

**GENDER ANALYSIS IN RICE PRODUCTION IN KYELA DISTRICT,  
MBEYA REGION- TANZANIA**

**THABITHASSAN THABITI**

**A DESSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE  
REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS IN RURAL  
DEVELOPMENT OF SOKOINE UNIVERSITY OF  
AGRICULTURE, MOROGORO, TANZANIA.**

## ABSTRACT

Rice is the second most important food and commercial crop in Tanzania after maize. This study was designed to conduct gender analysis in rice production in Kyela district. This study was designed to conduct gender analysis in rice production in Kyela district. The study covered four randomly selected villages of Katumba, Mpunguti, Kasala and Tenende. Data were analysed to obtain the descriptive statistics, Harvard analytical framework of activity profile were employed to assess gender roles in rice production, independent t-test was employed to compare rice production between male and female headed households and one way ANOVA used to test mean differences of rice production between MHH's and FHH's while multiple linear regression used to identify gender related socio-cultural factors that influence rice production. The study found that among MHH's and FHH's, who were literate, had higher rice production than illiterate ones. However, gender roles and time spent in rice production are almost equal. Furthermore, on the overall access and control over resources of MHH's and FHH's revealed that, (57%) male had higher access. In accessing to credit (49%), therefore, in order to improve gender on rice production education should be encouraged in the households' members to uplift gender sensitivity and awareness in the households and access and control over resources should consider gender. It is recommended that in order to improve gender participation in rice production, awareness raising on equality and equity in access and control over resources, including access and control over land, and access to education among household members should be improved.

**DECLARATION**

I, Thabiti Hassan Thabiti do hereby declare to the Senate of Sokoine University of Agriculture that this dissertation is my own original work done within the period of registration and has neither been submitted nor being concurrently submitted in any other institution.

.....  
Thabiti Hassan Thabiti Date  
(M.A.Candidate)

.....

The above declaration is confirmed by

.....  
Dr.Kizito.K. Mwajombe Date  
(Supervisor)

.....

## **COPYRIGHT**

No part of this Dissertation may be reproduced, stored in any retrieval system or transmitted in any form or by any means without prior written permission of the author or Sokoine University of Agriculture in that behalf.

## ACKNOWLEDGEMENTS

I thank the Almighty God who gave me the abilities to accomplish this research work. Special gratitude is directed to my beloved parents, Mr and Mrs Hassan; brothers and other family members for their encouragement and day to day support to accomplish my study. I am also very grateful to Dr. Mwajombe K.K my supervisor, who built my foundation for undertaking this research through his useful guidance. Sincere gratitude is also directed to Dr. Urassa, Dr. Sikira and Dr. Nombo for their contributions which helped to improve my dissertation through their professional recommendations. I am also thankful to Mr. Kazuzuru for his support which helped me to come up with the appropriate analysis. I greatly extend my zealous and sincere thanks to my classmates Emmanuel P. Mzingula, Brown David, Mlade Elimboto, Leonard Kafupa and Mustafa Said, and my friends Aden Mchimbi, Bernard Chale and Lulu John for their tireless contributions. Special thanks to my wife Yuster Laswai for her generous advice and tolerance for the whole period which I was away from home. Thanks to Prof. Mvena, Prof. Wambura, Dr. Chingonikaya and Dr. Mbwambo as well as Dr. Kayunze for their efforts to let me fly high in the sky in sake of academic pursuits. I would like to give my sincere acknowledgements to Ward Executive Officers (WEOs) and Village Executive Officers (VEOs) of Katumbasongwe and Mwaya wards, without to forget District Agricultural and Livestock Development Officer (DALDO) of Kyera district council for their cooperation which helped a research process to go as it was planned. Special thanks are directed to the District Executive Director (DED) of Kyela District Council for giving me a permission to undertake my research study. Last but not least, I would like to give my in depth gratitude to my field enumerators for their commitments. Without their contributions, this study would not be successfully accomplished.

## **DEDICATION**

This work is dedicated to my parents Mr. And Mrs. Hassan, and my wife Yuster Kalist Laswai because whatever I am doing and whatever I achieve in life is just because of their support, sincere efforts and indepth kindness.

## TABLE OF CONTENTS

<b>ABSTRACT .....</b>	<b>ii</b>
<b>DECLARATION .....</b>	<b>iii</b>
<b>COPYRIGHT .....</b>	<b>iv</b>
<b>ACKNOWLEDGEMENTS.....</b>	<b>v</b>
<b>DEDICATION.....</b>	<b>vi</b>
<b>TABLE OF CONTENTS.....</b>	<b>vii</b>
<b>LIST OF TABLES .....</b>	<b>xi</b>
<b>LIST OF FIGURES .....</b>	<b>xii</b>
<b>LIST OF APPENDICES.....</b>	<b>xiii</b>
<b>LIST OF ABBREVIATION AND ACRONYMS.....</b>	<b>xiv</b>
<b>CHAPTER ONE.....</b>	<b>1</b>
<b>1.0 INTRODUCTION .....</b>	<b>1</b>
1.1 Background Information .....	1
1.2 Problem Statement .....	2
1.3 Justification of the Study.....	3
1.4 Objectives of the Study .....	4
1.4.1 Overall objective .....	4
1.4.2 Specific Objectives.....	4
1.5 Research Questions .....	4
1.6 Conceptual Framework .....	5
<b>CHAPTER TWO.....</b>	<b>6</b>
<b>2.0 LITERATURE REVIEW .....</b>	<b>6</b>
2.1 Definition of Key Concepts.....	6
2.1.1 Gender .....	6

2.1.2 Gender roles .....	6
2.1.3 Gender analysis .....	7
2.1.4 Gender disaggregated data .....	7
2.2 Theoretical Perspective of the Study .....	7
2.3 Gender Roles on Rice Production .....	8
2.4 Gendered Participation in Crop Production .....	9
2.5 Gender Role in Post-harvest Activities .....	9
2.6 Gender in Smallholder Agriculture in Tanzania .....	10
2.7 Gender Constraints in Rice Production .....	11
2.7.1 Access to land.....	12
2.7.2 Access to credit .....	13
2.7.3 Access to education, training and extension services .....	15
2.7.4 Access to decision-making.....	16
2.7.5 Access to research and appropriate technology .....	18
2.8 Gendered Related Socio-cultural Factors that Influence Agriculture Production.....	18
2.8.1 Household size .....	18
2.8.2 Education level .....	19
2.8.3 Mobility .....	20
2.8.4 Income control in the household .....	20
2.9 Women Empowerment Through Access to Resources and Involvement in Decision Making .....	20
<b>CHAPTER THREE .....</b>	<b>22</b>
<b>3.0 RESEARCH METHODOLOGY.....</b>	<b>22</b>
3.1 Description of the Study Area .....	22
3.2 Research Design .....	22
3.3 Population of the Study .....	23



3.4 Sampling Procedure and Sample Size.....	23
3.4.1 Sample size.....	23
3.4.2 Sampling procedure.....	23
3.5 Data Collection.....	24
3.6 Data Analysis .....	24
3.6.1 Regression analysis .....	25
3.6.1.1 Model Specification .....	25
<b>CHAPTER FOUR.....</b>	<b>27</b>
<b>4.0 RESULTS AND DISCUSSION.....</b>	<b>27</b>
4.1 Demographic Characteristics of Respondents.....	27
4.1.1 Age of Respondents .....	27
4.1.2 Sex of the respondents.....	28
4.1.3 Marital status of the respondents.....	28
4.1.3 Village of the the respondents .....	28
4.1.4 Education level of the respondents.....	28
4.2 Household Gender Roles in Rice Production.....	29
4.2.1 Time spent on rice production activities by gender .....	31
4.3 Access and Control of Resources in the Household .....	33
4.3.1 Access and control of land and credit .....	33
4.3.2 Access to training and extension services on rice production.....	35
4.4 Comparison of Rice Production Between Male and Female Headed Households .....	37
4.5 Regression Analysis on Socio-Cultural Factors Influencing Rice Production.....	38
<b>CHAPTER FIVE.....</b>	<b>41</b>
<b>5.0 CONCLUSIONS AND RECOMMENDATIONS .....</b>	<b>41</b>
5.1 Conclusions .....	41
5.2 Recommendations .....	42

<b>REFERENCES .....</b>	<b>44</b>
<b>APPENDICES .....</b>	<b>56</b>

**LIST OF TABLES**

Table 1: Distribution of respondents based on demographic characteristics .....	27
Table 2: Household activities profile In rice production.....	30
Table 3: Household activities profile in rice production .....	32
Table 4: Distribution of respondents based on access to resources .....	33
Table 5: Distribution of respondents according to access to training and extension .....	36
Table 6: Average Rice Production Between Male Headed and Female Headed Households .....	37
Table 7: ANOVA Table on Rice Production between MHHs and FHHs.....	37
Table 8: Regression Analysis Presenting Gender Associated Socio- Cultural factors Influencing Rice Production .....	40

**LIST OF FIGURES**

Figure 1: Conceptual Framework of Gender analysis in Rice Production .....6

Figure 2: Distribution of respondents based on control of land.....34

Figure 3: Distribution of respondents based on control of credit .....34

**LIST OF APPENDICES**

Appendix 1: A summary of operational definitions, measurement levels and units .....56

Appendix 2 : Harvard analytical framework .....57

Appendix 3: Questionnaire for household respondent .....58

Appendix 4: Questionnaire for Household Respondents.....59

Appendix 5: Interview question for married household respondent and extension officer  
.....60

**LIST OF ABBREVIATION AND ACRONYMS**

ANOVA	Analysis of Variances
ASDP	Agriculture Sector Development Program
FAO	Food and Agriculture Organizations
FHH	Female-Headed household
GDP	Gross Domestic Product
Ha	Hectare
IFAD	International Fund for Agriculture Development
IFPRI	International Food Policy Research Institute
IRRI	International Rice Research Institute
KDC	Kyela District Council
LS	Livelihood Strategies
MDG	Millennium Development Goals
MHH	Male-Headed Household
NRDS	National Rice Development Strategy
NSGRP	National Strategy for Growth and Reduction of Poverty
PSD	Programme Support Document
RLDC	Rural Livelihood Development Company
TGNP	Tanzania Gender Networking Programme
UN	United Nations
UNDP	United Nation Development Program
UNESCO	United Nation Education, Scientific and Cultural Organization
URT	United Republic of Tanzania
USDA	United States Department of Agriculture
WHO	World Health Organization

## **CHAPTER ONE**

### **1.0 INTRODUCTION**

#### **1.1 Background Information**

Rice is one of the world's main staple crops, with nearly 2.5 billion people depending on it as their main food crop. Hundreds of millions of people spend more than half their incomes on rice to feed their families (FAO, 2010). Rice is the second most important food and commercial crop in Tanzania after maize; it is among the major sources of employment, income and food security for Tanzania farming households (RLDC,2009).

