

**FACTORS INFLUENCING HOUSEHOLD INCOME IN UNBOUND PROJECT,
CHIAKARIGA COUNTY ASSEMBLY WARD, THARAKA-NITHI COUNTY,
KENYA**

BY

MARIUS MARY WANJIKU

**A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS
FOR THE AWARD OF THE DEGREE OF MASTER OF ARTS IN PROJECT
PLANNING AND MANAGEMENT OF THE UNIVERSITY OF NAIROBI**

JUNE 2017

DECLARATION

This thesis contains my original work and has not been presented for a degree or any other award in any other university.

Signature.....

Mary Wanjiku Marius

Date.....

L50/73360/2014

This thesis has been submitted with my approval as the University Supervisor

Signature.....

Prof. Nathan Gichuki

Date.....

**Associate Professor
School of Biological Sciences,
University of Nairobi**

DEDICATION

This thesis is dedicated to my daughter Michelle Muthoni for her support and sacrifice as I was out of home most of the time and she understood and persevered. I also dedicate it to my late father Marius Njeru, who sacrificed his comfort to educate and teach me the value of education. It is also dedicated to my mother Nancy Mutitu, who has always encouraged and supported me throughout my studies.

ACKNOWLEDGEMENT

Sincere gratitude is extended to the following for their dedication and increasing support until the proposal was fully structured.

First and foremost, I would like to thank my supervisor, Prof. Nathan Gichuki, who tirelessly guided me throughout my research from the conceptualization of the research project, its execution and write up of the thesis. My supervisor taught me to be patient, strong and rigorous.

Secondly, I wish to thank Mr. Amos Gitonga of the University of Nairobi's Meru Extra Mural Center, and all the lecturers who taught me tirelessly and were always patient with me. Thank you for helping me improve my skills and acquire vast and useful knowledge in and outside my field of study.

This study would not have been possible without the support of my employer who allowed me time to study and also supported me financially.

Finally, my heartfelt gratitude goes to all the other people who contributed directly or otherwise to my study by playing different roles to enable me to successfully complete this research project.

TABLE OF CONTENTS

DECLARATION.....	ii
DEDICATION.....	iii
ACKNOWLEDGEMENT.....	iv
LIST OF TABLES.....	ix
LIST OF FIGURES.....	x
ABSTRACT.....	xii
CHAPTER ONE.....	1
INTRODUCTION.....	1
1.1 Background to the Study.....	1
1.1.1 Household income.....	1
1.1.2 Demographic characteristics.....	1
1.1.3 Economic activities.....	2
1.1.4 Institutional Infrastructure.....	3
1.1.5 Social cultural factors.....	3
1.2 Statement of the Problem.....	4
1.3 Purpose of the Study.....	5
1.4 Objectives of the Study.....	5
1.5 Research Questions.....	5
1.6 Significance of the Study.....	6
1.7 Delimitation of the Study.....	6
1.8 Limitations of the Study.....	7
1.9 Basic Assumptions of the Study.....	7
1.10 Definition of key terms used in the study.....	8
1.11 Organization of this thesis.....	8

CHAPTER TWO	9
LITERATURE REVIEW.....	9
2.1 Introduction	9
2.2 Household Demographic Characteristics and Household Income.....	9
2.3 Economic Activities and Household Income.....	10
2.4 Institutional Infrastructure Facilities and Household Income	12
2.5 Social Cultural Factors and Household Income.....	13
2.6 Theoretical Orientation	14
2.6.1 Social Capital Theory.....	14
2.6.2 Public Participation Theory	15
2.6.2 Absolute Income hypothesis	16
2.6.3 Relative Income Hypothesis	17
2.7 Conceptual Framework	19
CHAPTER THREE.....	20
RESEARCH METHODOLOGY	20
3.1 Introduction	20
3.2 Research Design.....	20
3.3 Target Population.....	20
3.4 Sample size and Sampling Procedures.....	21
3.4.1 Sample Size Estimate.....	21
3.4.2 Sampling Procedures.....	22
3.5 Research Instruments	23
3.5.1 Validity of Instruments	23
3.5.2 Reliability of Instruments.....	23
3.6 Data Collection Procedures.....	24
3.7 Data Analysis Techniques.....	24
3.8 Ethical Considerations	26

3.9 Operational Definition of Variables.....	28
CHAPTER FOUR.....	30
DATA ANALYSIS, PRESENTATION AND INTREPRETATION.....	30
4.1 Introduction	30
4.1.1 Response Rate	30
4.1.2 Reliability Analysis.....	30
4.2 Demographic Information of the Respondents	31
4.2.1 Highest Academic Qualification	31
4.2.2 Number of years respondents lived in Tharaka-Nithi County	32
4.3 Household Demographic Characteristics and Household Income.....	32
4.3.1 Effect of Demographic Characteristics on Household Income.....	32
4.3.2 Effects of specific Household Demographic Characteristics on Household Income	33
4.4 Economic Activities and Household Income.....	34
4.4.1 Extent Economic Activities Affects Household Income	34
4.4.2 Contribution of Different Economic Activities to Household Income	35
4.5 Institutional Infrastructure Facilities and Household Income.....	36
4.5.1 Extent to which Institutional Infrastructure Facilities Affect Household Income ...	36
4.5.2 Extent to which specific infrastructure Facilities Affected Household Income	37
4.6 Social Cultural Factors and Household Income.....	37
4.6.1 Extent Social Cultural Factors Affect Household Income	38
4.7 Principal sources of Household Income.....	39
4.8 Relationship between household income and socio-economic variables	40
4.9 Multiple relationships among dependent and independent variables	41
CHAPTER FIVE.....	45
SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS	45
5.1 Introduction	45
5.2 Summary of Findings.....	45

5.2.1 Influence of Demographic Characteristics.....	45
5.2.2 Economic Activities	45
5.2.3 Institutional Infrastructure Facilities	46
5.2.4 Social Cultural factors.....	46
5.3 Discussion of the findings.....	47
5.3.1 Household Demographic Characteristics.....	47
5.3.2 Economic Activities	48
5.3.3 Institutional Infrastructure Facilities	49
5.3.4 Social Cultural factors.....	50
5.4 Conclusions	50
5.5 Recommendations	52
5.5.2 Recommendations for further Studies.....	53
REFERENCES.....	55
Appendix 1: Transmittal Letter.....	61
Appendix 2: Research Questionnaire.....	62

LIST OF TABLES

Table 3. 1: Composition of target population in Chiakariga Ward, Tharaka Nithi County.....	21
Table 3. 2: Sample size estimate	22
Table 3. 3: Operational Definition of the Variables.....	28
Table 4. 1: Instrument reliability Analysis.....	31
Table 4. 2: Extent to which Demographic Characteristics Affected Household Income	33
Table 4. 3: Summary of mean scores of Household Demographic Characteristics.....	33
Table 4. 4: Extent to which Economic Activities Affected Household Income	34
Table 4.5: Significance of different aspects of Economic Activities and assets that affect Household Income.	35
Table 4. 6: Extent Institutional Infrastructure Facilities Affected Household Income.	36
Table 4. 7: Aspects of Institutional Infrastructure Facilities.....	37
Table 4. 8: Aspects of Social Cultural Factors.....	39
Table 4. 9: Household Income	39
Table 4. 10: Pearson Correlation Analysis.....	40
Table 4. 11: Summary of Regression Model Output	41
Table 4. 12: Analysis of variance the five independent variables.....	42
Table 4. 13: Pair-wise comparisons of the coefficients of determination using t-test.	43

LIST OF FIGURES

Figure 1: Conceptual Framework	19
--------------------------------------	----

LIST OF ABBREVIATIONS AND ACRONYMS

APC	Average Propensity to Consume
DNB	De Nederlandsche Bank
MPC	Marginal Propensity to Consume
NGO's	Non-governmental Organizations
OECD	The Organization for Economic Co-operation and Development
SSA	Sub-Sahara Africa
WEF	Women Enterprise Fund
YEF	Youth Enterprise Fund

ABSTRACT

Most rural households find it difficult to finance their operations, including their other income-generating activities, owing to their limited and irregular income. Low household incomes threaten to derail the achievement of the UN SDG's as well as Kenya's Vision 2030. There is no single pathway towards improving household income because social and economic fundamentals vary from one region to another. This study aimed to find out the factors influencing household income in Unbound Project Operation Area of Chiakariga County Assembly Ward in Tharaka-Nithi County in Eastern Kenya. The study adopted a descriptive research design and focused on target population of 6138 people resident in the ward. Questionnaires and interview schedules were administered to a sample of 361 respondents selected among rural households in the ward. Households were stratified by distance from the nearest urban centre and selected using stratified proportionate random sampling. The adult respondents, who were the heads of household, were selected purposively and the research tools administered. The primary data and personal observations were quantified and analyzed using Statistical Package for Social Sciences (SPSS Version 21.0). Descriptive statistics, such as frequencies, percentages, mean score and standard deviations was used for analysis of all quantitative variables. Multiple regression analysis was used to establish the relationship between the independent and dependent variables. The results were presented in form of tables. Finally, qualitative data was analyzed using conceptual content analysis and described accordingly. The study concluded that household demographic characteristics influenced household income in Chiakariga County assembly ward in Tharaka-Nithi County. Further, the more educated the household head, the more the household income. Infrastructure was also seen to affect houses hold income. The study also concludes that economic activities highly affect household income in unbound project. Furthermore, the study concludes that institutional infrastructural facilities influenced household income in unbound project in Chiakariga county assembly ward, Tharaka-Nithi County. Finally the study concludes that social cultural factors influences household income to moderate extents. The study found that 73.4% of the independent variables influenced the dependent variable, household income. The study recommends that different stakeholders in Chiakariga county assembly ward should consider household demographic characteristics when determining household income in unbound project. Farmers should be encouraged to utilize their farm and farming resources accordingly so as to earn more benefit from farming. Concerning institutional infrastructure the study recommends that government should increase investment in rural road infrastructure, telecommunication and water supply (especially irrigation schemes) and strengthen government capacity to combat natural calamities particularly in areas prone to drought and floods.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

1.1.1 Household income

Income is the most important factor worldwide that influences personal consumption expenditure. It will largely determine the level of consumption. Rich people usually spend more than poor people do, and rich people can afford products that cannot be afforded by poor people (Kilic, Carletto, Miluka & Savastano, 2009).

