women who participate in female agricultural labour force are residing in households that are being headed by men (48.8). This implies that most households headed by women do not participate in agriculture. This means that they may be employed in other sectors or in white-collar jobs other than agriculture.

4.3 Multivariate Analysis using a logistic model

Table 4.5 presents an assessment of the determinants of female agricultural labour participation using a binary logistic regression model. In this sub-section, a binary logistic regression model was run to determine the impact of each of the decisive factors affecting female agricultural labour force participation. To show the marginal change in probabilities as explanatory variables change from their mean marginal effects (Equation 3.2) have to be computed. Table 4.5 presents the computed marginal effects for the explanatory variables and their significance levels.

Table 4.5: Multivariate binary logistic regression results showing the household socio demographic determinants of female agricultural labour participation

Independent variable	Coefficient	Odds Ratios	Standard error	P-value
Age	0.03	1.03	0.00	0.000
Education level				
None	0.00	1.00		
Primary	-0.23	0.79	0.06	0.001
Secondary	-0.87	0.41	0.04	0.000
Higher	-2.19	0.11	0.12	0.000
Residence				
Urban	0.00	1.00		
Rural	1.23	3.43	0.20	0.000
Sex of household head				
Male	0.00	1.00		
Female	-0.13	0.88	0.04	0.011
Frequency of listening to radio				
Not at all	0.00	1.00		
Less than once a week	0.19	1.21	0.11	0.034
At least once a week	-0.15	0.86	0.07	0.058
Almost every day	0.03	1.03	0.07	0.694

4.4 Interpretation and Discussion of Model Results

The logistic regression model results show that all the five independent factors are significant, at 5% significant levels, in explaining female participation in agricultural labour. These are number of children age, residence, education level attained, gender of the household head and frequency of listening to the radio ($p<0.05$).

Education level attained by a woman is significant at 5% and is negatively related to female agricultural labour participation. Particularly, women with primary, secondary and tertiary education had reduced odds of participating in female agricultural labour force (OR=0.79: OR=0.41: OR=0.11 respectively) when compared to those that attained no education at all. This suggests that educated women are less likely to participate in agricultural labour than uneducated ones. This result is consistent with the finding by Naqvi and Shahnaz (2002) who examined the effects of various demographic, socio-economic and human capital related factors on women participation in economic activities. Education also provides females with skills that enable them to access opportunities in various economic activities. In order to reap the returns from investment in education, the educated females would automatically join the labour force (Tansel, 2002). Klasen and Pieters (2012) also concluded that agricultural participation is higher for women at low levels of education and the converse is true. Furthermore findings show that illiterate persons were more likely to be available for work than the literate ones (UNHS, 2013). The findings further show that persons without education had higher participation levels than those with primary education, while those who had attained secondary educational had the lowest levels of participation in economic activities.

The woman's residence is significant at 5% and is positively related to female agricultural labour participation. Particularly, women residing in rural areas are positively related to participating in female agricultural labour force (OR=3.4) when compared to those residing in urban. The show that the women in the rural areas are three times more likely to participate in female agricultural labour force when compared to their counter parts that reside in the urban settings. These results could be attributed to the fact that the women residing in the rural areas have access to land for farming. It should also be noted that the urban settings is usually industrialized and as such women tend to engage in other industrial labours such as cleaning, sorting and even administration. This makes urban women engaged in other forms of labour that are not agricultural in nature. On the other hand, woman residing in the rural settings can easily access the land needed for any particular agricultural activity thus making it easy for them to engage in the activity. These findings are not any different from literature since participation levels by selected background characteristics show rural women had higher participation rates than their urban counterparts (UNHS, 2013). Also, its further confirmed that Rural women show high labour force participation rates compared to urban women (MOGLSD, 2006).It is also evident that residence in peri-urban areas put an individual in a better position to participate in a formal sector than the informal one; to which agriculture is pre dominant (Drife, 2012). This means that individuals residing in urban areas have lower relative probability of participating in informal employment. Also, Female inactivity due to household duties is higher for urban areas than for rural area. This could be explained by higher costs of child care in urban areas which results in mothers deciding to stay at home to reduce the marginal cost of child care. Unlike in rural areas, the jobs that women can do for example agricultural work (Goldin, 1990). There are also noticeable differences between inactivity due to education levels attainment. This could be

explained by concentration of higher and tertiary education institutions in urban areas which leads people to migrate to urban areas for the purpose of pursuing further education (MOGLSD, 2006).