Tanzania is the second largest producer of rice in Southern Africa after Madagascar with production level of 818,000 tones (RLDC, 2009). The cultivated area is 681,000 ha; this represents 18 % of Tanzania's cultivated land. About 71 % of the rice grown in Tanzania is produced under rain fed conditions; irrigated land presents 29 % of the total area with most of it in small village level traditional irrigations(USDA,2007).

Agricultural production of different crops such as rice is the main economic activity supporting the rural and urban livelihood of most people in developing countries(FAO,2011). It provides employment, income generation and food provision for most people.

Despite such immense potential of agriculture sector for the developing countries such as Tanzania, the sector faces a number of problems which if not properly addressed greatly affect its role in promoting economic development in the developing countries. Some of these problems are cultural based which normally leads to unfair distribution of productive

resources among the societies members and in particular the gender imbalance between men and women engaged in agricultural activities (FAO,2011).

Gender is one among the factors which influence rice production whereby FAO(2011) argues that the agriculture sector in many developing countries is underperforming because women who represent crucial resources in agriculture and the rural economy through their roles as farmers, laborers and entrepreneurs, face severe constraints than men in access to productive resources. Such constraints may lead to occurrence of less access and control over resources, and information which directly influence rice production. Kyela District is one among the areas which cultivate rice for many years and depend on household members as sources of labour, therefore is more likely to have experienced these constraints. Thus this study intended to conduct a gendered analysis in rice production in Kyela District.

## **1.2 Problem Statement**

In Southern highlands zone of Tanzania, particularly Mbeya region where rice is produced, relevant data on gender analysis in rice productivity is inadequate. Most studies in Kyela district, reported on rice production and its contribution to poverty alleviation, significance of rice production and on land tenure system and agricultural technology in rice production but little has been documented on gender analysis on rice production. Therefore, there is a lack of gender-disaggregated data available to technicians, planners and policy makers in the district.

Indeed, both groups of men and women farmers have different responsibilities in agricultural production systems, including rice farming. Therefore, this study intends to fill the gap of information on a gender analysis in rice production in Kyela District.



### **1.3 Justification of the Study**

Tanzania government is struggling to promote agriculture production particularly rice production in Kyela District in order to sustain local economy, employment and food security among its people. Mashindano and Maro (2010) reported that, agriculture employs 80 percent of Tanzanian. Although the government of Tanzania is trying to promote agriculture production but the question of gender is less documented especially in rice production. Thus, this study carried out gender analysis in rice production in Kyela District.

The study is in line with Agricultural Sector Development Programme (ASDP) which emphasizes on increasing agricultural productivity, profitability and farm incomes (URT, 2009), The study also is parallel with National Rice Development Strategy (NRDS) which focusing on food security and achieving self-sufficient staple food production (URT, 2009).

Equally the study is in line with NSGRP II cluster II which focuses on quality of life and social wellbeing, and it keeps on with Tanzania's Development Vision 2025 and the Millennium Development Goals 2015 on high quality livelihood (URT, 2009)

This study paves the way for possible gender sensitive interventions to be implemented by gender experts and community development officers in order to minimize burden of women and strengthen their household capacity in coping with risks and food insecurities.

This study therefore is useful as provide better understanding on gender among smallholder farmers and other stakeholders interested on the matter related to gender

inequality in the district and identifies the challenges, opportunities, lessons learnt and provide an important input in other similar projects.

## **1.4. Objectives of the Study**

### **1.4.1 Overall objective**

In general, the study aimed at carrying out a gender analysis in rice production in Kyela District.

### **1.4.2 Specific Objectives**

In specific, the study intended;

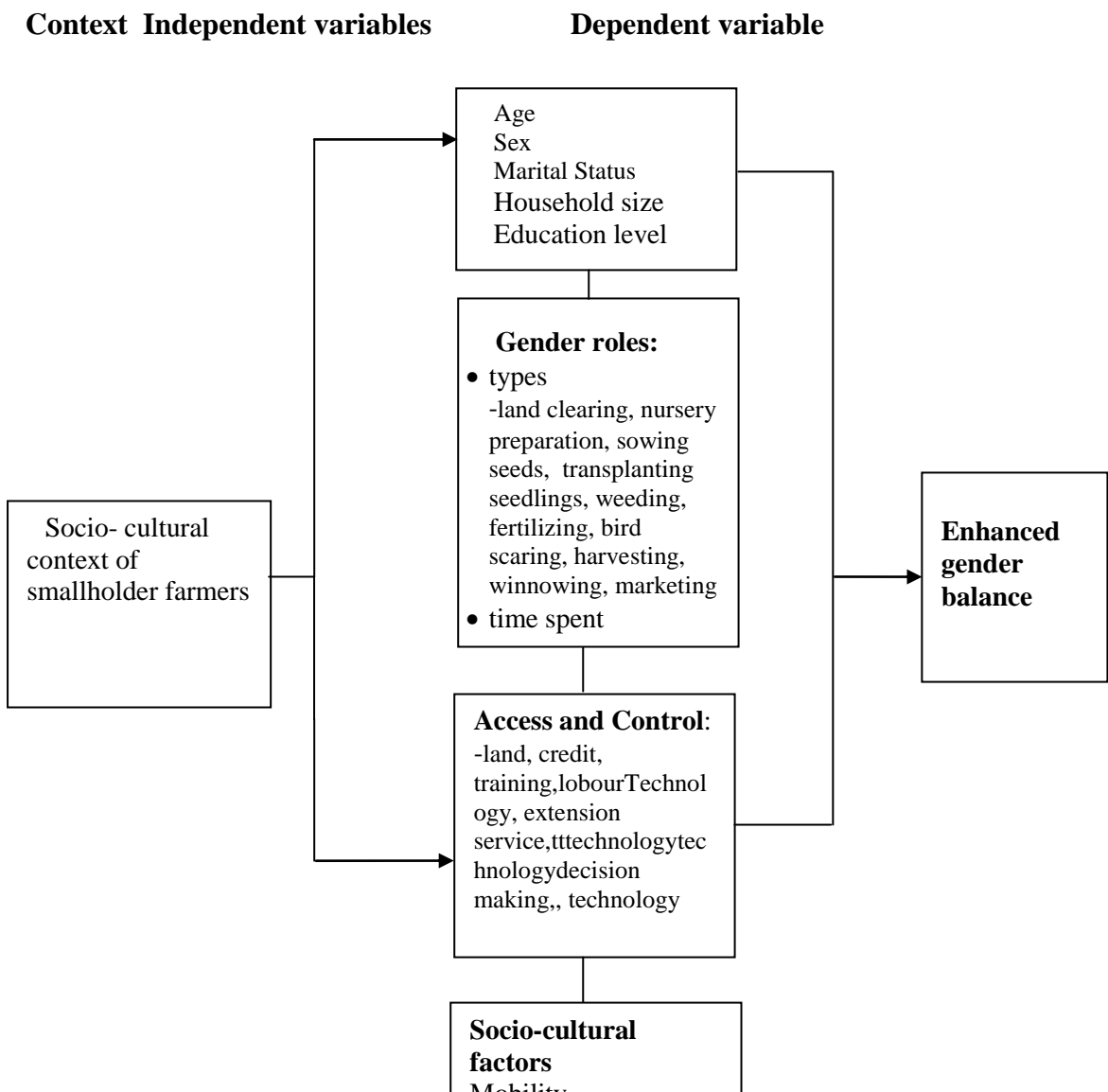
- i. To determine the role of men and women in rice production.
- ii. To assess the access and control over resources between men and women in rice production.
- iii. To compare rice production between male and female headed households.
- iv. To explore gender related socio-cultural factors which influence rice production.

## **1.5 Research Questions**

- i. What is the role of men and women in rice production?
- ii. What are the access and control over resources between men and women in rice production?
- iii. What is the difference in rice production between female headed and male headed households in the study area?
- iv. What are gender related socio-cultural factors which influence rice production in the study area?

**1.6 Conceptual Framework**

The conceptual framework used was modified from the materialist theory (Eitzen and Maxime, 2000) as shown in the Fig. 1. The independent variable of the study are socio-cultural context such as gender roles, access to and control of resources in rice production of smallholder farmers these factors has direct influence to dependent variable that's gender balance in rice production. However, in the conceptual framework there are background variables which has indirect influence to dependent variable. The background variable includes age, sex, marital status, household size and education level in the household.



**Figure 1: Conceptual Framework of Gender analysis in Rice Production****CHAPTER TWO****2.0 LITERATURE REVIEW****2.1 Definition of Key Concepts****2.1.1 Gender**

This refers to the characteristics, behavior, traits and social roles that people attribute to men or women (Leid, 2012). This term generally refers to allocation of social roles based on behaviors but not based on biological differences (sex) of men and women (UNDAW, 1999). Gender attributes are assigned roles and relations among them. Gender may count a variety of concerns instead of confined attachment among definite male and female attributes (Hanoi, 2004). In cultural, academic and social studies the term gender refers to social structure instead of biological one (Reddy, 2005). The concept of gender is an overarching variable in the sense that gender can also be applied to all other cross-cutting variables such as race, class, age, and ethnicity (Bussey and Bandura, 1999).

**2.1.2 Gender roles**

These are social definition of responsibilities/tasks assigned to women and men. They vary among different societies, cultures, classes, age and during period in history. Gender specific roles and responsibilities are often conditioned by household structures, access to resources, specific impact of the economy and other locally relevant factors such as ecological conditions (FAO, 2000). Thus different tasks, responsibilities and expectations that society defines and assigns to men and women. These are not necessarily determined

by biological make-up and can change at any time hence gender roles is a product of stereotype (UNO, 2001).

### **2.1.3 Gender analysis**

This refers to examine the relationships between females and males and their access to and control of resources, their roles and the constraints they face relative to each other (UNO, 2012). A Gender analysis entail collecting and analyzing disaggregated data on roles and relations of men and women, boys and girls and other socially vulnerable groups. The role of gender analysis is to observe how both members in the household are involved in different roles and responsibilities (UNO,2012).

### **2.1.4 Gender disaggregated data**

These are data collected and presented indicating issues of particular relevance to women and men, girls and boys, and their different roles and position in the society. Gender disaggregated data are essential to planning and implementation of gender informed development projects (WBG,2011),unlike, sex-disaggregated data which means every data is cross-classified by sex, or presenting information separately for women and men, boys and girls (Chen, 2004).

## **2.2 Theoretical Perspective of the Study**

This study is primarily applying the materialist theories. These theories use cross-cultural data on the status of women and men. Materialist theories explain gender inequality as an outcome of how women and men are tied to the economic structure of society. Such theories stress control and distribution of valued resources as crucial facts in producing stratification (Eitzen and Maxime,2000).