1.1.2 Demographic characteristics

Demographic variables also shape people's consumption habits. People living in the urban centers generally spend more than in rural areas while elderly put a higher portion of their budget on health care than do young people. Region of residence, family size, age of the reference person, education of the head, number of income earners, and age structure of the family members within a household are important factors that contribute to the variations in household incomes across the globe (Gerrans & Clark-Murphy, 2014).

Gerrans and Clark-Murphy (2004) concluded that there is a close relationship between age and gender, and household income. Using a survey of members of the Superannuation Scheme for Australian Universities, they have observed that younger females are more likely to have a higher risk tolerance and a bigger chance of generating low income compared to middle aged females. Furthermore, household incomes are also driven by the connection between gender and marital status rather than by gender alone. Married women tend to generate and save more than single women (Haggblade *et al.*, 2010). Previous studies have examined the effects of education on Household income (Laiglesia & Morrisson, 2008). Education is a factor which is closely tied to the wealth accumulation and its influence over income is direct. Over a long period of time, education corrects the savings of different individuals and its effect depends also on the region and economical development within that area. Morriset and Revoredo (2015) found that for each point increase in education, the savings rate increase with 0.37%.

Using the DNB (De Nederlandsche Bank) Household Survey, Van Rooij, Lusardi and Alessie (2011) provided evidence that financial education is strongly influenced by net worth of a business. First, a higher degree of financial knowledge increases the possibility of having gains from the stock market. Second, it has a large impact on the creation of retirement plans which lead to a boost in income and savings. Overall, financial literacy has been found to influence directly as well as indirectly the wealth and savings of households, proving to be much more efficient in determining the household income. In a study to investigate the determinants of income in Bangladesh, which is an agricultural economy, it was found that household size and land area were positive contributors to household income.

The study by Sibanda indicates that ethnicity, household size, female household headship and the household heads level of education are predictors of household income. The selection process for staying in school seems to favour children from upper income groups compared to their low income counterparts in Kenya and South Africa (OECD, 2013; Oketch and Ngware, 2012; Sibanda, 2004). In Rwanda, education of the adults in household had a positive and significant influence on the household income (Kinyanjui, 2011).

1.1.3 Economic activities

Households in developing countries have for a long time been perceived to receive their income predominantly from one or a few economic activities. Evidence abounds, however, that households derive their household income from multiple sources. Haggblad, Hazell and Reardon (2010) reports that agriculture constitutes a significant proportion of rural households income generating activities and rural employment, and income from this source accounts for 35 to 50 percent of total rural household income across the developing world. However, rural development literature has pointed out that rural households make up their livelihood based on complex strategies and not just on agricultural production. The livelihood of rural households is the result of the interaction between complex strategies and multiple income generating activities (Kilic *et al.*, 2009). These income-generating activities have been seen to be influenced by demographic factors.

Similarly, three shares of income from agriculture, business-commerce, and house rent were positive determinants of income. The study also revealed that more than 80 percent of its population depends directly or indirectly on agriculture for their livelihoods. In South Africa,

Sibanda (2004) found that both individual and household level attributes are important determinants of household income.

1.1.4 Institutional Infrastructure

Locally, and more specifically in Tharaka-Nithi County, 65% of the residents live below the poverty line. The county is characterized by semi-arid climate, agro-pastoralist and limited opportunities for alternative livelihoods (Kinyanjui, 2011). Persistent poverty is reflected by low household incomes and this situation has been attributed to low educational levels, low land productivity, unemployment, low empowerment of the communities and retrogressive cultural practices and beliefs. Rural women and the youth are vulnerable to poverty, because they do not have equal access to social and economic assets. Subsistence farming is the primary source of livelihood for most of the women. Yet, women and young people have great potential for contributing to economic development and social progress if they are able to meet their potential (Oketch & Ngware, 2012).

1.1.5 Social cultural factors

Gender roles influence household income. Women in most communities are tasked with the role of caring for the family. At the same time, they are sometimes themselves heads of the families. This also requires them to bring in an income in the family to cater for their needs. House chores, although labor by itself, is unpaid labor and so has no contribution per se in the household income. Studies on household income in Kenya are very limited but the few available indicate that women are more vulnerable to low incomes and poverty than men are. 69% of the active female populations work as subsistence farmers compared to 43% of men. Given that subsistence farmers are among the very poor, this relative dependence of women upon subsistence farming explains their extreme vulnerability to low household incomes and ill health, and hence poverty (Wamukonya, 2011). These problems are more severe in Tharaka-Nithi County where women spend a great portion of their time searching for water and fuel wood.

Household income can serve as a suitable proxy indicator of economic well being and poverty levels in a particular area. However, the factors that influence household incomes in Kenya's arid and semi arid areas have not been adequately investigated. It is therefore difficult for the government and aid agencies to determine priority areas of socio-economic support and how

to ensure that benefits from the external support can be sustained by the community beneficiaries (Ngethe, 2014). More than three quarters of the population live in rural areas, and rural households rely on agriculture for most of their income. The rural economy, in turn, depends mainly on small scale farming, which produces most of the country's food. In an attempt to improve their welfare, many poor households turn to microfinance institutions. The purpose of this study is to investigate the factors that influence household incomes in Chiakariga ward of Tharaka-Nithi County. This area has semi-arid climate and is vulnerable to climate variability, which leads to persistent food insecurity. Over the years, local communities have become increasingly dependent on relief food and other forms of external support (Ngethe, 2014).

1.2 Statement of the Problem

Most rural households find it difficult to finance their operations, including maintaining their other income-generating activities, owing to their limited income and opportunities. Therefore, in order to adopt relevant technologies and improve their productivity and income, the households need assistance in the form of production loans (Morriset & Revoredo, 2015). While Kenya is on the path to economic growth, poverty alleviation through increasing household incomes remains a major challenge for the government and development organizations (Kinyanjui, 2011).

About 70 per cent of the population with low household incomes in Kenya are in the Eastern, central and western regions and live in areas that have medium to high potential for agriculture. However, poverty, low incomes and the associated food insecurity are acute in the country's arid and semi-arid lands, which have been severely affected by recurrent droughts (Nudamatiya, 2010). Nearly 75% of Kenya's land mass is arid or semi-arid. Household incomes tend to be low (OECD, 2013). In Tharaka-Nithi County, where unbound project is operated, most families were still living in grass-thatched houses with some literally having no roof above their heads. The low household incomes have actually contributed to the derailment of the achievement of the MDG's as well as the Vision 2030 (Kenya Information Guide, 2015). The local communities and especially where unbound works perceive themselves as poor by fate and have limited capacity to improve their food security and livelihoods. The area is characterized by low education levels, high affinity to retrogressive

cultural practices and resistance to change. This makes it difficult to even realize the opportunities available despite the many untapped or undiscovered resources, such as fertile soil, ground water and human talents. Unbound has tried to improve household income and thus reduce poverty by empowering families in different areas such a care of families, importance of good nutrition, as well as providing opportunities for micro finance, education for the children and programs for the fathers and youths to be more participatory in community development. However, Unbound has not been able to successfully improve the income levels thus reducing the effects of poverty. This study therefore sought to establish the factors influencing household income in Chiakariga Ward of Tharaka-Nithi County, Kenya.

1.3 Purpose of the Study

The purpose of this study was to assess the factors influencing household income, in Unbound Project Operation Area in Chiakariga ward in Tharaka-Nithi County, Kenya.

1.4 Objectives of the Study

The study was guided by the following four specific objectives:

- i. To determine the extent to which demographic characteristics influenced household income in Unbound project area in Chiakariga County Assembly Ward.
- ii. To establish how economic activities of family members influenced household income in the Unbound Project Area.
- iii. To examine how institutional infrastructure facilities influenced household income in the Unbound Project Area.
- iv. To assess the extent to which social cultural factors influenced household income in Unbound Project Area.

1.5 Research Questions

- i. To what extent do household demographic characteristics influence household income in Unbound Project area in Chiakariga County Assembly Ward?
- ii. How do economic activities of household members influence household income in Unbound Project area in Chiakariga County Assembly Ward?