Gender of the household head where a woman resides is significant at 5% and is negatively related to female agricultural labour participation. Particularly, women residing in female headed households are less likely to participate (OR=0.88) when compared to those residing in male headed households. These findings are contrary to results by Naqvi and Shahnaz (2002) who examined the effects of various demographic, socio-economic and human capital related factors on women participation in economic activities. Their results at the multivariate level showed that household head gender was significantly related to with women's participation in economic activities.

Age of the woman is also significantly related to female agricultural labour participation (p=0.000). And there is a positive relation between age of the woman and female labour agricultural participation (OR=1.02). The results imply that as the woman's age increases the chances of the particular woman participating in the agricultural labour force also increases. The results are in the same direction as what Berndt (1991) identifies that the labour force participation rate of women varies by age and has considerably increased for all age groups during the past three decades. Further, this is affirmed by European Commission (2010), for developed countries, that concluded that ageing is moreover one of the factors that significantly affect FLFP participation. This justifies women participation in agriculture based on age as a determinant factor.

Frequency of listening to the radio by a woman is also significantly related to female agricultural labour participation ($p<0.05$).Particularly the women that listened to the radio at least once in a week were more likely to participate in agricultural female labour (OR=1.2) when compared to their counterparts that listened to no radio at all. This could be attributed to the messages that are aired on the radio through the programs and dramas that these women listen to that entice them to participate in the labour force. On the other hand, the women that do not listen to the radio at all will not have chance to be enticed to engage in the activity.

CHAPTER FIVE

SUMMARY OF THE FINDINGS, CONCLUSSION AND RECOMMENDATIONS

5.0 Introduction

This Chapter presents the summary of the findings, conclusion and recommendations. Further, recommendations for further research are presented in this section.

5.1 Summary of the findings

The results show that the highest proportion of the women that were considered in this study were not participating in the agricultural labour (53.2%). It should be noted that only 47 % of the women are currently engaged in agricultural. These figures are lower than those in the 2006 UDHS, when 75 percent of women were employed in agricultural occupations.

The demographics revealed that, the average age of the woman was 26 years where the youngest was 15 and the oldest 49 years old. Also, results show that the highest proportion of women attained up to primary education (55.6%), followed by those with up to secondary education with a 22.7 percent; women with no education at all were 15.4 percent while women with tertiary education were the least with a percentage of six. For residence, majorities (70.5%) of the women were from rural residence and married (61.7 %).

At the bivariate analysis all the independent variables were significantly associated with female agricultural labour force participation at 95 percent level of significance. Particularly, there was a significant difference between groups for age of the woman, education level attained, residence, sex of the household head and frequency of listening to the radio at five percent level of

significance. Notably, the average age of the woman for those that do not participate in agricultural labour was about twenty six years while for the women who participated in agricultural labour was about thirty years.

Regarding education level, there was a strong significant relationship noted with a very significant p-value (χ^2 =844.9; p-value = 0.0000). the highest percentage of women that did not participate in female agricultural labour force had attained up to tertiary level(91.1), on the other hand the highest percentage of women that participate in female agricultural labour force had attained no education at all (65.9).

For residence, there was a strong significant relationship noted with a very significant p-value (χ^2 =949.2; p-value = 0.0000). The highest percentage of women that did not participate in female agricultural labour force were residing in the urban areas (78.7) while the highest percentage of women that participate in female agricultural labour force were residing in the rural areas (57.5).

There was a strong significant relationship noted regarding the gender of the household head with a very significant p-value (χ^2 =28.17; p-value = 0.0000). the highest percentage of women that did not participate in female agricultural labour force were residing in households headed by females (57.3), on the other hand the highest percentage of women that participate in female agricultural labour force were residing in households that were being headed by men (48.8).

At the multivariate level of the analysis, an assessment of the determinants of female agricultural labour participation using a binary logistic regression model was carried out. The results indicate

that, all the five independent factors are significant, at 5% significant levels, in explaining female participation in agricultural labour. These are age, residence, education level attained, gender of the household head and frequency of listening to the radio ($p<0.05$).

Education level attained by a woman is significant at 5% and is negatively related to female agricultural labour participation. Particularly, women with primary, secondary and tertiary education had reduced odds of participating in female agricultural labour force (OR=0.79: OR=0.41: OR=0.11 respectively) when compared to those that attained no education at all.

The woman's residence is significant at 5% and is positively related to female agricultural labour participation. Particularly, women residing in rural areas are positively related to participating in female agricultural labour force (OR=3.4) when compared to those residing in urban.

Gender of the household head where a woman resides is significant at 5% and is negatively related to female agricultural labour participation. Particularly, women residing in female headed households are less likely to participate (OR=0.88) when compared to those residing in male headed households.