They point out that women's roles of mother and wife, although vital to the well-being of society, are devalued and also deny women access to highly valued public resources such as land, credit and decision making. They point out that gender stratification is greater where women's work is directed inward to the family and agriculture, including rice production and men's work is directed outward to trade and the marketplace(Eitzen,2000). When women do enter the labour markets, they often concentrate in lower-paying jobs.

### **2.3 Gender Roles on Rice Production**

Women play vital roles in food production, processing and marketing in producing about 60-80 percent of food in the country (Buckland and Haleegoah, 1996; Rahman 2004), and contributing about 60-80 percent of agricultural labour force (Mgbada,2000). They also contribute to household well being through their income generating activities (Ayoola, 1999; Rahman and Usman, 2004).

Despite the immense contributions of women to agriculture, various findings have reported that women farmers generally, and particularly in Nigeria, lack access to adequate productive resources such as land, credit, agricultural inputs, education, extension services, and appropriate technology, due to various socio-economic factors Rahman (2008). Thus, gender has become a critical cross-cutting factor in innovation process to promote equity and enhance the relative access of female and male farmers to necessary resources in programs targeted at promoting household food security and poverty reduction.

However, the gender roles and relative performance of male and female farmers in the production of rice in the Northern Guinea Savanna of Nigeria have not been adequately valued by research and documentation.

## **2.4 Gendered Participation in Crop Production**

In African countries, Boserup (1970) studied the female role and estimated as 70% of the total farming activities. Kumar and Shubh (1985) examined the importance and involvement of female in Eastern Province (Zambia). Women were occupied in cultivation of major cash crops. The roles of African women farmers were acknowledged in the literature (Holmboe-Ottesen, 1989).

In Nigeria and other African countries it was noted that female farmer involvement in food production was lower as (47.7%) compared to men (65%). It was reported that 95% of rural females were small farmers who produced their own food. Women carry out cultural roles/activities in farming and home production. These were field cleaning, burning, use of fertilizer, sowing, preserving food, and processing (Olawoye, 1985 and Ohuegbe, 1989).

In Bangladesh rural women were responsible in 97% of crop preservation. Rural women had played role in activities such as pisciculture, agriculture and horticulture also engaged in salaried labour in building field and agricultural work. Women represented a most important supply of labour in the farming sector (Paul and Saadullah, 1991 and Pal, 2001). Whereas, in India it was reported that 50% of women involved in provided the 60% labour which gives 10% of income. They carry out different tasks in the home, farm and related work, like harvesting and weeding (Rangalakshmi, 2002 and Harshipender and Gupta, 2006).

## **2.5 Gender Role in Post-harvest Activities**

The food produced from the agriculture and livestock production should be processed and secured for consumption by the both gender. In Bangladesh women contribute 90% of

food crops in post harvest activities. In rural area women have to play vital roles regarding the economic tasks such as post-harvesting activities (Paul and Saadullah, 1991; UNDP, 1997 and Pal, 2001).

In India rural women are responsible for post harvest tasks like seed supply and its storage. Therefore, rural women play an important role in post harvest activities especially in drying, storage and cleaning of grains in all the zones proving that they are a major contributor to the family food security than men. Their participation is however low in processing and marketing activities. Participation of women in activities like drying, storage and cleaning of grains made it necessary to lay stress on transfer of technical knowhow on these aspects to women. The technical guidance will help in enhancement of their capabilities, which in turn will lead to reduction in losses during storage (Rajika and Smith, 1997; Lakshmi, 2002 and Sidhu, 2007).

Threshing and winnowing of cereals is an arduous task, mostly carried out by women and children, and estimated to account for 50% of the total labour used in small grains production (Sidhu, 2007). In some cultures rural women do not work in the fields but play leading role in post-harvest activities, even so, women got less than 1% of the total recognition from agriculture production (Heyzer, 1996).

## **2.6 Gender in Smallholder Agriculture in Tanzania**

In Tanzania there has traditionally been a division of labour by gender in agriculture. This division may be based on crop or task – or both. Often, cash crops and export crops are seen as ‘male’ crops, while subsistence crops are ‘female’ crops, because of the notion that women are responsible for feeding the family while men are responsible for providing income, Doss (1999).



All regions have more dependants in female-headed households compared to male-headed households, implying that women have to work harder to feed their dependants (URT, 2007). At national level slightly more male- than female-headed households use improved seed such rice, wheat and sorghum in which small difference exists in the use of fertilizers, 27 per cent and 23 per cent for male- and female-headed households respectively (URT, 2007). This clearly highlights gender inequalities in access to and control of land and other important inputs used in agricultural production URT (2007).

In crop production, men and women participate fairly equally in site clearance, land preparation, sowing, and planting, while women carry out most of the weeding, harvesting, transportation, threshing, processing, and storage activities. Women are also responsible for food preparation, fetching water, and gathering firewood. A study by Mjema (2008) in Shinyanga revealed that although men and women participate in most agricultural activities – land clearing, planting, weeding, harvesting, and processing – it is men who dominate selling activities.

## **2.7 Gender Constraints in Rice Production**

Despite women's importance in agricultural production, they usually have lower levels of physical and human capital than men. Their limited access to resources and their insufficient purchasing power are products of interrelated social, economic and cultural factors that force them into a subordinate role, to the detriment of their own development and that of the society as a whole (FAO, 2003). Therefore, despite their role as the backbone of food production and provision for the family in developing countries, women remain limited in their access to critical resources and services. Although in most developing countries, both men and women farmers do not have access to adequate

resources; women's access is even more limited due to cultural, traditional and sociological factors (FAO, 2003).

### **2.7.1 Access to land**

Women own not even 2% of land, while the proportion of female-heads of household continues to grow. Land reform programmes together with the break-up of communal landholdings have led to the transfer of exclusive land rights to males as heads of households and the rights of married women to a joint share (FAO, 2000). According to FAO one of the most serious obstacles to increasing the agricultural productivity and income of rural women is their lack of security of tenure. Secure land rights are important with regard to access to credit and membership of rural organizations. Rural women's access to rural organization membership is severely limited. While there may not be any law prohibiting women from becoming members, women are generally excluded because membership is based on landownership and/or a head-of household criterion (Jazairy *et al.*, 1992). The dual recognition of customary and civil law tend to allow for precedence being given to customary practices that limit rural women's marital and land rights (Jazairy *et al.*, 1992).

The World Bank (2008) estimates that in all zones about one-third of land holdings in Africa are below the calculated poverty threshold size. Women's landholdings as percentage of total agricultural holdings relative to men's are too small. This situation is an impediment to improving household food security and family welfare. For women the situation is even more critical; faced with uncertain tenure and the decreasing size and quality of plots to farm, women have an exceptionally difficult task in maintaining levels of output and household food security (Saito, 1994).

In Tanzania traditional practices and customary laws continue to discriminate against land tenure of women. This is especially the case in relation to inheritance after the death of a spouse, or after a divorce. Women have been estimated to own about 19 percent of registered land, and their plots are less than half the size of those of their male counterparts (PSD, 2012).

However, both the Land Act and the Village Land Act of 1999 have been hailed as a triumph for the women's rights movement in Tanzania. Gender activists have been among the most active lobbyists in the national debates surrounding the land acts. They successfully lobbied for the inclusion in the Acts of provisions to ensure equality before the law for women in both statutory and customary tenure. Land Act states as one of its fundamental principles that, the right of every woman to acquire, hold, use, and deal with; land shall to the same extent and subject to the same restrictions be treated as a right of any man. The same principle is explicitly laid down in the village land Act to cover customary rights of land (PSD, 2012).

In order for women farmers, who are responsible for 60 to 80 % of the food production in developing countries, to use land more effectively and thereby make a great contribution to food security; they need access to land, management control of land-based resources and economic incentives that security of tenure provides (FAO, 2003).

### **2.7.2 Access to credit**

Rural women's limited incomes, lack of collateral, higher levels of illiteracy and lack of information drastically constrain their access to almost all forms of credit from both financial institutions and government agencies. An analysis of credit schemes in Kenya, Malawi, Sierra Leone, Zambia and Zimbabwe found that women receive less than 10 percent of the credit directed to smallholders and merely 1 percent of the total credit to

agriculture (FAO,1990).Women's access to credit is further constrained by their exclusion from cooperatives or other peasant organizations through which credit is often channeled to farmers (Jazaryet al.,1992).

The potential of women in agricultural productivity and their ability to repay loans are often underestimated,although their repayment records have consistently been superior to those of male borrowers in credit programs available to them (Jazairyet al., 1992).Women's productivity in subsistence activities could be greatly improved by the introduction of new technology and, where necessary, hired labor, but these are hampered by women's apparent credit unworthiness, precisely because their main responsibility centers on substance produce (Jazairyet al., 1992).

In addition the World Bank (2008) reported that, women have less access to formal financial services because of higher transaction costs, limited education and mobility, social and cultural barriers, the nature of their business and collateral requirements such as land title, they cannot meet.Women now represent the majority of microfinance (SACCOS) customers worldwide. Women are not just successful micro-entrepreneurs, working in multiple sectors throughout developing economies, they are also outstanding bank customers, as many microfinance program have shown (SwissContact,2014).

However, they are still economically, legally and culturally marginalized in many countries and regarded as not creditworthy. In Tanzania Women often invest their money more conscientiously, for example, in the schooling of children or in family health. They also pay their loans back more punctually and more reliably than men. Involving women in the financial sector promotes equality and strengthens their role in the family and in society(USAID, 2014).

### **2.7.3 Access to education, training and extension services**

Two-thirds of the one billion illiterate in the world are women and girls. Available figures show that only 5% of extension services have been addressed to rural women, while no more than 15% of the world's extension agents are women. In Africa only 7 percent of agricultural extension services were directed to women farmers in 1998 and only about 11 percent of all extension personnel were women (FAO, 1989). In addition, most of the extension services focus on cash crops rather than food and subsistence crops, which are the primary concern of women farmers and the key to food security (FAO, 2003).

Gender still receives low priority in the planning and implementation of extension policies and programs in many developing countries today. Women's full roles in production-related activities need to be brought into mainstream of extension and training (Jazairy *et al.*, 1992).

In Tanzania, food crop production dominates the agricultural economy with 81% of the female population working as primary producers, contributing up to 70% of the total agricultural production. Yet, the majority of women peasants do not have control of land, nor access to training and extension services. This issue is evident in the latest national Tanzania Long Term Perspective Plan (LTPP) 2011/12-2025/26, which mentions the 90% of women engaged in agriculture and livestock keeping that do not have equal rights to assets, such as land, and also have limited access to finance and education (Also, in a World Bank report from 2007 it is estimated that only 5% of women in Tanzania are banked (PDS, 2012).