- iii. In what ways do institutional infrastructure facilities influence household income in Unbound Project area in Chiakariga County Assembly Ward?
- iv. What is the extent to which social cultural factors influence household income in Unbound Project area in Chiakariga County Assembly Ward?

1.6 Significance of the Study

The study offers valuable contributions from both a theoretical and practical standpoint. From a theoretical standpoint, it contributes to the general understanding of the factors influencing household income.

Findings of the research will assist households in understanding the factors influencing household income. These findings would assist them design interventions to help them improve their household income. The findings will also help them to determine the income generating activities that they may engage in to benefit or improve their household income. This study will be important to the community at large as they will get a better understanding of the strategies that may be employed in generating more income and the challenges they are likely to face in employing them.

The research findings will also provide vital information that will assist government particularly policy makers, planners and program implementers to formulate policies and strategies necessary to help households generate adequate income for their sustainability. This is more so for the communities in arid and semi-arid areas, which often depend on government and well-wishers during the drought season. This study will help the government with various income generating activities among households. The research findings will also provide vital information that will benefit future academicians and researchers on the factors influencing household income. Scholars and other researchers will use the findings of this study to carry out further research. Academicians will use the study as reference materials and illustrations.

1.7 Delimitation of the Study

The study was conducted in the Unbound Project Area in Chiakariga County Assembly Ward, Tharaka-Nithi County. However, the findings can be extrapolated to other regions affected by rural poverty in the county and in Kenya. This study adopted a descriptive research design,

which involved collection of primary data using semi-structured self-administered questionnaires and secondary data from credible published sources, such as websites, journals and reports for a period of ten years from 2006 to 2015. Data were collected from villages that were highly affected by low household income and that perpetually received food relief from the government and Non-governmental Organizations (NGO's). The study primarily focused on vulnerable groups of women and the youth.

1.8 Limitations of the Study

The researcher encountered various limitations that might hinder access to information that the study sought. The study encountered the inability to include many households owing to the fact that some of the respondents were not found easily due to their economic activities. However, the researcher countered that problem by carrying a study across the whole of Chiakariga County Assembly Ward that produced a more representative sample. Further, the researcher made prior visit to the sub-county to identify potential respondents and make arrangements for data collection.

The terrain in Tharaka-Nithi County was difficult and because of high levels of illiteracy among the poor people, data collection was a challenge and few questionnaires were expected to be returned. In order to address that challenge, the researcher carried out data collection when the weather condition was conducive, especially during the dry season and used trained local research assistants.

1.9 Basic Assumptions of the Study

The researcher assumed that the respondents would be cooperative, factual (objective) and truthful in their response to the research questions and that they would be willing to respond to the research questions on time. The researcher also assumed that the local administration and employers grant the required permission to collect data from employees. Further, the study assumed that there were no serious changes in the composition of the target population that could affect the validity of the study sample.

1.10 Definition of key terms used in the study

Household income: This is the consumption and saving opportunity gained by an entity within a specified time frame. It includes agricultural wage income, total off farm income, non-agriculture wage income, rental/property income, or money transfers.

Demographic characteristics - Socioeconomic characteristics of a population expressed statistically, such as age, gender of household head, education level, marital status, and average family size.

Economic activities – Human actions that involve the production, distribution and consumption of goods and services at all levels within a society, such as, sources of livelihood, occupation structure, off farm activities, land holding size, land ownership security.

Institutional infrastructure facilities –These include credit facilities, agricultural production technologies, access to production information, access to markets, and access to electricity.

Social Cultural factors - These facts and experiences that influence an individual's personality, attitudes and lifestyle. They include cultural restrictions, culturally defined gender roles, social capital, responsibility and social obligations, and relative values.

1.11 Organization of this thesis

This study is organized in five chapters. Chapter one covers the introduction, which focuses on the background, statement of the problem, research questions and objectives, the scope and limitations, and significance of the study. Chapter two presents a review of the relevant literature as well as the theoretical and conceptual frameworks upon which this study was founded. Chapter three describes the research methodology, including a brief description of the study area, sampling design, data collection procedures and the analytical techniques used. Chapter four of this thesis presents the results of the study along with their discussion, highlighting concurrence or discordance with similar studies carried out elsewhere by other researchers. Finally, summary of the key findings, conclusion and recommendations are presented in Chapter five. The literature reviewed during this study is listed in the last section.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this second chapter, relevant literature that is related and consistent with the objectives of the study is reviewed. Important issues and practical problems are brought out and critically examined so as to determine the current knowledge of the subject of study. The chapter is thus structured into conceptual, empirical and theoretical review. The study also presents the knowledge gaps that the chapter seeks to fill.

2.2 Household Demographic Characteristics and Household Income

Consensus among researchers all around the world has shown that income generation and savings are influenced by demographic variables (Fernandez, Otero, Vivel, Rodeiro & 2009). Factors such as age, gender, education or civil or social status are shown as important aspects in the household income generation. For example, Fernandez *et al.*, (2009) investigate the determinants of savings from eight countries in Europe. *Gender* has an impact on the willingness to save. Recent studies point out the higher degree of risk aversion among women (Pan & Statman, 2010). Floro and Seguino (2012) show evidence that women do save more relative to men, even after an increase in women's income and bargaining power. *Demographics* have also been widely cited to be key determinants of a household's income in both the rural and urban areas (Rashidi, Aukd & Mohammadian, 2012). Changes in household demographics have also been observed as a key determinant of income source choices (Galvez & Kleit, 2011). Such demographics which have been cited by scholars as key determinants of household incomes include gender, age, marital status, professional affiliation and education level of owner of house, income of household, size of family, household composition and level of household expenditure (Galvez & Kleit, 2011).

The *level of education* attained by the head of a household is also expected to influence access to information, decision making, income and consequently livelihood security of a household. Income of a household, is therefore, expected to increase as level of education of its head increases. This is because educated household heads are likely to have higher income earning potential and more alternative income earning opportunities, such as formal and informal

employment. According to Wasonga (2009), education provides an opportunity for households to diversify their livelihood portfolios, especially through employment as a source of wage and remittances. In addition, the *size of a family* may also be directly proportional to its demand for food and income to secure other necessities. In this study the size of a household as the sum total of a household head, spouse, off spring and dependants.

Further, in the pastoralist community, employment outside the pastoral sector is one important way of diversifying sources of livelihood. It is important to note that although some pastoralists are currently living off-pastoral sector for various reasons, such as employment, by tradition, most of them remit part of their wages to their families back home. This favorably alters such households' resource base. Wage transfers received from employed members is assumed to ease the dependency on livestock, crop cultivation and land resource base and reduce poverty. Household receiving remittances are therefore expected to be less dependent on livestock for their needs, and more secure in food and other needs than their counterparts who do not receive such remittances (Galvez & Kleit, 2011).

Finally, literature on livelihood diversification across Africa has pointed to the increasing role of non-farm incomes in poverty reduction. Therefore, exploiting these off-farm opportunities could offer a pathway out of poverty for the rural poor (Barrett, Bezuneh & About, 2011). Since many rural households derive livelihoods from some form of non-farm activity, such as trade and state social support for the elderly citizens, increasing the viability and range of such activities would improve their livelihood security and living conditions (Thorbecke, 2007). But, expansion of these opportunities is related to the asset status and barriers to entry into market economy, thereby resulting in differential access to markets (Ellis, 2013).

2.3 Economic Activities and Household Income

The empirical results over the influence of economic factors on households' incomes are mixed. Recent studies found that households with multiple sources of income do not experience significant fluctuations in their income levels (Wang and Wen, 2011). Evidence suggests that income increase in the case of households that engage in multiple economic activities (Engelhardt, 2006). Contrary, Hsueh (2010) recognize that income fluctuations have a direct impact on the savings of households. The author justifies that incomes increases with respect to economic activities, cause an increase in wealth of the family. Even if there is no

general agreement on the effect of economic activities on household income level, both views affirm that the overall effect of economic activities changes on income and wealth is very hard to determine.

Among pastoral households in Africa and Kenya in particular, the problem of curtailed mobility and shrinking grazing areas has increasingly forced them to settle. Households in marginal pastoral areas are characterized by few resources, low income, low level of human and social capital, and limited access to markets and service institutions like credit institutions, extension and plant protection (Ogato, Boon & Subramani, 2009). Crop and livestock production are the main income sources in addition to other non-farm income sources such as selling labor, charcoal and seasonal migration (Rutten, 2012). Pastoral household income areas are characterized by seasonal fluctuations, which force people to engage in many activities like selling firewood and charcoal.

Household income is not static, households often move in and out of low incomes from time to time. This is unsurprising in Kenya, given that economies of East African countries mainly depend on land based production systems and are affected by seasonality and highly variable climatic conditions. Changes in income status can be due to economic cycles and shocks, such as poor weather, loss of employment, or loss of a major income earner through death, injury or long illness. In addition, institutions for income and consumption smoothing in these economies are either inadequate or are absent altogether (Kristjanson, Krishna, Radeny & Nindo, 2009). Nonetheless, some households do manage to escape poverty, while others remain in poverty for extended periods of time. Understanding what factors drive household incomes is extremely important for the design of poverty reduction strategies, and is still an open area for research (Suri, Tschirley, Irungu, Gitau & Kariuki, 2008). However, in order to address incomes among the agro-pastoral communities, governments, non-governmental organizations and international agencies must understand more clearly the geo-physical, economic and cultural environments within which they live as well as their livelihood systems (Campbell, 1999). This study will therefore seek to find out which factors and to what extent they affect household income in the semi-arid areas of Chiakariga County Assembly Ward, Tharaka-Nithi County.