Age of the woman is also significantly related to female agricultural labour participation ($p=0.000$). And there is a positive relation between age of the woman and female labour agricultural participation (OR=1.02).

Frequency of listening to the radio by a woman is also significantly related to female agricultural labour participation ($p<0.05$). Particularly the women that listened to the radio at least once in a

week were more likely to participate in agricultural female labour (OR=1.2) when compared to their counterparts that listened to no radio at all.

5.2 Conclusions of the Study

The study infers that Education, Residence, Household Gender, Wealth Index, Number of children ever born and Region statistically and significantly affect female agricultural participation, whereas Age, Marital status, Household size and Access/frequency of listening to radio do not significantly affect Female agricultural participation.

5.3 Recommendations

Based on the key findings in this study, the following policy recommendations are proposed

The findings from the study revealed that Education determines women participation in agriculture. Therefore, this calls for increase in capacity building programs among the women through skills and knowledge development in agriculture both in urban and rural areas. Furthermore the women engaged in agriculture should be educated on better agricultural/farming methods.

The findings also indicated that Residence of women significantly determines women participation in agriculture. Thus, policy makers should design programs that improve market access, storage facilities, post-harvest handling facilities, and social amenities such as hospitals, recreational facilities, and postal service within the rural areas for easy accessibility by rural women. This will reduce the influx of women from rural areas to urban areas.

Furthermore, the results also showed that Household Gender significantly determines women participation in agriculture. Therefore, policy makers should design programs that promotes and advocates for agricultural activities among households, which is the main source of livelihood. Besides, they should provide agricultural implements to households at a subsidized rate.

In addition, the findings also showed that Wealth Index of women significantly determines women participation in agriculture. The policy makers should help the households to have access to capital/finance in order to acquire land, agricultural inputs, and labour to accumulate wealth.

Number of children ever born and the findings also showed that Wealth Index of women significantly determines women participation in agriculture. The policy makers should help women to reconcile work and family in order to increase women participation in agriculture.

The findings also showed that location in a particular region significantly determined women participation in agriculture. Therefore, the government should have gender sensitive agricultural extension services throughout all regions in order to encourage participation of women in agriculture.

5.4 Areas for Further Research

Although the results of this study provide an explanation on household socio economic factors that affect female agricultural labour force participation, other factors for example economic characteristics of the woman, loan availabilities and so many more need to be studied to check for their association with female agricultural labour participation.

More research could be done to find out why women dominate agricultural activities in local food crops, poultry, and small ruminants (ground nuts etc.).

Further research could be done to investigate whether networks among women through participation in social organization can influence women participation in agriculture.

Also studies critically analysing the knowledge, attitudes and practices of females regarding agricultural labour participation should be carried out. This will help in making better informed decisions regarding policies and guidelines that aim at helping the female gender participate more in the agricultural labour force.

Lastly, a study should be carried out to investigate the impact of technology on women participation in agriculture.

REFERENCES

Adedayo, A., and Tunde, A. M., (2013). Challenges of Women in Urban Agriculture in Kwara State, Nigeria. Sustainable Agriculture Research [online], 2(3),p8. Available at http://www. ccsenet.org/journal/index.php/sar/article/viewFile/22517/15771 [Accessed 21 Dec 2013].

Ahmed, S. and Maitra, P. (2010). Gender wage Discrimination in Rural and Urban Labour Markets of Bangladesh. Oxford Development Studies, 38(1): 83–112.

Amin, M. E. (2005). Social science research: Conception, methodology and analysis. Kampala: Makerere University Printery.

Anderson, K. and W. Masters (2009). "Distortions to Agricultural Incentives in Africa", The World Bank, 2009, 335.

Ani AO, Ogunnika O, Ifah, SS (2004). Relationship between socio-economic characteristics of rural women farmers and their adoption of farm technologies in southern,Ebonyi State, Nigeria. Int. J. Agric. Biol. Vol. 6(5):802–805.

Anifowose, B.O (2013). Exploring Radio as a Means for Disseminating Development Messages. Department of Communication and Language Arts, University of Ibandan, Ibandan, Oyo-State.

Anselm AE, Taofeeq AA (2010). Determinants of women's contribution to farming decision making in cocoa based agro-forest household of Ekiti State, Nigeria. The journal of field actions, Vol. (4): pp 228-320. Available from: http://www.factsreports.revues.org/pdf/396 (Accessed: 30 March 2011).

Ariyo, O.C et. al (2013) Assessment of the Role of Mass Media in the Dissemination of Agricultural Technologies among Farmers in Kaduna North Local Government Area of Kaduna State. Nigeria. Journal of Biology, Agriculture and Healthcare. Vol. 3. No. 6, retrieved from: http://www.docstoc.com/docs/159341316.