Various studies have shown that market opportunities and transport facilities can stimulate women farmers to produce food surpluses, equal participation of women in production and marketing cooperatives play a significant role in encouraging women farmers to produce surpluses for markets and thus augment the household income and contribute to improving the food security situation.

Furthermore, women need training in marketing, accounting and management skills (FAO, 1990). Also the World Bank (2008), argued that, women are less educated in parts of Africa, Asia and the Middle East. Illiteracy hampers their information. Worldwide, women have less access to education and training in Agriculture.

In Tanzania various programs were initiated to uphold education development such as Education and Training Policy (ETP) and the Education Sector Development Programmes (ESDP), through the Primary Education Development Programmes (PEDP), Secondary Education Development Programme (SEDP), Higher Education Development Programme (HEDP), Folk Education Development Programme (FEDP), Adult and Non-formal Education Strategy (ANFES), Teacher Development and Management Strategy (TDMS), Vocational Education Act, the Technical Education and Training Policy, and Higher Education Policy. The Government also implemented cross sectoral programmes such as TASAF. The main result has been increased access to education at all levels.

#### **2.7.4 Access to decision-making**

Traditionally women have limited role in decision-making processes and laws, which are important for poverty reduction, food security and environmental sustainability. The causes of women's exclusion from decision-making are closely linked to their additional reproductive roles and their household workload, which account for an important share of

their time. A women play role in suggesting and consulting a decision in household although the final decision is made by men (Njiku, 2013).In Tanzania decision about the use of income of cash crops 52.2% , major agriculture 62.1% and household expenditures 61.1% and major assets sales, their participation is often nominal, consultative rather equal(Krugger, 2013).

According to World Bank(2014) women form the majority of Tanzania's agriculture work force particularly in rural areas, where 98% of economically-active women are involved in agriculture. They prepare, plant, weed, harvest, transport, store, and process their farms' products. In addition to these time and labor-intensive activities, women also cook meals and perform other household management tasks. These are crucial in a country where 42% of children under 5 years old suffer from stunted growth, due to malnutrition, and 16% are underweight.

Tanzanian women are keenly aware of their responsibilities and the challenges embedded therein. Limited decision-making power, unfavorable regulations, and biased socio-cultural norms reduce their access to finance, land, technical training, labor-saving equipment and other productive resources. As a result, barriers are stifling their potential to be leaders of technological invention, entrepreneurship, and legal and regulatory change throughout the agriculture sector. But these challenges are not insurmountable (World Bank, 2014).

The productive work done within the household by women has been ignored and not much attempt has been made to incorporate the value of such activities within the national accounts. The degree of error is even more pronounced within the developing

countries context with a large agricultural sector where large percentage of goods and services consumed within the households are produced at home (World Bank, 1992).

### **2.7.5 Access to research and appropriate technology**

Women have little access to the benefits of research and innovation, especially in the domain of food crops, which in spite of ensuring food security at the household and community levels; have a low priority in crop improvement research. In addition, women farmers' needs are often ignored when devising technology that may cause labor displacement or increased workload (FAO, 2003). Women generally use lower level technology because of difficulties in access. Cultural restriction on use, or regard of women crops and livestock as low priorities World Bank (2008).

In summary, even though women are the main food producers and providers their critical contribution to household food security is only now becoming recognized (FAO, 2003). Studies confirm that while women are the mainstay of small-scale agricultural, farm labor force and day-to-day family subsistence, they have more difficulties than men in gaining access to resources such as land, credit and productivity enhancing inputs and services. Given women's crucial role in food production and provision, any set of strategies for sustainable food security must address their limited access to productive resources (FAO, 2003).

## **2.8 Gendered Related Socio-cultural Factors that Influence Agriculture Production**

### **2.8.1 Household size**

The household size is related to household food security and agriculture production as it determines the labour availability for productive activities in the household, the size of household also indicates individual access to the availability of food in household and their



nutrition status. Many studies has been done in African countries on the impact of household size to agriculture production and the result show that the increase of household size lead to low production though higher household size increase labour power but other factors such as inadequate land, credit and crude technology lead to low productivity.

Study conducted by Barret(2001) and Minot *et al.*(2006) argued that the larger households with less land to work on are prone to diversify into off-farm income generating activities. Minot(2006) add that, household with higher proportion of working age adults have a great chances into diversifying into off-farm activities and it is assumed that a larger number of working adult would be associated with abundant skills fit for off-arm activities. Moreover, Brons(2005) argue that, household with more members have general flexibility in supplementary activities.

However, Galabet *al.* (2006) found that, household with many members, particularly household dependent on agriculture production stand a chance of having enough labour for their agricultural production and even to use their excess labour for diversification into livelihood strategies compared to those with less labour. Thus, this study proves that it is not true because the households which have had higher income can employ hired labour to manage all activities related to rice production and other members can be involved in non-farm activities.

### **2.8.2 Education level**

Most of Sub-Saharan African society's status can be measured by the level of education. Thus, to cope with suitable agriculture production, education played important role because it has a positive impact in agriculture production. The level of education in household had influence in decision being taken in households and farm

management. Study conducted by Adutende and Akensina (2008) classified rural women as educated were 34% it has been concluded that all women with pre-school and university level of education avails the opportunity according to their knowledge.

### **2.8.3 Mobility**

In Africa context, women are immobile as compared to men due to socio-cultural practices existing in African societies. Study conducted by the World Bank (2008) reported that, women are less mobile than men, both because of their child care and household responsibilities, and because of socio-cultural norms that limit their mobility. Thus immobility of women in the household level influence agriculture production in general and rice productivity in particular.

### **2.8.4 Income control in the household**

In Sub-Saharan Africa both women and men are responsible for selling the cash crops along with some help from other household members. However, women do not get the control over the income. Evidence from Uganda shows that majority of women are involved in producing cash crops still they do not have control over income (Godfrey, 2010) mainly because the rural households and marketing institutions work within a wider framework of patriarchal systems that were tilted in favor of men's control of major household resources. In Tanzania household income and expenditures 52.2% controlled by women as well as 61.1% of agriculture income and expenditures but men regarded as final decision maker (Njiku, 2013).

## **2.9 Women Empowerment Through Access to Resources and Involvement in Decision Making**

Several indicators are used to measure empowerment including women's freedom of movement, their decision making independence in both economic and social sphere, their

access to and hold on resources, and relations within the household. This information gives valuable sequence on different community, household and individual characteristics that determines women's position in the household (Sathar and Kazi, 1997). The study of rural women involved in labour depends whether work is paid or remains unpaid. In case they are paid for their labour work in a fair and just manner, they can have access to resources. Their economic improvement can help them improve their health, education and decision making power. Economic empowerment and education sphere can contribute to the quality of labour, food provision, and minimize the population growth (Zehra, 1998)

Similarly, Shah (2003) found that women were gaining control of income and expenditure decisions in household. Women's involvement had increased in expenditure decisions relating to poultry rearing and livestock management. Rural women generated 50% of their income from livestock.

## **CHAPTER THREE**

### **3.0 RESEARCH METHODOLOGY**

#### **3.1 Description of the Study Area**

This study was conducted in Kyela District which is located in Mbeya region. The district lies between  $35^{\circ} 41'$  and  $30^{\circ}$  longitudes East of Greenwich meridian and  $9^{\circ} 25'$  and  $90^{\circ} 40'$  latitudes of the equator. Kyela borders with Makete District and Ludewa district in the East and Ileje district in the West, Mbeya Municipal and Rungwe District in the north. On the south of the district, Kyela borders with Lake Nyasa and Republic of Malawi (URT,2010).

In Kyela District about 60% of the population has access to clean and safe water within a distance of 400m, to the question of education about 29% of the females and 19% males aged 5 and above had never attended school. For the rural population, the total of those aged 5 and above who never attended school was 26%, while in the urban areas the total was 10% (URT, 2010). Although primary school is free in Tanzania, much of the poor attendance is influenced by students lacking uniforms and school supplies.

This study was conducted in Kyela District because about 79.3 percent of Kyela residences are engaged in rice production and little has been documented on gender analysis in rice production. The study was conducted in Katumbasongwe and Mwaya wards where four villages randomly selected such as Katumba, Mpunguti, Kasala and Tenende from two wards respectively.

#### **3.2 Research Design**

This study employed a cross-sectional study design, where this method is useful in terms of time limitation and resources constraints (Bailey and Mouton, 1998). The study

employed both male and female headed households who engaged in rice farming activities from selected villages.

### 3.3 Population of the Study

This study involved Kyela rice growing households, both male and female headed. Households that were involved in growing rice for the past five years were the once considered to form the study population.

### 3.4 Sampling Procedure and Sample Size

#### 3.4.1 Sample size

The sample for the study was calculated using a formula derived from Yamane (1967) where random sampling was used to obtain a sample size of 134 rice growing households from four selected villages at confidence level of 95% and level of precision of 5% as indicated below:

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

Where;

n is the sample size

N is the population size=134

e is the level of precision(sampling error)=5% or 0.05

$$n = \frac{134}{1 + 134(0.05)^2}$$

$$n=100$$

#### 3.4.2 Sampling procedure

The sample size constituted 100 respondents including males and females from four villages. Bailey and Mouton (1998) argue that 30 cases is a bare minimum for studies in which statistical data analysis is to be done regardless of their population size.

A total of 100 respondents from 40 households were from a list of married and un-married female headed as well as un-married male headed households while the rest were married male headed households selected randomly. The four randomly selected villages were picked from two purposively selected wards of Kyela District which were famous for rice production. However, the study selected two ward agriculture and extension officers from Katumbasongwe and Mwaya ward respectively as the key informants.

### **3.5 Data Collection**

The study was designed to conduct gender analysis on rice production in Kyela district. The data were collected through questionnaire survey to married and unmarried female headed households and married and unmarried male households while an interview schedule for key informants, which was designed for this purpose to cover a sample of 60 respondents (comprising husband and wife respondents) and 40 unmarried male and female headed household respondents and two ward agriculture and extension officer as a key informants.

The study collected both qualitative and quantitative data using qualitative and quantitative techniques. Through quantitative technique, a questionnaire survey and Harvard analytical framework were applied. Questionnaire survey was used for collecting quantitative data pertaining to rice productivity between male and female headed households as well as gendered factors influencing rice productivity. While Harvard analytical framework was used in identifying roles of men and women in rice production as well as their access and control over resources.

### **3.6 Data Analysis**

Data analysis is the process of evaluating data using analytical and logical reasoning to examine each component of the data provided (Dodge, 2003). For this study descriptive and regression analysis were used to analyse collected data.