2.4 Institutional Infrastructure Facilities and Household Income

One important way to enhance household income is by improving access to credit facilities to farmers to enable them afford technologies and even essential inputs for production. The Kenyan government, through the Vision 2030, has identified poor access to and the cost of credit rural financial services as major contributing factors to the decline in agricultural productivity, leading to low income levels for the households in rural areas and hence low level of commercialization (Thorbecke, 2007).

The coverage of financial services in Kenya, like in many other Sub Sahara Africa countries, is currently estimated at just 10 percent whereas those operated by formal financial organizations are usually not accessible to low income earners, particularly in the more remote areas where the banking infrastructure tends to be under-represented. The credit problem is further aggravated by the inability of formal institutions to lend to smallholder income earners due to lack of proper records, lack of tangible collateral such as titles to land, and lack of valuable assets. The situation is compounded by inadequate laws to help speed up liquidation of assets for the benefit of lending institutions when borrowers default. In spite of attempts by the government to diversify formal credit channels such as rolling out the Women Enterprise Fund (WEF) and the Youth Enterprise Fund (YEF), many households in rural areas still have credit constraints. In trying to overcome access to credit financial services obstacles, many households resort to forming credit groups through which they mobilize funds to loan to each other. However, such credit is limited in amounts due to low funds mobilization restricted by membership and geographical spread and hence forcing them to seek additional credit from other financial institutions (Fernandez, Otero, Vivel & Rodeiro, 2009).

Further, According to Ruda *et al.* (2010), the poor often lack access to insurance services; so many individuals prefer strategies to avoid risk. Based on this statement, one strategy for avoiding or minimizing risk is to engage in a wide range of income generating activities so that if one activity fails the individual may fall back on another. As such, the rural poor often pursue a diverse range of income generating activities. Nyoro *et al.*, (2002) observes that lack of working capital and low liquidity limit the farmer's ability to purchase productivity enhancing inputs like seeds, fertilizers and pesticide. In spite of the relatively high adoption

rates of these inputs, the quantities used are low and indeed, access to formal credit has been found to enhance agricultural productivity through the improvement of technical efficiency in maize production in Kenya (Kibaara, 2005). Credit programs have also been instrumental in encouraging farmers to take up new technologies it is argued that financial credit is the most flexible form of transferring economic resources to the poor as one can buy anything that is for sale with cash obtained through credit (Padmanabhan, 2006).

Goldberg and Karlan (2008) on the contrary noted that the basic premise of microfinance of extending credit to the poor for investing in entrepreneurial activities so as to increase the welfare of borrowing households remains untested by rigorous scientific standards. They further noted that, access to credit by many very poor households has remained a development challenge worldwide (Kibaara, 2005). With the promise to help reduce poverty and spur economic development through access to credit, commercial banks have faced challenges expanding access to the poor and low-income households in developing economies due to high transaction costs. As shown by the 2006 national survey on financial access in Kenya by Steadman Group, 30.7% of Kenyans are currently accessing formal or informal credit/loan financial services while 8.1% have used credit financial services in the past. The categories however exclude those who only borrow from family friends. This directly translates to household income.

2.5 Social Cultural Factors and Household Income

Income level for households remains an important avenue of alleviating rural poverty especially in Developing Countries (Abdullah & Markandya, 2012). There is continued emphasis on increasing rural income generating activities to rural households globally whose adoption at household level is quite low in the SSA (Kemmler, 2007). However, increased concern does not translate into automatic adoption by rural households. Additionally, income does not guarantee use of the income among all end users (Winkler, 2011). There is general consensus that households' head income is a major factor that determines the livelihood in the residential sector (Abdullah & Markandya, 2012). Studies further show income to be a prime driver of poverty elevation; reporting strong correlation between income increase and poverty reduction (Barnes). Electricity has been seen as a key factor in income generation and poverty alleviation. However, according to Mishra (2010), income cannot be a key determinant of

electricity adoption and also there is a negative correlation between electricity adoption and income. Ketlogetswe *et al.* (2007) indicated that connection rates in Botswana were very low despite friendly payment systems; 10% covered at installation and 90% of the remaining cost spread across 10 years.

It is recognized that very few people collect all their incomes from any one source, hold their wealth in form of single asset, or use their assets in just one activity (Barretta *et al.*, 2001). Mishra (2010) indicated that pastoralists in Kenya diversify their income sources as a management risk while SSA (Haggblade *et al.*, 2010) shows that major determinants of farmers' livelihoods in central Kenya are risk and returns. However, there is limited information on the factors influencing income diversification in arid and semi-arid zones.

Recent studies in Sub-Sahara Africa (SSA) indicate that rural households are increasingly diversifying their income sources by combining farm and non-farm activities to sustain their livelihoods (Winters, McCulloch & McKay, 2010). Asset, activity and income diversification characterize the livelihood strategies of rural households in rural Africa (Barrett, Reardon and Webb, 2001). Incomes from non-farm sources have grown in importance and account for between 35–50% of rural household incomes in SSA (Haggblad *et al.* 2010), with reliance on non-farm income sources higher in some areas (e.g. as high as 80–90% in southern Africa). However, the common pattern is for such activities to be prevalent in areas with good agricultural potential, good market access, close to urban areas and those with better infrastructure (Winters *et al.* 2010).

2.6 Theoretical Orientation

The relevant theories discussed here are the stakeholder theory, the public participation theory, Absolute income hypothesis and relative income hypothesis.

2.6.1 Social Capital Theory

In order to produce improvements in quality of life and social cohesion as ascribed by human development theory, people often need to be linked through social capital (Kapoor, 2009). Social capital has been described as the "networks, together with shared norms, values and understandings that facilitate cooperation within or among groups" (Cote and Healy, 2001). Drawing from this definition, Dugdale (2011) concludes that the main aspects of social capital

should therefore include citizenship, neighborliness, social networks and civic participation. Social capital, as observed by San and Portes (2009) is important to the functioning of community life. The theory views sustainability as an asset, occurring naturally and with varying degrees within societies, which allows them to maintain coherences and overcome challenges and hardship (McKenzie, 2007). Social capital, according to Kapoor (2009), is the product, intentional or unintentional, of social processes aimed at the building and reproduction of durable and useful social relationships necessary for both material and economic benefits. Consistent with Bramley and others' definition is McKenzie (2007) view that social capital consists of shared knowledge and related organizational networks that enhance the potential for effective individual and collective action in human social systems. These relationships are believed to help enlarge individual or collective actors' action of capabilities and can be extended to social system's action of capabilities too. Social capital is measured at various levels, namely: individual, community, country or organizational.

The main weakness in social capital theory is that, "it produces descriptions that retain unresolved tensions" (Haynes, 2009: 16-17). The theory thus lacks a framework that explains its contribution as more than the sum of the various kinds of relationships. Consequently no consensus exists as to what it is in reality. It is because of these that its critics claim that despite its vast mention in literature, social capital fails to provide a coherent concept at all; making it an elusive concept. According to Hynes (2009), some of the critics, for instance, Ben Fine have argued that theory is highly political in both neutralizing dissent, but systematically disregarding key questions and issues concerning the social problems it is meant to address. This raises questions on its implications as a theory, as well as the type of explanations it advances. Furthermore, there still exist some unresolved methodological and conceptual issues related to the concept and measurement of social capital (Tzanakis, 2013).

2.6.2 Public Participation Theory

Arnstein (1969) provides an overview of the different ways the public can be involved in decision making and the various levels of public participation. Further Arnstein defines public participation as a process in which people, and especially disadvantaged people, influence resource allocation, policy and program formulation and implementation. In this model people are expected to be responsible and should, therefore, be active participants in public service

decision making. On the other hand, Brett (2003) notes that public participation has gained support in response to demands for greater individual and community control over the activities of governments towards its citizens. Further Brett points out that public participation and involvement in decision-making can succeed for certain projects depending on the circumstances. This approach of public participation however, fails in situations where local conditions make collective action very difficult, or where it is manipulated by implementing authorities to justify their own actions or poor performance.

In a review of literature Muhangi (2007), points out that the rationale for public participation may include; being a means of improving economic wellbeing, a way of responding to society needs, poverty alleviation for the local people, and improving income levels by allowing mobilization of local resources. This theory therefore is believed to promote more equitable distribution of the benefits that accrue from development activities and in line with the above, Chambers (1997) argues that participation empowers citizens so that they can continue to direct and support future changes.