Becker, G.S (1960), "An Economic Analysis of Fertility", in Demographic and Economic change in Developing countries, Universities-National Bureau of Economic Research Conference series 11, Princeton, NJ, 209-231.

Becker, G.S (1981), A Treatise on the Family, Harvard University Press, Cambridge, M.A.

Becker, G.S and H.G Lewis (1973), "On the Interaction between the Quantity and Quality of Children", Journal of Political Economy, 82:S279-S288.

Blau, Francine D., Marianne A. Ferber, and Anne E. Winkler (2006). "The Allocation of Time between the Household and the Labour Market." The Economics of Women, Men and Work. 5th ed., Upper Saddle River: Pearson/Prentice Hall, 2006, pp. 85-135.

Brewster, K.L. and R.R Rindfuss (2000), "Fertility and Women Employment in Industrialised Nations", Annual review of Sociology, 26:271-296.

Charles, A. and Willem Z. (2008): Participation in Agricultural Extension, The World Bank participation sourcebook, Appendix II, Working Paper Summaries.

Cigno, A (1991), Economics of the Family, Clarendon Press, Oxford.

Damisa, M.A, Samndi, J.R, and Yohanna, M. (2007): 'Women Participation in Agricultural Production: A probit analysis', Journal of Applied sciences, Vol. 7 (3) pp. 412-414.

Dawson, C., (2002), Practical Research Methods, New Delhi, UBS Publishers' Distributors.

DFID, (2014), Agriculture and women Agriculture and growth evidence paper series.

Endris M.H, (2014), women's workload and their roles in agricultural production in Ambo District, Ethiopia: Journal of development and agricultural economics. vol 6(8), pp 356-362.

Etwire P.M, Dogbe W, Wiredu N.A, Martey. E, Etwire. E, Owusu R.K, and Wahaga. E., (2013). Factors Influencing Farmer's Participation in Agricultural Projects: The case of the Agricultural Value Chain Mentorship Project in the Northern Region of Ghana.

FAO, (2011), 'The state of food and agriculture 2010-11: Women in agriculture – closing the gender gap for development', 2011a.

FAO, (2011), Women in Agriculture - Making a Strong Case for Investing in Women. Rome: FAO.

FAO (2013) 2nd edition, Participatory Development guidelines on Beneficiary participation in Agricultural and Rural Development.

Farid, K.S., L. Mozumdar, M.S. Kabir and U.K. Goswami (2009). "Nature And Extent of Rural Women's Participation in Agricultural and Non-Agricultural Activities". Agricultural Science Digest 29(4): 254-259.

Feed the Future Uganda: Multi-Year Strategy 2011-2015", USAID, Feb 2011. <uganda.usaid.gov.

Feed the Future Uganda; http://reliefweb.int/report/uganda/uganda-acute-food-insecuritysituation- overview-jun-sep-2013.

Goldin, C. 1990. Understanding the Gender Gap: An Economic History of AmericanWomen. Oxford University Press, New York.

Hilbe, J. M. (2009). Logistic Regression Models. Virginia Beach, VA: Chapman & Hall.

Joughlin, J. and A.M. Kjoer (2010). "The Politics of Agricultural Policy Reforms: The Case of Uganda", Forum for Development Studies, Vol. 37, Issue 1. 2010, 1. June 2014.

Khan, M., M. Sajjad, B. Hameed, M. N. Khan and A. U Jan (2012). "Participation of Women in Agriculture Activities in District Peshawar". Sarhad Journal of Agriculture 28(1): 121-127.

Kumar, R. (2005). Research Methodology-A Step-by-Step Guide for Beginners, (2nd Ed.), Singapore, Pearson Education.

Kutiwa, S., Boon, E., and Devuyst, D., (2010). Urban Agriculture in low income households of Harare: an adaptive response to economic crisis. Journal of Human Ecology [online], 32(2), 85-96. Available from: <http://www.krepublishers.com/02-Journals/JHE/JHE-32-0-000-10- Web/JHE-32-2-000-10-Abst-PDF/JHE-032-2-085-10-2015-Kutiwa-S/JHE-032-2-085-10- 2015-Kutiwa-S-Tt.pdf> [Accessed 26 Dec 2013].

Mammen, Kristin, and Christina Paxson (2008). "Women ' s Work and Economic Development." The Journal of Economic Perspectives 14 (4): 141–164.