Descriptive analysis were used whereby qualitative and quantitative data collected from rice growers were summarized, coded and entered in the software Programmes of Statistical Package for Social Science(SPSS) version 16 spread sheets, for analysis to give quantitative description of information, frequencies and percentages.

However, Independent-samples T-test used for objective III to test if there is significant difference in rice production between male and female-headed households in Kyela District, as well as one way ANOVA was used to analyze means of rice production between male and female headed households.

### **3.6.1 Regression analysis**

Multiple linear regression models were run to quantify gender analysis as an independent variable as well as to find out the role of each variable in explaining the dependent variable. The factors used as predictors included sex of respondents, age of respondents (years), respondent years spent at schooling (education level), respondents marital status and household size. The dependent variable was rice production in male and female headed households.

Moreover, other factors were included such as rice grower's characteristics like sex, age, education level and marital status as explanatory variable in the model. Gendered related socio-cultural factors such as mobility, household size, education level, income control, and polygamy were included in the model in order to gauge on how these factors influence rice productivity in the household.

#### **3.6.1.1 Model Specification**

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \epsilon_i \dots \dots \dots (2)$$

Whereby;

- $Y$  is dependent variable which is the household rice productivity (kg/hectare/year)
- $X_1, X_2, \dots, \dots, X_7$  are independent variables which are socio-cultural factors influencing household rice productivity namely marital status(1/0), household size (number of household members), education level (years spent in school), mobility (1/0), patrilineal (1/0), monogamy (1/0), income control (1/0) respectively.
- $\beta_1, \beta_2, \dots, \beta_7$  are coefficients which measure a corresponding change in dependent variable brought by a unit change in independent variable
- $\beta_0$  and  $\epsilon_i$  are intercept and error term respectively



## CHAPTER FOUR

### 4.0 RESULTS AND DISCUSSION

#### 4.1 Demographic Characteristics of Respondents.

##### 4.1.1 Age of Respondents

Respondents were categorized into six age groups with interval of ten years by considering married male and female headed households and un-married male and female headed households (Table 1).

**Table 1: Distribution of respondents based on demographic characteristics (n=100)**

Variable	Frequency	Percentage
<b>Age</b>		
21-30	21	21
31-40	31	31
41-50	15	15
51-60	18	18
61-70	8	8
71-80	7	7
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Sex</b>		
Females	51	51
Males	49	49
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Marital status</b>		
Married	60	60
Widow	21	21
Divorced	11	11
Single	8	8
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Education</b>		
Non- formal education	10	10
Primary education	29	29
Secondary education	39	39
Tertiary education	22	22
<b>Total</b>	<b>100</b>	<b>100</b>

The study observed that, large number of respondents were in the age groups of 21-30 years (21%) and 31-40years (31%) and these constituted the most active working group in agricultural activities with a range of 21 to 80 years (Okunade. 2005; Karau, 2010). Similar range of age has been reported in Nigeria (Ayanwuyi, 2007).

#### **4.1.2 Sex of the respondents**

Result from Table 1 show that 51% of the respondents were females while 49% were males. Thus according to these results revealed that, men dominated rice production activities than females.

#### **4.1.3 Marital status of the respondents**

Based on marital status, married respondents were 60% while widows constituted 21%, divorced 11% and single were 8%.

#### **4.1.3 Village of the the respondents**

The distribution of respondents by villages show that there were 25 (25%) of the respondents from each of the studied villages that were Mpunguti, Tenende, Katumba and Kasala.

#### **4.1.4 Education level of the respondents**

Education level is the basic measure used to decide the status of the society. A literate society is better in understanding and his competency in performing different agricultural activities including rice production (Table 5). The findings revealed that, 39% of the respondents had completed secondary level education. Others, 29% and 22% had completed primary level education and tertiary level education, respectively. The remaining 10% had no formal education.

Literacy for women can produce socially, economic and personal benefits such as better personal and family health, low fertility, readiness to participate in new economic activities and empowerment (Caldwell, 1989; Myers 1995; Puchner, 1995). The level of education helps women to influence major decision being taken in the household and farm management inclusive (Damisa and Yohanna, 2007).

#### **4.2 Household Gender Roles in Rice Production**

Table 2 shows the involvement of various gender categories by gender. This is a complex process demanding different skills and encompasses a lot of activities. The involvement of both male and female in farming activities is well documented (Fabiya, 2007). Thus, in this study their involvement in agricultural activities especially rice production has been captured.

To estimate the involvement by gender in different rice production activities that is land clearing, nursery preparation, sowing, transplanting seedlings, weeding, fertilizer application, bird scaring, harvesting, winnowing and marketing were included in the questionnaires and interview schedule. The respondents were asked about their involvement in these activities, as shown below in the Table 2.

The results revealed that, Male were involved in land clearing 57% of the respondents, while 11% of the respondents indicated that land clearing was done by females, and both (male and female) were 12% as well as children, male and female contributed 14% and 6% respectively. In nursery preparation, male contributed 27%, female 30% and both, (male and female) members in households contributed 22%, and children, male and female contributed 11% and 10% respectively.

**Table 2: Household activities profile In rice production (n=100)**

Activities/Roles	Response									
	Male		Female		Both		Children			
	n	%	n	%	n	%	n	%	n	%
Land clearing	57	57	11	11	12	12	14	14	6	6
Nursery	27	27	30	30	22	22	11	11	10	10
Preparation										
Sowing	61	61	10	10	21	21	8	8	-	-
Transplanting	20	20	35	35	24	24	8	8	13	13
Weeding	16	16	48	48	18	18	6	6	12	12
Fertilizer	46	46	15	15	18	18	12	12	9	9
Application										
Bird Scaring	6	6	63	63	19	19	12	12	10	10
Harvesting	20	20	7	7	54	54	17	17	2	2
Winnowing	1	1	83	83	15	15	-	-	1	1
Marketing	16	16	3	3	80	80	1	1	-	-
Decision making	47	47	10	10	43	43	-	-	-	-

Furthermore, the data revealed that in paddy sowing seeds was done by males 61% of the respondents, female 10% and 21% for both, male and female in the household as well as male children contributed 8%. In transplanting of seedlings, the data revealed that male contributed 20% and female 35%, and for both (male and female) contributed 24% and male and female children were contributed 8% and 13% respectively.

During the weeding process, the respondents revealed the data that male and female constitutes 16% and 48% respectively and both (male and female) contributed 18%. As well as male and female children contributed 6% and 12% respectively.

In addition to that, in fertilizer application process the findings show that male and female contributed 46% and 15%, respectively and it was 12% and 9% for male and female children, respectively. On bird scaring, the findings revealed that, male and female

contributed 6% and 63%, respectively, and as well as male and female children contributed 12% and 9%, respectively.

During winnowing process, the findings revealed that, females contributed highly (83%) and male contributed one percent while male children contributed 15.0%, and one percent was done by female children. Rice marketing was done by male 16% and female 3% and both husband and wife contributed 80% in marketing activities. Male respondents were the main decision makers and constituted 47% while females 10% and both husband and wife constituted 43% in decision making. Similar findings were reported by Abdi (2004) who found that, women direct participation in cereals production activities was significant in storage management, protection, harvesting and transportation of grains. The author found that 74% and 68% of the women participated in storage management and crop protection, respectively. Women participation was found to be low in land clearing and sowing.

Again, similar findings were reported in the study conducted in Nigeria, which concluded that most of the rural females contributed in field work along with their justifiable roles as wives and mothers. Male alone could not attain victory in agriculture without females. Females were involved in field preparation by 58%, sowing 72%, marketing 88%, transportation 82%, harvesting 93%, processing 93% and weeding 80% (Fabiya, 2007).

#### **4.2.1 Time spent on rice production activities by gender**

Table 3 shows the time spent by household members to perform various activities related to rice production. Respondents were asked to indicate the amount of time they spent in various rice production activities including land clearing, nursery preparation, sowing, transplanting seedlings, weeding, bird scaring, winnowing, harvesting and marketing.

**Table 3: Household activities profile in rice production (n=100)**

Activities/Roles	Time Spent(Days/Growing season)		
	Men	Women	Children
Land clearing	33	13	5
Nursery Preparation	7	5	4
Sowing	14	7	4
Transplanting	9	10	6
Weeding	34	44	26
Fertilizer Application	7	1	0
Bird Scaring	19	15	18
Harvesting	31	29	18
Winnowing	2	30	3
Marketing	12	11	0
<b>Total</b>	<b>168</b>	<b>165</b>	<b>84</b>

The total days spent in various activities related to rice production revealed that men spent 168 days, women 165 days and 84 for children per season. Therefore, from this data it has been found that there was almost equal division of number of days spent in rice production between women and men although men spent more days in land clearing, weeding and harvesting while females spent more days in weeding, harvesting and winnowing and children were more involved during weeding, bird scaring and harvesting.

The World Bank (2005) reported that females provide the labour force for production of cash crops as well as food crops with the range from 50% to 90% and that male and female are attributed with specific roles in different farming activities.

### 4.3 Access and Control of Resources in the Household

#### 4.3.1 Access and control of land and credit

Table 4 shows access and control of land for the rice production and revealed that access to land in the households between men and women was 57% and 9%, respectively and 34% of respondents mentioned equal access to agricultural land between men and woman.