Brett (2003) recommends for a more people-driven development that emphasizes the need for institutional strengthening and building local capacity and accountability for sustainability of income generating activities. Brett observes that citizenship is marked first of all, by active participation in public affairs and decision making and that interest in public issues and devotion to public causes are the key signs of civic duty. Participatory theory was found to be relevant to this study because household income is in line with most of the above mentioned claims made by the advocates of the theory. Project beneficiaries who participate in the program activities are empowered to demand services, develop a sense of ownership of the program and a sense of belonging to the projects. Participation theory therefore provides a good theoretical framework and foundation on which this study is based (Muhangi, 2007)

2.6.2 Absolute Income hypothesis

Keynes (3616) was the first to develop a systematic theory of aggregate consumption expenditure by households. He assumed consumption expenditure to be a function of current disposable income. Keynes absolute income hypothesis is based on the psychological law, which states that men are disposed, as a rule and on average, to increase their consumption as their income increases but not as much as the increase in their income (Keynes, 3616). The

marginal propensity to consume out of disposable income is positive and less than one. Household's current consumption expenditure is a positive function of real current disposable income. As the income increases, the increment is partly consumed and partly saved for purposes of financial security in periods of unemployment, illness, death of bread winner or for investment so as to enhance future income. The absolute income hypothesis is a short run theory and makes the assumption that marginal propensity to consume (MPC) is between zero and one. MPC declines with increase in income, implying that marginal propensity to save increases as income increases. The implication of this is that low income families save a lower percentage of their income as compared to high income families (Haynes, 2009).

The proposition of the absolute income hypothesis that MPC is positively related to income was at first accepted, but empirical studies have shown that MPC is stable over time (Kuznets, 1946). Available data on aggregate consumption and savings over time does not support the proposition that MPC is less than average propensity to consume (APC), and that marginal propensity to save grows over time as aggregate income increases. However, the constant slope of the consumption function does not alter the basic proposition of absolute income hypothesis which postulates that consumption is an increasing function of disposable income (McKenzie, 2007).

2.6.3 Relative Income Hypothesis

Relative income hypothesis is another consumption theory that was proposed by Duesenberry (1949). After the Second World War, due to the apparent contradictions of absolute income hypothesis and observed facts, economists carried out studies to resolve the contradictions. According to relative income hypothesis, a household's consumption expenditure is a function of the relative income of the household (Dupas & Robinson, 2009). The relative income can be the average income of households in the neighborhood where the household resides, or it can be the highest income that the household has attained in the near past. When a household's income falls, the household dis-saves or borrows in order to prevent a large fall in their living standards and also to maintain their living standards at par with their peer groups. This is an important distinction between absolute income hypothesis and relative income hypothesis. The short run APC is greater than the long run APC according to relative

income hypothesis. This implies that the short run average propensity to save is smaller than the long run average propensity to save (Edwards, 1996).

According to the relative income hypothesis, an increase in income is always proportional to the increase in household consumption expenditure irrespective of whether the increase in income is small or large. However, empirical evidence suggests that exceptionally large and unexpected increases in incomes are often associated initially with a less than proportionate increase in consumption. According to the relative income hypothesis, consumption standards are irreversible in the short run, but not in the long run because people cannot go on dis-saving or borrowing to maintain their living standards, as it is not sustainable if incomes continue to decrease (Edwards, 1996). According to this consumption theory, incomes and consumption change in the same direction, which implies that recession is always accompanied by decreases in aggregate consumption expenditure. This was contradicted in the United States of America between 1948 and 1949, after the Second World War when consumption expenditure was rising while the disposable income was decreasing. The relative income hypothesis was a significant improvement over the absolute income hypothesis (Dupas & Robinson, 2009).

2.7 Conceptual Framework

Independent variable

Dependent variables

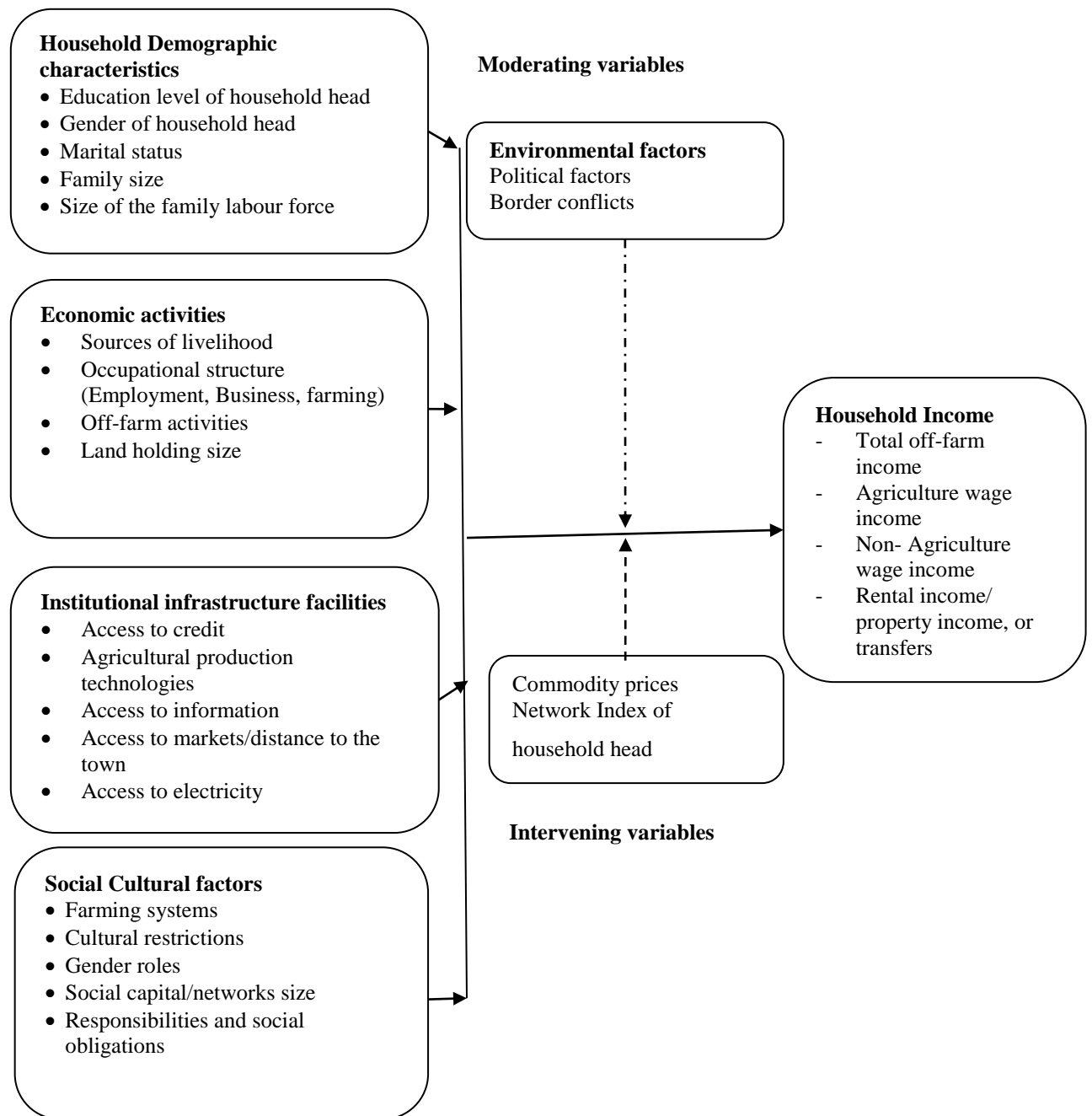


Figure 2. 1: Conceptual Framework

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodology that was adopted in the operationalization of the research and achievement of the study objectives. Therefore, in this section the research identifies the procedures and techniques that were used in the collection, processing and analysis of data. Specifically the following subsections were included; research design, target population and sampling, data collection instruments, data collection procedures and finally data analysis.

3.2 Research Design

The study adopted a descriptive research design to find out the factors influencing household income in Chiakariga County Assembly Ward, Tharaka-Nithi County. A descriptive design is concerned with determining the frequency with which something occurs or the relationship between variables (Bryman & Bell, 2011). Thus, this approach was suitable for this study, since the study intended to collect comprehensive information through descriptions which was helpful for identifying variables. The method was chosen since it was more precise and accurate as it involved description of events in a carefully planned way (savings and credit co-operatives). A descriptive research design determines and reports the way things are (Nassiuma, 2012). Sekaran (2010) observes that a descriptive research design is used when data are collected to describe persons, organizations, settings or phenomena. The data collection for descriptive research presents a number of advantages since it can provide a very multifaceted approach using interviews, observations, questionnaires and participation.

3.3 Target Population

According to Saunders, Lewis and Thornhill (2009), a population is the total collection of elements about which we wish to make inferences. The target population for this study was composed of various stakeholders in Chiakariga County Assembly Ward, Tharaka-Nithi County as shown in table 3.1.

Table 3. 1: Composition of target population in Chiakariga Ward, Tharaka Nithi County.

Population subgroups	Target Population
Household heads	5,683
County officials	93
Local administrators	63
Religious Leaders	59
Youth Leaders	23
Women groups Leaders	73
Community Elders	91
Traders Associations representatives	53
Total	6,138

Source: Chiakariga Sub-County Public Records (2016)

3.4 Sample size and Sampling Procedures

Sampling is a deliberate choice of a number of people who are to provide the data from which a study will draw conclusions about some larger group whom these people represent.