Manuh. T. (1998). Women in Africa's development: Overcoming obstacles pushing for progress. Nigeria. United Nations department of public information. Available From: www.un.org/geninfo/ afree/b.paper/maineng.htm (Accessed 06 April 2011).

Mougeot, L., (2000). Urban Agriculture - Definition, Presence, potential and Risks and Policy Challenges, Growing Food. Urban Agriculture on Policy Agenda. La Ha Vana, Cuba, International Workshop on Growing cities.

Mugenda O.M. & Mugenda A.G. (2003). Research Methods Quantitative and qualitative approaches. Nairobi: Acts Press.

Natural Resources Management and Environment Department (2010). Higher agricultural education and opportunities in rural development for women. Available from: http://www.foa.org (Accessed: 02 June 2010).

Nnadi, F. N., and C. D. Akwiwu (2008). "Determinants of Youths' Participation in Rural Agriculture in Imo State, Nigeria". Journal of Applied Sciences 8(2): 328-333.

Ntuli, M. (2007) “Determinants of South African Women’s Labour Force Participation, 1995–2004”, University of CapeTown and IZA Discussion Paper No. 3119.

Nxumalo, K. K. S., and O. I. Oladele (2013). “Factors Affecting Farmers’ Participation in Agricultural Programme in Zululand District, Kwazulu Natal Province, South Africa”. Journal of Social Science 34(1): 83-88.

Ogenga-Latigo, M. “Transforming Agriculture is a National Imperative”, Daily Monitor, July 2012.

Ogilvie W.D (2000).Interview of David Hines in 1999 by W D Ogilvie; obituary of David Hines in London Daily Telegraph 8 April 2000.

Okali, C. (2011) “Achieving Transformative Change for Rural Women’s Empowerment”, Expert Paper, UN Women; Enabling Rural Women’s Economic Empowerment: Institutions, Opportunities, and Participation, Accra, Ghana, Sept. 2011.

Oladejo, J. A., S. O. Olawuyi, and T. D. Anjorin (2011). “Analysis of Women Participation in Agricultural Production in Egbedore Local Government Area of Osun State, Nigeria”. International Journal of Agricultural Economics and Rural Development 4(1): 1-11.

Omenesa Z. E (1997) Rural Agricultural radio in Nigeria. An overview of the National Agrcultural Extension and Researh Liaison Service (NAERLS) Farm broadcaster. J. Agric Ext. Pp. 74-81.

Penin, A. (1999). The impact of education in small crop-holder crop production system.South Africa.Agrekon publishers.

Rad S, Ates C, H Delioglan, S. Polatoz, S, Ozcomlekci G (2009). Participation of rural women in sustainable development: demographic and socio-economic determinants. Sustainable development. Turkey. John Wiley and sons Ltd and ERP environment. Available from: www.interscience.wiley.com (Accessed: 06 April 2011).

Sharon, B.H. (2008): 'Rural Women and Food Security' FAO Participation in Panel Discussion on the occasion of the International Day of Rural Women held in New York; 15th October, 2008.

Tansel, Aysit. (2002). "Economic Development and Female Labour Force Participation in Turkey: Time-series Evidence and Cross-section Estimates." METU/ERC Working Paper. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=301946.

UBOS, (2008/2009). Uganda Census of agriculture.

UBOS, (1995), Uganda Demographic and Health survey Statistical Abstract 1995, Uganda Bureau of Statistics, Kampala, Uganda.

UBOS, (200), Uganda Demographic and Health survey Statistical Abstract 2000, Uganda Bureau of Statistics, Kampala, Uganda.

UBOS, (2005), Uganda Demographic and Health survey Statistical Abstract 2005, Uganda Bureau of Statistics, Kampala, Uganda.

UBOS, (2012), Uganda Demographic and Health survey Statistical Abstract 2012, Uganda Bureau of Statistics, Kampala, Uganda.

UBOS, (2016), National Population Census, Uganda Population Status: Statistical Abstract 2016, Uganda Bureau of Statistics, Kampala, Uganda.

UBOS, (2010), Uganda National Household Survey Statistical Abstract 2012, Uganda Bureau of Statistics, Kampala, Uganda.

UBOS, (2012), National Household Survey Statistical Abstract 2012, Uganda Bureau of Statistics, Kampala, Uganda.

Willis, J.R (1973), "A New Approach to the economic theory of fertility behaviour", Journal of political Economy, 81: S14-S64.

World Bank, (2007). World Development Report 2008: Agriculture for Development. Washington, D.C.: World Bank Publications.

World Bank, (2012) 'World Development Report 2012: Gender and Development', 2012.

APPENDIX

Appendix 1: Data Set