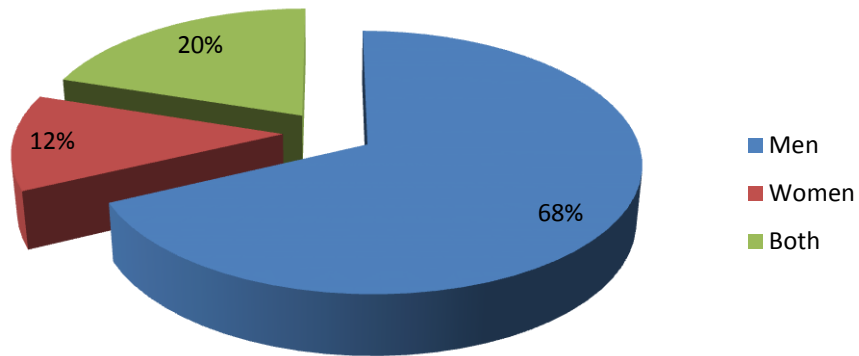
**Table 4: Distribution of respondents based on access to resources (n=100)**

Access Over Resources	Men		Women		Both	
	n	%	n	%	n	%
Land	57	57	9	9	34	34
Credit	49	49	21	21	30	30

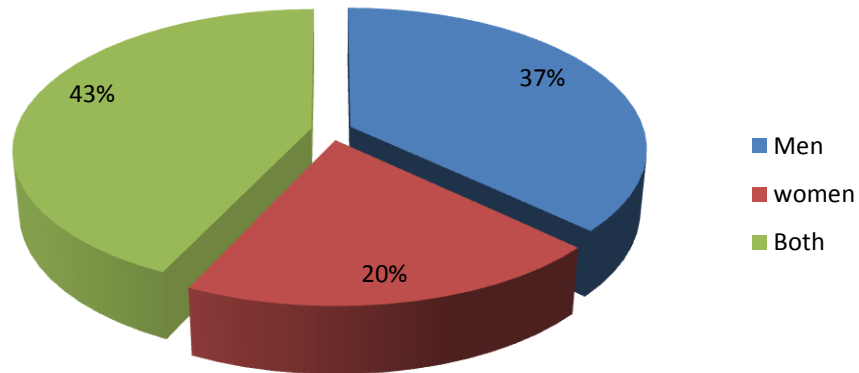
Similar findings were reported by Ajani (2008) who found that patriarchal structures and authorities gave more resources to men in Nigeria, resulting in women having less access to productive resources, particularly land, which is perhaps the most economic constraint for most rural women. It was also found that the women utilize less of agricultural inputs including fertilizers, herbicides and labour than the male farmers. Women's access to land in African societies is quite restricted, even in cases where the law protects women's rights to land, traditional customs inhibit their access and control over land. An example from Mozambique points out that customary law protects single-women and widowed women in access to land (Gawanya, 2008)

However, there are customs that constrain women's access to land. Single-women can gain access to land through their fathers, brothers or uncles. But, upon marriage in patriarchal communities women's access to land held by these relatives is lost, as they are expected to have access to land through their husbands (Gawanya, 2008). Generally, women tend to have smaller land holdings and less fertile plots. The findings revealed that, men and

women had access to credit by 49% and 21%, respectively and jointly, men and women had access to credit by 30%.



**Figure 2: Distribution of respondents based on control of land**



**Figure 3: Distribution of respondents based on control of credit**

Credit is important for securing fertilizer, improved varieties of seeds and other technology on farms. Most women farmers are not able to obtain credit without a male guarantor or without husband’s assistance. The disparity between who farms and who receives inputs and credit is due to institutional barriers and social constraints. The



perception that women produce crops for subsistence and not for the market, women's less secure land tenure and provision of credit through organizations geared towards men affect provision of credit to women farmers.

A study in Kenya, Zimbabwe, Malawi, Zambia and Sierra Leone found that women received only 10% of the credit for smallholder farmers and 1% of total credit to agriculture. (Mehra and Rojas, 2008). Thus, an agriculture development policy intended to create an all-round development in rural Africa needs to be sensitive to needs of women in these subsistence societies.

#### **4.3.2 Access to training and extension services on rice production**

Table 5 shows that men and women had access to training by 48% and 16%, respectively and both, men and women had access to training by 36% while men and women had access to extension services by 63% and 18%, respectively and for both, men and women it was only 9%. The extension officers from two wards reported that both women and men were involved in training. A study in Malawi found that women had no contact with extension agents and their participation was very limited (Hirschchamann and Vaughan, 1984). Besides, the deficiency of extension programme to target women farmers, limited women participation and was constrained by practices like the expectation that woman need husband's approval for any contacts to be made (Doss, 1999).

A research conducted in Kenya revealed that agricultural extension programmes always tend to ignore plots which are individually managed by women. They would provide assistance to plots which are managed by men and women or only men (Pala, 1983). Moreover, the World Bank (2008) reported that women have less contact with extension services than men, especially where male-female contact is culturally restricted. Extension

is often provided by male agent to male farmers on the erroneous assumption that the knowledge is transferred “across” to women. In fact, agricultural knowledge is transferred inefficiently or not at all from-husband to wife. Also, the message tends to ignore the unique workload, responsibilities and constraints facing women farmers

Findings in the Table 5 show that, men had more access to technology by 47% while female farmers accessed technology only by 12% and both, men and woman accessed technology by 41%. Therefore, it has been found that most technology was accessed by men. As women farmers generally have less access to cash and credit, they are less likely to purchase and use fertilizer (Doss, 1999).

Similarly, a research in Burkina Faso on men and women who grew the same crops on individual plots revealed that most of the inputs such as hired labour, fertilizer, tools went to men’s plot (Mehra and Rojas, 2008). A study from Cameroon and Malawi show that the structural adjustment programs that removed fertilizer subsidy affected female farmers more than male farmers as they reduced fertilizer application on crops (Galdwin, 1992).

**Table 5: Distribution of respondents according to access to training and extension**  
(n=100)

<b>Access and Control Over Agricultural Services</b>							
<b>Agricultural Services</b>	<b>Men</b>		<b>Women</b>		<b>Both</b>		
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	
Agriculture Training	48	48	16	16	36	36	
Extension Services	63	63	18	18	9	9	
Technology	47	47	12	12	41	41	

#### 4.4 Comparison of Rice Production Between Male and Female Headed Households

Table 6 shows the average rice production levels between male and female headed households. The findings revealed that in all villages with exception of Katumba village, male headed household had higher rice yields than female headed households and the differences between male headed and female headed households in Kasala village was found to be statistically significant at  $p=0.001$ .

**Table 6: Average Rice Production Between Male Headed and Female Headed Households**

Villages	Average Households Rice Productivity(kgs/ha)			
	MHH	FHH	Difference	P-level
<b>Mpunguti</b>	461.5(10)	378(10)	83.2	0.340
<b>Katumba</b>	389(10)	428(10)	38.6	0.657
<b>Kasala</b>	619.7(10)	260.0(10)	359.7***	0.001
<b>Tenende</b>	502.5(10)	326.0(10)	176.5	0.065

\*\*\* Significant at  $P<0.001$  respectively, Figures in brackets are frequencies.

**MHH:** Male Headed Household; **FHH:** Female Headed Households

However, analysis of variance for mean comparison between male headed and female headed households was found to be statistically significant at  $P=0.002$  (Table 7).

**Table 7: ANOVA Table on Rice Production between MHHs and FHHs**

Groups	Sum of Squares	Df	Mean square	F	P-value
Between Groups	421501.1	1	421501.095	10.558*	0.002
Within Groups	3114076	78	39924.052		

\*Significant at  $p<0.05$

#### **4.5 Regression Analysis on Socio-Cultural Factors Influencing Rice Production**

Table 8 shows the regression analysis on the influence of socio-cultural factors on rice production. Multiple regression analysis represent logical extension of the variables regression analysis instead of a single independent variables, two or more independent variable are used to estimate the value of a dependent variables (Gupta, 1990). Multicollinearity diagnostics were tested in order to detect whether there is correlation among the independent (X) variables. According to Line (2007) when there is a perfect linear relation among the predictors, the estimate for a regression model cannot be uniquely computed.

The collinearity implies that two variables are near perfect linear of one another. When more than two variables are involved, it is called multicollinearity, although the term is used interchangeably. The Table 9 below represent predictors on gendered socio-cultural factors that influence rice production whereby regression was significant ( $P < 0.05$ ). Also, findings from the field revealed that one of the five independent variables included in the analysis had significant ( $P < 0.05$ ) regression coefficient. Household size had a standardized regression coefficient of -6.311, not significant at 5% level. The negative regression coefficient implies that household size and rice production are negative related thus, the large household size should lead to low rice production. This is due to the fact not all household members were involved full in rice production activities because of either division of labour and specialization or were not in the productive age (below 15 aged and above 65 aged).

Similar result reported by Urassa (2010) suggest that, higher involvement of smaller household in crop production and non-farm activities compared to the medium and larger ones. Relatively higher proportion of medium sized households adopted crop, livestock

production and non-farm activities as compared to the small and large sized households. Although, lower proportion of all households relied on crop production only, a relatively higher proportion of larger households relied on it. Frequency of years spent at school(education) had a standardized regression coefficient of 31.254, significant at 5% level. The positive regression coefficient implies that the frequency of year spent at school and rice production are positive related. Increase in respondent's education level increases rice production in households.

A result of respondent education level has been reported by Swanson (1984) the farmers educational background is potential factor in determining the rice production. CIMMYT(1993) found that in Tanzania, most farmers have had primary education and practiced in traditional farming. Thus, the higher education level leads increase rice production in households. Mobility had standardized regression coefficient of 25.306, not significant at 5% level, the positive regression coefficient implies that mobility and rice production are positive related. Increase in mobility leads to increase rice production in household level.

The frequency of polygamy also had a standardized regression coefficient of 114.712, not significant at 5% level. The positive regression coefficient implies that the frequency of polygamy and rice production are positive related. Hence, increase in frequency of polygamy leads to increase rice production. However, income control of woman or man had a standardized regression coefficient of -1.237, not significant at 5% level. The negative regression coefficient implies that the income control of woman or man are negative related. Increase income control of woman leads to low rice production. This is due to the fact that not all women can control income in the households because woman

who had got education have had control income in the household effectively which resulted to increase rice production.

Similarly, Shah (2003) found that women were gaining control of income and expenditure decisions of household. Women's involvement had increased in expenditure decisions relating to poultry rearing and livestock management. Rural women generated 50% of their income from livestock.

In addition, marital status of respondents did not significantly influence rice production at 5% level .as shown in the Table8 below.

**Table 8: Regression Analysis Presenting Gender Associated Socio- Cultural factors Influencing Rice Production**

<b>Variable Level</b>	<b><math>\beta</math></b>	<b>Standardized SE</b>	<b>Coefficient t-value</b>	<b>Sign. Level</b>
Constant	230.422	249.906	0.922	0.361
Marital Status	0.125	0.012	-1.084	0.279
Household Size	-6.311	13.137	-0.480	0.633
Education level	31.254	10.427	2.998	0.04*
Mobility	25.306	158.152	0.160	0.873
Polygamy	114.712	90.314	1.270	0.210
Income Control	-1.237	81.665	-0.15	0.988

R Square( $R^2$ )=0.175 \* significant at  $P < 0.05$

Dependent Variable: Rice production (kgs) in Household per acre.

## **CHAPTER FIVE**

### **5.0 CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Conclusions**

Therefore, the study was conducted to fill the gap on gender analysis in rice production, thus to capture the gap the study came out with four objectives and the following were the outcome.

The study found that, women played a vital role in rice production process rather men who were engaged highly on land preparation while other activities' carried out by women. The study found out that, men has higher access to and control of land and credit resources in rice production than women even though currently women involved in SACCOSS/VIKOBAs which enable them to have a financial assistant in order to fill the gap and the land act of 1999 encouraged women to hire land.

More than that, women has not equal access to training and extension services that's why there is little rice production in Kyela district because men who has access to training and extension do not involve in rice production as women.

Gender sensitivity and awareness should be insisted in the household, because through this leads to increase rice production by considering gender roles, access and control over resources in the household level. The only way to be achieving this is through promoting education at the household level.