3.4.1 Sample Size Estimate

The sample size is a subset of the population that is taken to be representative of the entire population (Kumar, 2005). A sample of 361 respondents was calculated from the target population of 6138 and at 95% confidence level and a tolerable margin of error of 0.05 using the formula provided by Kothari (2004) as follows.

$$n = \frac{z^2 \cdot N \cdot \theta_p^2}{(N - 1)e^2 + z^2 \theta_p^2}$$

Where; n = desired size the sample,

N = Size of the target or accessible population given as 6138,

e = Acceptable error and given as 0.05,

\hat{p} = The standard deviation of the population and given as 0.5 where not known,

Z = Standard normal deviate at a confidence level given as 1.96 at 95% confidence level.

The sample size of 361 respondents shown in Table 3.2 far exceeds the minimum size of 30 proposed by Saunders *et al.*, (2009).

Table 3. 2: Sample size estimate

Group	Target Population	Ratio	Sample size
Household heads	5683	0.06	334
County officials	93	0.06	5
Local administrators	63	0.06	4
Religious Leaders	59	0.06	3
Youth Leaders	23	0.06	1
Women groups Leaders	73	0.06	4
Community Elders	91	0.06	5
Traders Associations representatives	53	0.06	3
Total	6138		361

3.4.2 Sampling Procedures

The required sample of respondents was selected using stratified proportionate sampling technique. Stratified random sampling was considered unbiased when grouping heterogeneous population into homogenous subsets. Individuals were sampled randomly

within the subsets or subgroups so as to ensure representativeness. The goal of stratified random sampling was to achieve the desired representation from various sub-groups in the population. In stratified random sampling subjects are selected in such a way that the existing sub-groups in the population are equitably represented in the sample (Kothari, 2012). The method involves dividing the population into a series of relevant strata, which implies that a random sample is likely to be more representative (Saunders *et al.*, 2009).

3.5 Research Instruments

Primary data were obtained using self-administered questionnaires. The questionnaire was made up of both open-ended and closed-ended questions. The open ended questions were used so as to encourage the respondent to give an in-depth response without feeling held back in illuminating related issues of investigation. The closed ended questions allowed the respondents limited options that had been stated. According to Saunders *et al.*, (2012), the open ended or unstructured questions allow profound response from the respondents while the closed or structured questions are provide simple results and are generally easier to evaluate.

3.5.1 Validity of Instruments

Validity is the accuracy and meaningfulness of inferences, based on the research results. One of the main reasons for conducting the pilot study was to ascertain the validity of the questionnaire. The study used both face to face and questionnaire content to ascertain the validity of the questionnaires (Bell, 2010). Content validity draws an inference from test scores to a large domain of items similar to those on the test. Content validity is concerned with sample-population representativeness. Sekaran and Bougie (2010) stated that the knowledge and skills covered by the test items should be representative to the larger domain of knowledge and skills.

3.5.2 Reliability of Instruments

The pilot testing was conducted by administering the questionnaire to 20 representatives of the interest groups. These respondents and the results of their responses were not included in the final sample. The pilot group was selected through random sampling. Sekaran and Bougie (2010) recommend that the questionnaire pre-tests should be done through personal interviews in order to observe the respondents reactions and attitudes. Instrument reliability is the extent to which a research instrument produces similar results on different occasions under

similar conditions. It's the degree of consistency with which it measures whatever it is meant to measure (Bryman & Bell, 2011). Reliability is concerned with the question of whether the results of a study are repeatable.

Spearman rank correlation coefficient was used to work out the correlation. The following shows the results. A coefficient correlation of 0.699 is considered adequate as shown below.

$$r^2 = \frac{1 - 6 \sum d^2}{n(n^2 - 1)}$$

r^2 = Coefficient of Determination

r = Correlation coefficient

n = Number of pairs

d = Difference between the pairs

\sum = Summation

3.6 Data Collection Procedures

The researcher obtained an introduction letter from the university, which was presented to each respondent as a way of showing good faith. The drop and pick method was preferred for questionnaire administration to give respondents enough time to give well thought out responses. According to Pole and Lampard (2010), a self-administered questionnaire was appropriate tool to elicit self-report on people's opinion, attitudes, beliefs and values. Research assistants presented themselves with 361 semi structured questionnaires to the respondents across the area of study. The researcher assistants later passed through to the respondents to and picked the filled questionnaires to prepare them for analysis.

3.7 Data Analysis Techniques

Before processing the responses, the completed questionnaires were edited for completeness and consistency. The data were then coded to enable the responses to be grouped into various categories and corresponding tables. Data were then analyzed using Statistical Package for Social Sciences (SPSS Version 21.0). Descriptive statistics, such as frequencies, percentages, mean score and standard deviation were computed for all the quantitative variables and

information presented in the form of tables and graphs. Descriptive statistics were used because they enabled the researcher to meaningfully describe distribution of scores or measurements using a few indices (Mugenda & Mugenda, 2003). The qualitative data from the open ended questions were analyzed using conceptual content analysis. Based on Zibran (2012) recommendation on the analysis of qualitative data, primary data were organized, sorted out, coded and thematically analyzed, searching for meaning and interpretation, and drew conclusions based on the concepts.

Inferential data analysis was done using tests of relationship between variables, including Pearson correlation coefficient and multiple regression analysis. According to Tanton (2011), in many statistical methods that use parametric measures, one presumes (at least approximately) the variables measured were normally distributed.

Pearson correlation coefficient was used to determine the strength and the direction of the relationship between the dependent variable (household income) and the independent variables (household demographic characteristics, social cultural factors, institutional infrastructure facilities and economic activities). The analysis using Pearson's product moment correlation was based on the assumption that the data were normally distributed and also that the measurements of the variables were continuous. According to Creswell (2010), correlation technique is used to analyze the degree of association between two variables. Only variables that produced significant correlation results entered into regression analysis.

Multiple regression analysis was used to establish the relations between the independent (baseline) and dependent (response) variables. The multiple regression model was used because it is the procedure that uses two or more independent variables (e.g. age and gender) to predict a dependent variable (e.g. household income). The study used multiple regressions analysis to analyze the collected data to measure the effects of factors influencing household income on the household income. Multiple regression attempts to determine whether a group of variables together predict a given dependent variable (Babbie, 2004). Since there were four independent variables in this study the multiple regression models generally assumed the following equation;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where:-

Y= Household Income

β_0 =constant

X_1 = Household demographic characteristics

X_2 = Economic activities

X_3 = Institutional infrastructure facilities

X_4 = Social cultural factors

ϵ =Error Term

In testing the significance of the model, the coefficient of determination (R^2) was used to measure the extent to which the variation in household income could be explained by the variations of various independent factors. ANOVA F-statistic was also computed at 95% confidence level to test whether there was any significant relationship between household income and factors affecting it. This analysis was done using SPSS software version 21.0 and the statistical outputs subsequently interpreted. All necessary diagnostic tests were performed and at significance levels of 95 percent.

3.8 Ethical Considerations

The researcher observed the following standards of behaviour in relation to the rights of those who became subject of the study or were affected by it: First, the participants were informed of the objective of the study and the confidentiality of obtained information, through a letter enabled them to give informed consent. Once consent was granted, the participants maintained their right, which entails but was not limited to withdraw or decline to take part in some aspect of the research including rights not to answer any question or set of questions and/or not to provide any data requested; and possibly to withdraw data they had provided. Caution was observed to ensure that no participant was coerced into taking part in the study and, the researcher used minimum time and resources in acquiring the information required.

Secondly, the study adopted quantitative research methods for reliability, objectivity and independence of the researcher.

In summary, while conducting the study, the researcher ensured that research ethics were observed. Participation in the study was voluntary. Privacy and confidentiality was also observed. The objectives of the study were explained to the respondents with an assurance that the information provided was to be used for academic purpose only.

3.9 Operational Definition of Variables

The operational definition of the study variables is shown in table 3.3.

Table 3. 3: Operational Definition of the Variables

Objectives	Variables	Indicator	Measurement	Measurement scale	Tools of Analysis	Data analysis
To determine how the household demographic characteristics influence household income in Chiakariga County Assembly Ward.	Household demographic characteristics	Education level of household head	Number of Household Heads with tertiary education	Nominal	Mean	Descriptive Correlation
		Gender of household head	Sexual orientation of the Household Head	Ordinal		
		Marital status	Whether single, married	Ordinal	Percentage	Regression Chi-square
		Family size	Number of people in a household	Ordinal		
		Size of the family labour force	Number of family members working			
To establish how economic activities influence household income in Chiakariga County	economic activities	Sources of livelihood	Number of sources	Interval	Mean	Descriptive Correlation
		Occupational structure (Employment, Business, farming)	Number of occupations in a household	Ratio		
		Off-farm activities	Number of activities	Interval	Percentage	Regression
		Land holding size	Acreage owned			

Assembly Ward.						Chi-square
To examine how institutional infrastructure facilities influence household income in Chiakariga County Assembly Ward.	Infrastructure facilities	Access to credit Agricultural production technologies Access to information Access to markets/distance to the town Access to electricity	Number of credit facilities Number of technology Level of access Number of kilometers Connection to the national grid	Nominal Nominal Ordinal	Mean Percentage	Descriptive Correlation Regression Chi-square
To assess how social cultural factors influence household income in Chiakariga County Assembly Ward	Social cultural factors	Farming systems Cultural restrictions Gender roles Social capital/networks Responsibilities and social obligations	Types of systems Norms and taboos Roles and responsibility assigned Size of network Number of social responsibilities	Interval Ordinal Ratio	Mean Percentage	Descriptive Correlation Regression Chi-square

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTREPRETATION

4.1 Introduction

This chapter presents results in tables, graphs and pie charts and interprets them. The results are discussed and compared with findings of other researchers in the same field of study. The chapter contains findings on the characteristics of the respondents, their opinions on the factors influencing household income in the Unbound Project Area in Chiakariga County Assembly Ward in Tharaka-Nithi County, Kenya. In order to extrapolate the findings, the discussion of the results expounds the collective reactions of the respondents.