The study also found that, male headed household produce higher than female headed household, because male has access and control over land and credit than female thus, in order to increase rice production there is need to educate Kyela dwellers in particular and rural farmers at large on how to improve gender sensitivity and awareness.

In addition, the study is based on materialist theory which explain gender imbalance is a product of women and men are tied with economic structure within the society, thus in order to improve rice production in the household there is need to provide education on gender to the entire society.

However, the study observed that, education played a vital role on improving gender awareness and rice production in the household that's why result found out that the household which have had higher education produce higher.

## **5.2 Recommendations**

- i. Gender sensitivity and awareness should be insisted in the households level so as to ensure that gender roles and access to and control of resources in rice production is based on gender.
- ii. Access to and control of resources such as land, credit, agriculture training, extension services, technology and decision making at the household level is based on gender.
- iii. Education is an important tools in development, thus it should be promoted because it leads to improve gender awareness and sensitivity in the households



which directly increase rice production. Women should more encourage getting gender education because has got great impact once they have got education in the households. Education on gender can be promoted by community development officers and gender experts through seminars, workshop and forums.

- iv. Rice smallholder farmers should be encouraged to use nursery preparation rather than based on sowing during planting period, due to the fact that thoroughly the study found out that the households which employ nursery preparation has had higher rice production.
- v. The financial institution is most important to address rice smallholder farmer's credit needs on long terms with low interest rate. This can provide financial assistants through VIKOBA/SACCOSS where the majority of rural dwellers engaged with this to earn credit.
- vi. Rice farmers should establish their organization which will encourage the government at the village levels so as to get agriculture equipments like tractors, power tillers and irrigation machines.
- vii. Government and other development agencies should make sure that smallholder rice farmers get agriculture technologies such as tractors, power tillers, plough and irrigation machines at affordable price, with regard gender as well as increase agriculture subsidies such as fertilizer.

## REFERENCES

- Abdi, R. (2004). *Role of Women in Improving and Providing Food Security*. Addis Ababa University-Ethiopia. pp44-46.
- Ahmad, S.(2006). *Gender Issues in Agriculture and Rural Livelihoods*. M. S. Swaminathan Research Foundation Uttara Devi Resource Centre for Gender and Development. India. 203-207pp.
- Ajani, O.I. (2008). *Gender Dimensions in Agriculture, Poverty, Nutrition and Food Security in Nigeria Strategy Support Program (NSSP)*. IFPRI. pp 5-7.
- Ayoola, J.B. (1999). *Economic Analysis of Women Entrepreneurship in Low Income Households of Benue State, Nigeria*. A PhD Thesis Submitted to AbubarkaTafawaBalewa University, Bauchi, Nigeria, in Partial Fulfilment of PhD Degree, March 1999. pp 53-55.
- Bailey, D. and Mouton (1998). *Method of Social Science Research*. The free press Collier Macmillan publisher, London. 25pp.
- Barrett, C. B., Reardon, T. and Webb, P. (2001). *Non-farm Income Diversification and Households Livelihood Strategies In Rural Africa: Concept, Dynamics and Policy Implication*, Food Policy Vol.26 (4), pp 315-331.

- Best, J. W. and Kahn, J. V. (1998). *Research in Education* (8th ed) Needham Heights, MA. Allyn and Bacon. 254-255 pp.
- Boserup, Ester (1970), *Woman's Role in Economic Development* (New York: St. Martin Press).
- Boserup, E. (1970). *Woman's Role in Economic Development*: New York: St. Martin Press.
- Brons, J. (2005). *Activity Diversification In Rural Livelihood: The Role of Farm Supplementary Income In Burkina Faso*. PhD thesis Wageningen University.
- Buckland, L. and Haleegoah, J. (1996). *Gender analysis in agricultural production*. IITA Research Guide 58 training Programme of International Institute for Tropical Agriculture (IITA). Ibadan, Nigeria. pp10-12.
- Bussey, K. and Bandura, A. (1999). 'Social cognitive theory of gender development and differentiation', *Psychological Review*. 106, pp. 676–713.
- Chen, S. (2004). *Women Right Promotion Foundation*. Taiwan. 35 pp.
- CIMMYT Economic Program, (1993). *The Adoption of Agriculture Technology, A guide for Survey design*. D.F Mexco. 88 pp.
- Dodge, Y. (2003). *The Oxford Dictionary of Statistical Terms*. Oxford University press. UK. 498 pp.
- Doss, C.R. (1999). *Twenty-Five Years of Research on Women Farmers in Africa: Lessons and Implications for Agricultural Research Institutions; with an Annotated Bibliography*. CIMMYT Economics Program Paper No. 99-02. Mexico D.F.: CIMMYT.

- Doss, C. R. (1999). Twenty-five years of research on women farmers in Africa: Lessons and implications for agricultural institutions; with an annotated bibliography. 1999. CIMMYT Economics Program paper No. 99-02. Mexico D.F.
- Eagly, A. H., Wood, W. and Diekmann, A. B. (2000). *Social Role Theory of Sex Differences And Similarities: A Current Appraisal*. In T. Eckes & H. M. Trautner (Eds.). *The developmental social psychology of gender* Mahwah, N. J: Erlbaum. pp. 123-174.
- ECOSOC (2004). *Review of Economic and Social Council Agreed Conclusion 1997/2 on mainstreaming the Gender Perspectives Into all Policies and Programmes: In the United Nation System*. 27<sup>th</sup> plenary meeting.
- Eitzen, D. S. and Maxine, B. (2000). *Social Problems*. (8<sup>th</sup> Ed.) Boston: Allyn and Bacon. 251pp.
- FAO (1989). *Report of the Global Consultation on Agricultural Extension*. Rome. 149pp.
- FAO (1990b). *Women in Agricultural Development, Gender Issues in Rural Food Security in Developing Countries*. Rome: FAO.
- FAO (1995). *FAO Regional Plan of Action for Women in Agriculture in the Near East*. FAO Regional Office for Near East, Cairo. 8-11pp.
- FAO (1995). *Report of Technical Workshop on Women in Agriculture and Rural*. Rome. 7-14 December. 13pp.

FAO (2000). *Women, Agriculture and Rural Development: A Synthesis Report of the Near East Region*, FAO and Rome. 10-15pp.

FAO (2003). *Focus: 'Women and Food Security'*. FAO, Rome. 98pp.

FAO (2004). *International Year of Rice, "Rice Is Life"* Rome. 79pp.

FAO (2008). *Gender equality: ensuring rural women's and men's equal participation in development*, New York.

[[FAOftp://ftp.fao.org/docrep/fao/011/i0765e/i0765e10.Pdf](ftp://ftp.fao.org/docrep/fao/011/i0765e/i0765e10.Pdf)] ste visited on 10/06/2014.

FAO (2009). *Bridging the gap: FAO's programme for gender equality in agriculture and rural development*. [<ftp://ftp.fao.org/docrep/fao/012/i1243e/i1243e00.pdf>] ste visited on 12/07/2014.

FAO (2010). *Food Outlook," Global Market Analysis"* Rome. 121pp.

FAO (2011). *Gender Equality, Ensuring Equal Access to resources*. Rome Italy.

Fontana, M. and Paciello, C. (2009). *Gender dimensions of rural and agricultural employment: differentiated pathways out of poverty, a global perspective*. Paper for the FAO–IFAD–ILO Workshop on 'Gaps, trends and current research in gender dimensions of agricultural and rural employment: differentiated pathways out of poverty' Rome, 31 March–2 April 2009.

- Galab, S., Fenn, B., Jonnes, N., Sree, R. R., Willson, I. and Gopineth, R. M. (2006).  
Livelihood Diversification In Rural Andhra Pradesh: Household and  
Implication For Poverty Reduction. Young lives savechildren. UK. London  
[<http://www.younglives.org.uk/pdf>] ste visited on 3/10/2013.
- Galdwin, C. and McMillan, D. (1989). *Is a turnaround in Africa possible without helping  
African women to farm?* Economic Development and Cultural Change, Vol.37,  
No.2 pp345-369.
- Gawanya, R. (2008). *Investing in Women Farmers to Eliminate Food Insecurity in  
Southern Africa: Policy-Related Research From Mozambique.* Gender and  
Development, Vol 16, No.1.
- Gladwin, C. H. (1992). Gender impacts of fertilizer subsidy removal programs in Malawi  
and Cameroon. *Agricultural Economics* Vol.7, pp 141-53.
- Godfrey, A. (2010). *Household Gender and Resource Allocation: Women in the  
Marketing Arena of Income Generating Crops in Uganda.* Africa Social Science  
Research Review, Vol 26, no. 2.
- Gupta, J. B. (1990). *Statistical Theory and Related Topics IV (2<sup>nd</sup> ed).* pp 296-312.
- Hanoi (2004). Gender mainstreaming guidelines in national policy formulation and  
Implementation. Towards gender equality in Vietnam through gender-responsive  
national policy and planning. Vie 01-015-01 Project "Gender in Public  
Policy" National Committee for the Advancement of Women in Viet Nam.

- Haq, M. (2000). *Human Development in South Asia 2000: The gender question*. Oxford University press, Pakistan. 203pp.
- Heyzer, N. (1996). *Celebrating the Fourth, World Conference on Women*, UNIFEM, New York. 123pp.
- Hirschmann, D. and Vaughan, M. (1984). *Women Farmers of Malawi: Food Production in the Zomba District*. Berkeley, California: University of California.
- IFPRI (2012). ' *Women: The key to Food Security*'. Food Policy Report. Washington D.C.
- IRRI (2009). *Rice Today; Making Rice less Thirst Overcoming the Toughest Stress*; vol 8, no 3.
- Jazairy, I., Alamgin, M. and Theresia, P. (1992). *Household Food Security and Child World Development*. V20 n8, pp. 296(9).
- JICA Research Institute, (2009). JICA's approach to Rice Development in Africa, presentation to the 2<sup>nd</sup> Card General Meeting.
- Kabeer, N. (1999). Resources, agency, achievements: reflections on the measurement of Women's empowerment', *Development and Change*. New York 30.3: 435–64.
- Kenmore, P. (2003). *Sustainable Rice Production, Food Security and Enhanced Livelihoods in Rice Science*. Innovations and Impact for Livelihood. Cambodia. 303-305pp.