4.1.1 Response Rate

The study targeted a population of 6,138 resident stakeholders in Chiakariga County Assembly Ward in Tharaka-Nithi County. Out of a sample size of 361 questionnaires administered, a total of 270 filled questionnaires were returned, giving a response rate of 74.8%. This response rate is well above the rate of 50% prescribed by Mugenda and Mugenda (2011). The study made use of frequencies (absolute and relative) for single response questions. For matrix questions, the study used the Likert scale, where 1-5 points were used in computing the mean scores and standard deviations. These were then presented in tables as appropriate with explanations being given in prose. Findings from open ended questions were mainly presented in prose.

4.1.2 Reliability Analysis

A pilot study was carried out to determine reliability of the questionnaires. The pilot study involved 20 respondents. Reliability analysis was subsequently done using Cronbach's alpha (α), which measures the internal consistency by establishing if certain items within a scale measure the same construct. Gliem and Gliem (2012) established the alpha value threshold at 0.7 and this value formed this study's benchmark. Cronbach Alpha was established for every objective and it was found that all the four objectives had reliability values that way above or equal to the prescribed threshold of 0.7 as shown on table 4.1. It was therefore concluded that the research instrument was reliable and required no further amendments.

Table 4. 1: Instrument reliability Analysis

Summary of research objectives	Cronbach's alpha
Household demographic characteristics	.829
Economic activities	.733
Institutional Infrastructure facilities	.751
Social cultural factors	.748

4.2 Demographic Information of the Respondents

The study sought to enquire about the characteristics of individual respondents, including the level of education, and the number of years respondents had stayed in Tharaka-Nithi County. This general information is presented in table 4.4.

4.2.1 Highest Academic Qualification

The respondents were requested to indicate their highest level of education. The results are as shown in the table 4.2.

Table 4.2: Levels of Education of the Respondents

	Frequency	Percent
Primary Level only	122	45.2
Secondary Level only	100	37.0
Diploma level	26	9.6
Bachelor Degree	22	8.1
Total	270	100.0

The findings in table 4.2 revealed that majority of the respondents, 54.7 %, were educated beyond primary school level. However, most of them, 45.2%, had only primary level of education. Those with secondary school education were a significant number, 37.0%, diploma level of education had quite a small population, 9.6% while those with Bachelor's degree was even smaller, only 8.1%. This implies that the communities in Chiakariga Subcounty Ward

were generally well educated and had the basic requirement for economic empowerment. They therefore had significant potential to increase household income.

4.2.2 Number of years respondents lived in Tharaka-Nithi County

The respondents were also requested to indicate the duration of residence in time in Tharaka-Nithi County. The responses obtained are shown in table 4.3.

Table 4. 3: Duration of stay in Tharaka-Nithi County

	Frequency	Percent
Less than 1 year	10	3.7
1 - 5 years	13	4.8
6 - 10 years	10	3.7
11 - 15 years	20	7.4
More than 15 years	217	80.4
Total	270	100.0

The findings in table 4.3 revealed that the majority of the respondents, 80.4% had lived in Tharaka-Nithi County for more than 15 years. In total, only a small percentage, 19.6% had lived in the county for less than 15 years. These results indicate that most of the respondents were residents and were therefore able to give reliable information about the resident population in Chiakariga Sub-county Ward.

4.3 Household Demographic Characteristics and Household Income

These two variables sought to measure the effect of different characteristics of households on family income in Unbound Project Area in Chiakariga County Assembly Ward in Tharaka-Nithi County.

4.3.1 Effect of Demographic Characteristics on Household Income

Respondents were asked to indicate how key demographic characteristics (Education level, gender of the household head, marital status, family size, and size of the family labour force) influenced household income in Chiakariga County Assembly Ward, Tharaka-Nithi County. The summary of responses received is shown in the table 4.4.

Table 4. 4: Extent to which Demographic Characteristics Affected Household Income

	Frequency	Percent
Little extent	30	11.1
Moderate extent	47	17.4
Great extent	79	29.3
Very great extent	114	42.2
Total	270	100.0

The findings in table 4.4 show that 71.5% of the respondents indicated that demographic characteristics had very great impact, 42.2% and great impact, 29.3% on household income in the Unbound Project Area. Only about a third of the respondents said that demographic factors had moderate impact, 17.4% or little impact, 11.1% on household income in the Unbound Project Area. These findings indicate that household demographic characteristics significantly affected household income in Chiakariga County Assembly Ward.

4.3.2 Effects of specific Household Demographic Characteristics on Household Income

The respondents were requested to indicate the extent to which specific demographic attributes affected household income in Chiakariga Sub County, Tharaka-Nithi County. A summary of the mean scores of responses received about specific demographic attributes is provided in table 4.5.

Table 4. 5: Summary of mean scores of specific Household Demographic Characteristics

	Mean	Std. Deviation
Education level	3.159	.947
Gender of household head	2.996	.938
Marital status	3.196	.801
Family size	3.540	.857
Size of the family labor force	3.155	.723

In table 4.5, the larger mean scores represent higher levels of perceived effect of the demographic attribute on household income. The standard deviations indicate the amount of variability around the mean scores among respondents. With a mean score of 3.540 implies that family size was perceived to have the greatest impact on household income in the study

area. The mean score of the other demographic factors, namely; marital status, level of education of family members and size of family labour force, had a mean score of less than 3.2. This score indicates that those demographic factors were perceived to have moderate effect on household. The gender of household head also influenced household income but had low mean score of about three. On the five demographic factors evaluated, there was little variability in the responses of the various respondents, indicating considerable agreement among the respondents.

4.4 Economic Activities and Household Income

The research was also interested in finding out how the economic activities of household members affected household income in Unbound Project Area in Chiakariga County Assembly Ward, Tharaka-Nithi County.

4.4.1 Extent Economic Activities Affects Household Income

Respondents were asked to indicate the extent to which economic activities of family members generally influenced household income in Chiakariga County Assembly Ward, Tharaka-Nithi County. The findings are as shown in the table 4.6.

Table 4. 6: Extent to which Economic Activities of family members Affected Household Income

Impact level	Frequency	Percent
Little extent	28	10.4
Moderate extent	49	18.1
Great extent	84	31.1
Very great extent	109	40.4
Total	270	100.0

According to the findings in table 4.6, 71.5%, 193 of the respondents, indicated that economic activities of family members greatly influenced household income. Those considered economic activities of family members to have moderate or little impact on household income in the Unbound Project Area formed 28.5% only. Most of the respondents, 40.4%, considered economic activities of family members to have a very great influence on household income while 31.1% considered economic activities to have great influence. These results indicate

that economic activities of family members influence household income and collectively contributed to the overall economic status of the household in Chiakariga County Assembly ward.

4.4.2 Contribution of Different Economic Activities to Household Income

The residents of Chiakariga County Assembly Ward were involved in a wide range of economic activities, which made variable contribution to household income and economic wellbeing. The sampled respondents were asked to name and indicate the significance of different economic activities (scores) with respect to their contribution to the household income. The mean scores and their standard deviations from the sample of 270 respondents are shown in table 4.7.

Table 4.7: Significance of different Economic Activities and assets that affected Household Income in the study area.

	Mean	Std. Deviation
Livelihood activities	3.570	.657
Occupation (Employment, Business, Farming)	3.377	.762
Off-farm activities	2.885	.975
Size of family land	3.348	.611
Land ownership and security	3.359	.968

In table 4.7, the respondents indicated with mean of 3.570 that sources of livelihood influenced household income in Chiakariga County Assembly Ward. The respondents said that families with relatively stable sources of livelihood spent less money buying food, water and fuel wood. Sources of livelihood were considered to have the greatest effect on household income and there was considerable agreement on this among respondents as shown by lower standard deviation. Occupation of family members (formal employment, business, and farming) influenced household income to a moderate extent with mean score of 3.377 with moderate response variability among respondents. Respondents further indicated with a mean of 3.359 that land ownership security influence household income in Chiakariga Sub-County, Tharaka-Nithi County to a moderate extent. Land holding size was also indicated with a mean of 3.348 that it influenced household income to a moderate extent. Findings also showed that off-farm activities influences household income to a moderate extent with a mean score of

2.885. As observed by Engelhardt (2006), these results imply that household income improved significantly in the case of households that engaged in multiple economic activities.

4.5 Institutional Infrastructure Facilities and Household Income

Institutional infrastructure facilities, such as market chain, proximity to markets, access roads access to the markets and modes of transportation, can have notable impact on household income. This study sought to find out how the infrastructural facilities in Unbound Project Area in Chiakariga County Assembly Ward affected household income.

4.5.1 Extent to which Institutional Infrastructure Facilities Affect Household Income

Respondents were required to indicate the extent to which institutional infrastructure facilities in general influenced household income in the study area. The results are summarized in table 4.8.