- Kisaka, J., Mkuya, M., Hella, J. P. and Kibanda, N. (2002). Land Tenure and agricultural technology Uptake by Smallholders Rice Farmers in Kyela-Tanzania. pp18-23.
- Leid, S. (2012). *“Women Speak, Women Tell Their Stories of Discrimination”* Washington DC. The World Bank. 126pp.
- Mashindano, O. and Maro, F. (2010). Growth without poverty reduction in Tanzania: Reasons for the mismatch, Chronic Poverty Research Centre; Working Paper No 207.
- Mehra, R. and Rojas, M. (2008). *Women, food security and agriculture in a global marketplace*, International Center for Research on Women [<http://www.icrw.org/publications/women-food-security-and-agriculture-global-marketplace>] site visited on 10/7/2013.
- Mgbada, J.U. (2000). Production of staple crops by rural women in Enugu and Ebonyi States. Lessons for enhancing poverty alleviation programmes. In T.A. Olowu(eds). *Agricultural extension and poverty alleviation in Nigeria*. Proceedings of the 6<sup>th</sup> Annual National Conference of the Agricultural Extension Society of Nigeria. pp11.
- Minot, N., Epprecht, M., Anh, T. T. T. and Trung, Q. (2006). *Income Diversification and Poverty In The Northern Highland Upland of Vietnam*. Research Report No.145 [<http://www.ifpri.org/pubs/abstract/145/rr145cho06.pdf>] site visited on 9/12/2013.



- Mjema, R. (2008). *Report on Social-Economic Gaps Study for Agriculture Scale up Program*(Shinyanga Rural, Kahama, Bukombe, Kishapu Districts). A Consultancy report for Oxfam GB Shinyanga.
- Ngairo J. A., Kaswamila, A. L. and Senkoro, C. (2007). *Rice Production in the Maswa District, Tanzania and its contribution to Poverty Alleviation, Research on Poverty Alleviation, Report no.07.1.*
- Pal, M. S. (2001). *Women in Bangladesh: Country briefing paper.* Asian Development Bank. 2001.
- Pala, A. O. (1983). Women's access to land and their role in agriculture and decision-making on the farm: experiences of the Joluo of Kenya. *Journal of Eastern African Research and Development* Vol. 13, pp 69–85.
- Pitcher, M. (1996). *Conflicts and Cooperation: Gendered Roles and Responsibilities Within The Cotton Households in Northern Mozambique.* African Studies Review, Vol 39, No. 3. pp 9.
- PSD (2012). *Gender Equality and Women Empowerment Programme in Tanzania.*
- Rahman, S.A. (2008). Women's Involvement in Agriculture in Northern and Southern Kaduna State, Nigeria. *Journal of Gender Studies, Volume 17, Issue1, pp17-26.*

Rahman, S. A. and Usman, J.I. (2004). *Comparative analysis of women's participation in In Agriculture In Northern and South Kaduna State*. Nigeria proceeding of the 38<sup>th</sup> Annual Conference of the Agricultural Society of Nigeria. pp105-108.

Rajika, B. and Smith, J. (1997). Rural Women in India: Assessment of Educational Constraints and the Need for New Educational Approaches. *Journal of Research in Rural Education*, Winter, 1997, Vol. 13, No.3, 183-196. 1997.

Reddi, P.(2003). *Women in Agriculture: A Sociological Study in Southern India*.

Reddy, G. (2005). *With Respect to Sex: Negotiating Hijra Identity in South India*. Worlds of Desire: The Chicago Series on Sexuality, Gender, and Culture. University of Chicago Press, Chicago.

RLDC (2009). "Rice Strategy" Annual Report. Morogoro. 13pp.

Saito, K.A., and Weidman, C.J. (1990). *Agricultural Extension for Women Farmers in Africa*. Washington, D.C.: World Bank. 241-278pp.

Saito, K.(1994). Raising the productivity of women farmers in Sub-Saharan Africa. 1994. World Bank Discussion Papers, No. 230.

Sathar.Z. and Kazi, S. (1997), *Women's Antonomy, Livelihood and Fertility, PIDE*. Cited in UNDP (2003).

Sidhu, K. (2007). Participation Pattern of Farm Women in Post Harvesting, Department of Extension Education. Punjab Agricultural University, Ludhiana 141 001, Punjab, India. 41-46pp.

Swiss Contact, (2014). *Swiss Foundation For Technical Cooperation, Financial Services, An Essential Prerequisite For the Economic Growth and Employment*. Dar es salaam, January 2014.

Tanzania Gender and Networking Program (TGNP) and SARDC-WIDSAA, (1997). *Beyond Inequalities: Women in Tanzania*, TGNP/SARDC, Dar-es-Salaam, Tanzania. pp 29.

Thomas, D. (2008). 'Gender Differences in Household Resource Allocation', Population and Human Resources Department, Living Standards Measurement Study, Working Paper, No. 76, Washington D.C: The World Bank. 211-220pp.

UNDAW (1999). *World Survey on the role of women in development: Globalization, gender and work*. New York. United Nations. 56-67pp.

UNDP (1995). *Human Development Report*. Oxford University Press, New York.

UNO (2001). *Gender Issues and the Advancement of Women, Human Development Report*. Oxford University Press, New York. 321pp.

UNO (2012). *Gender and Mine Action: Key Terms and Definition*. New York

URT (2007).Improved Agricultural Technologies Recommended in Tanzania (Edited by Kanyeka, E., Kamala, R. and Kasuga, R.) First Edition.Published by The Department of Research and Training of the Ministry of Agriculture Food Security and Cooperatives, Dar-es-Salaam, Tanzania.144 pp.

URT (2009).Ministry of agriculture food security and cooperatives-national rice development Final Report.Dar es salaam-Tanzania. July-September 2009.

URT (2010).*Kyela District-Basic Information*, Mbeya Region Report. 23pp.

USAID (2014).Want to Empower Woman in Agriculture Use Technology. 6<sup>th</sup> march 2014.

USDA (2007).World Rice Statistics, Rice Assessment and Draft Strategy:Dar es Salaam, pp 6.

USDA (2010).*Historical Rice Paddy Production Statistics: Cambodia*.pp207-209.

World Bank (1992).Fact Sheets, Gender Issues per country.Women in Development Unit, Poverty and Social Policy Division, Technical Department, Africa Region. Washington DC.

World Bank (2008).*The World Development Report, Agriculture Development*:Washington DC, The World Bank Oct-2007.

World Bank (2014). *Leveling the Field, Improving Women Farmers in Africa*: Washington DC. January 2014.

World Bank (with FAO and IFAD), (2009). *Gender in Agriculture Sourcebook*, Washington: World Bank  
[<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTARD/EXTGENAGRLIVSOUBOOK/0,,contentMDK:21348334~pagePK:64168427~piPK:64168435~theSitePK:3817359,00.html>] site visited 8/9/2013.

World Bank Group (2011). *Implication of World Development Report, Gender Equality and Development for the World Bank Group*, September 1, 2011:57-87pp.

Zahra, K.(2000). 'Women and Agriculture Development in the Near East'. Middle East Technical University Department of Economics and Gender and Women's Studies, Ankara, Turkey.112-115pp.

## APPENDICES

Appendix 1: A summary of operational definitions, measurement levels and units

<b>Concept</b>	<b>Operational definition</b>	<b>Measurement Levels</b>	<b>Units</b>
<b>Age</b>	Number of years since one was born	Ratio	Whole number
<b>Sex</b>	Biological state of being a male or female	Nominal	1. Female 2. Male
<b>Marital status</b>	Status of marriage	Nominal	1. Married 2. Single 3. Separated 4. Widowed 5. divorced
<b>Education</b>	Number of years spent in formal education	Ordinal	1.Primary 2.Secondary 3 Tertiary 4.Non-formal
<b>Household member</b>	Number of people living in the same Residence.	Nominal	1.Husband 2.Wife 3.Children(M/F)
<b>Gender</b>	The social attributes and opportunities associated with being male and female and the relationships between women and men or girls and boys.	Nominal	1.Husband 2.Wife 3.Children(M/F)
<b>Gender Roles</b>	A set of social and behavior norms that are generally considered appropriate for a man or women.(interpersonal relation)	Nominal	1.Male 2.Female 3.Children(M/F)
<b>Access and Control</b>	The opening to use of something and ability to define its use such as land, credit, training, technology, sources of information.	Nominal	1.Male 2.Female 3.Children(M/F)
<b>Productive Role</b>	In response to the monetary benefit assignment done by male and female; includes the market production along with an exchange value.	Nominal	1.Male 2.Female 3.Children(M/F)

## Appendix2 : Harvard analytical framework

(To be answered by a household respondent who is married/wife or husband)

### 1.1 Household gendered activity profile

Roles	Responsible(Tick (√) in the appropriate space below)			Time spent(Hours/day)		
	M	W	C	M	W	C
Land clearing						
Nursery preparation						
Sowing seeds						
Transplanting seedlings						
Weeding						
Fertilizer application						
Bird scaring						
Harvesting						
Winnowing						
Marketing						
TOTAL						

Note: M=Man, W=Woman, C=Children

### 1.2 Household gendered access and control over resources

(Tick (√) in the appropriate space below)

Resources	Access		Control	
	Man	Woman	Man	Woman
Land for agriculture				
Credit				
Agricultural training				
Extension service				
Technology				
Decision making				
TOTAL				

**Thank you for your cooperation**

### **Appendix 3: Questionnaire for household respondent**

**(To be answered by a household respondent who is married/wife or husband)**

Date.....

#### A. ADMINISTRATIVE DATA

Division..... Ward.....

Village.....

#### A. PERSONAL INFORMATION

1. Name of respondent.....

2. Age of respondent..... years old

3. Sex of respondent (a) Female (b) Male ( )

#### B. GENDER ASSOCIATED SOCIO-CULTURAL FACTORS

1. What is the number of household members? .....(mention)

2. How many years did you spend at school?.....years

3. From question 3 above specify your level of education.....

4. Is the woman left free to participate in various income generating activities?

(a) Yes (b) No ( )

5. Are you a head of household?

(a) Yes (b) No ( )

6. How many wives do you possess? (If a respondent is a man)/How many of you do you belong to your husband? .....(please mention)

7. Who has got a final decision making on controlling household income?

(a) Wife (b) Husband ( )

8. How many kg/hectare/year of rice do your household harvest from your farm plot?

**Thank you for your cooperation**



**Appendix 4: Questionnaire for Household Respondents**

**(To be answered by widow, widower, un-married woman or man, divorced)**

Date.....

Division.....Ward.....Village.....

1. Name of respondent.....
2. Age.....
3. Marital status: (a) Widow(b) divorced (c)Not ready to be married ( )
4. How many kg/hectare/year of rice do your household harvest from your farm plot?

**Thank you for your cooperation**

**Appendix 5: Interview question for married household respondent and extension officer**

Date.....

Division..... Ward.....

Village.....

Name of respondent.....

Age ..... Sex.....

1. Do you see that the current system household division of labour appropriate in improving rice crop productivity? Justify.
2. Is the household existing system of control over resources sufficient as far as far as man and woman contribution in household economy is concerned? Justify.

**Thank you for your cooperation**