Table 4.8: Extent to which Institutional Infrastructure Facilities Affected Household Income

	Frequency	Percent
Little extent	26	9.6
Moderate extent	51	18.9
Great extent	87	32.2
Very great extent	106	39.3
Total	270	100.0

The findings in the table 4.8 show that a total of 71.5% of the respondents indicated that institutional infrastructure facilities had very great impact, 39.3% and great impact, 32.2% on household income in the Unbound Project Area. There was clear agreement on the important role of infrastructure in influencing household income. The rest of the respondents said that institutional infrastructure facilities had moderate, 18.9% or little impact, 9.6% on household income in the Unbound Project Area. These were mainly households without surplus crops or milk to transport to the market for sale. These findings indicate that institutional infrastructure facilities significantly affected household income in Chiakariga County Assembly Ward.

4.5.2 Extent to which specific infrastructure Facilities Affected Household Income

This study sought to find out how different aspects of infrastructural facilities in Unbound Project Area in Chiakariga County Assembly Ward affected household income. The results are shown in the table 4.9.

Table 4.9: Effects of different Institutional Infrastructure Facilities on household income

	Mean	Std. Deviation
Access to credit markets	2.644	.990
Access to agricultural production technologies	3.277	.688
Access to essential information	2.718	.965
Access to markets/distance to the town	2.922	.769
Access to electricity	3.459	.550

According to table 4.9, the larger mean scores represent higher levels of perceived effect of specific institutional infrastructure facilities on household income. The standard deviations indicate the amount variability around the mean scores among respondents. With a mean score of 3.459 implies that access to electricity was perceived to have the greatest impact on household income in the study area. This implies that the respondents considered electric power to be crucial in diversifying economic activities and improving household income. The mean score of the other institutional infrastructure facilities, namely; agricultural production technologies, access to the market/distance to the town, access to the information and credit markets, were less than 3.3. These scores indicate that those institutional infrastructure facilities were perceived to have moderate effect on household income. On the five institutional infrastructure facilities evaluated, there was little variability in the responses of the various respondents, indicating considerable agreement among the respondents. This finding implies that some aspects of institutional infrastructure facilities significantly influenced the household income in Chiakariga county assembly ward, Tharaka-Nithi County.

4.6 Social Cultural Factors and Household Income

The respondents had to answer some questions that relate to socio-cultural factors and how they affect household income in Chiakariga county assembly ward in Tharaka-Nithi County.

4.6.1 Extent Social Cultural Factors Affect Household Income

Respondents were required to indicate the extent to which social cultural factors affected household income in Chiakariga County Assembly Ward, Tharaka-Nithi County. The social cultural factors included traditional role of men and women in generating and owning property as well as cultural barriers to women exploring new ways of generating household income. The findings are summarized in the figure 4.10.

Table 4. 10: Extent to which Social Cultural Factors Affected Household Income

	Frequency	Percent
Little extent	31	11.5
Moderate extent	47	17.4
Great extent	80	29.6
Very great extent	112	41.5
Total	270	100.0

According to the findings in table 4.10, 71.1% of the respondents indicated that social cultural factors greatly influenced household income. Those most cited social-cultural constraints were dependence of women and limited alternative income generating activities. The social cultural factors considered to have moderate or little impact on household income in the Unbound Project Area formed 28.9% only. Most of the respondents, 41.5% considered social cultural factors of the communities have the very great influence on household income while 29.6% considered social cultural factors to have great influence. These results indicate that social cultural factors of the communities influence household income and collectively contributed to the overall economic status of the household in Chiakariga County Assembly ward.

4.6.2 Extent to which specific Social Cultural Factors Affected Household Income

The respondents were furthermore requested to indicate the extent to which the following aspects of social cultural factors affect household income in Chiakariga county assembly ward, Tharaka-Nithi County. The results are shown in the table 4.11.

Table 4.11: Aspects of Social Cultural Factors that affecting household income

	Mean	Std. Deviation
Irrigation programs	2.851	.853
Model farming	3.170	.713
Green houses farming	3.088	.674
Genetically modified products	2.837	.492
Relief foods	2.611	.767

According to the results of the findings in table 4.11, all the five aspects of social cultural factors namely; relief foods, green houses farming, irrigation programs, genetically modified products and model farming have a moderate effects on household income in the Unbound Project in Chiakariga County Assembly ward as were noted with a mean ranging between 3.1 and 2.6. On the five social cultural factors evaluated, there was little variability in the responses of the various respondents, indicating considerable agreement among the respondents. These results mean that aspects of social cultural factors significantly influence the household income in Chiakariga county assembly ward.

4.7 Principal sources of Household Income

The respondents were asked to indicate the significance of various sources of household income. The findings are summarized in the Table 4.12.

Table 4.12: Household Income

	Mean	Std. Deviation
Total off-farm income	3.589	.937
Agriculture wage income	4.578	.488
Non- Agriculture wage income	4.377	.906
Rental income/ property income, or transfers	3.388	.807

According to table 4.12, the respondents indicated with mean of 4.578 that agricultural wage income has greatly increased among the household income with most of the household in Chiakariga County Assembly Ward. Non-Agricultural wage income and total off-farm income were considered to have greatly increased for the past five years and there was considerable variability in agreement on this among respondents as shown by higher standard deviation. However, rental income/ property income, or transfers has been on a constant rate

for the past five years as indicated by a mean score of 3.388. These results imply that household income has significantly increased in unbound projects in Chiakariga county assembly ward, Tharaka-Nithi County.

4.8 Relationship between household income and socio-economic variables

Pearson correlation coefficient was used to determine the strength and the direction of the relationship between the dependent variable and several independent variables targeted during this study. The correlation coefficient matrix between the dependent variable, household income and several independent variables is shown in Table 4.13.

Table 4. 13: Pearson Correlation Analysis

		Household income	Household demographic characteristics	Economic activities	Institutional infrastructure facilities	Social cultural facilities
Household income	Pearson Correlation Sig. (2-tailed)	1				
Household demographic characteristics	Pearson Correlation Sig. (2-tailed)	.495 P = .019	1			
Economic activities	Pearson Correlation Sig. (2-tailed)	.887 P = .015	.496 P = .000	1		
Institutional infrastructure facilities	Pearson Correlation Sig. (2-tailed)	.799 P = .026	.096 P = .116	.407 P = .000	1	
Social cultural factors	Pearson Correlation Sig. (2-tailed)	.574 P = .016	.367 P = .000	.443 P = .000	.489 P = .000	1

The results in Table 4.13, indicate that household income was significantly correlated with economic activities of family members ($r = 0.887$, $p = 0.015$). Similarly, it was also

significantly and positively correlated with institutional infrastructures facilities available in the study area ($r = 0.799$, $p = 0.026$, Table 4.10). Results of the correlation test matrix showed that social cultural factors have a positive correlation with household income ($r = 0.574$, $p = 0.016$). Household demographic characteristics had a marginally weak but positive correlation with household income.

4.9 Multiple relationships among dependent and independent variables

Model 1 Regression Analysis of the relationship among the test variables shown in Table 4.13, revealed that there were significant and positive relationship between household income and all the independent variables combined. This overall relationship is summarized in table 4.14. The adjusted R^2 was used to establish the predictive power of the model, which showed that all the variables combined explained 73.4% (Adjusted $R^2 = 0.734$) of the variability of household income in Chiakariga County Assemble Ward.

Table 4. 14: Summary of Regression Model Output

	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.859	0.738	0.734	1.324

According to table 4.14, the study found that independent variables selected for the study (i.e. household demographic characteristics, economic activities, institutional infrastructure facilities and social cultural factors) accounted for 73.4% of the variations in household income in unbound project area. According to the test model, 26.6% percent of the variation in household income could not be explained by the model. Therefore, further studies should be done to establish the other factors that contributed the unexplained (26.6%) of the variation in household income in Chiakariga County Assembly Ward, Tharaka-Nithi County in Kenya. Multiple regression models have been shown to be reliable in predicting changes in a dependent variable from a group of independent variables (Babbie, 2004).

The established multiple regression equation for predicting household income from the four independent variables was:

Predicted Household income, $Y = 3.351 + 0.450 X_1 + 0.865 X_2 + 0.772 X_3 + 0.568 X_4$

Where, Y represents predicted household income

X_1 represents household demographic characteristics

X_2 represents economic activities of household members

X_3 represents institutional infrastructure facilities

X_4 represents social cultural factors

Table 4. 15: Analysis of variance the four independent variables

Model	Sum of Squares	Df.	Mean Square	F	Sig.
Regression	1325.82	4	331.455	186.916	.000
Residual	469.92	265	1.773		
Total	1795.74	269			

In table 4.15, the probability value of 0.00 indicates that the regression relationship was significant in predicting the effects of demographic characteristics, economic activities, institutional infrastructure facilities and social cultural factors on household income. The calculated F (186.916) was significantly larger than the critical value of $F_{0.05, 4, 265} = 2.406$. This again shows that the overall test model was significant.

Pair-wise comparison of regression coefficients and coefficients of determination of individual independent variables revealed significant positive differences as shown in table 4.15. The calculated t-test values were significantly larger than critical values at five percent significant level. However, the most significant relationship was between household income and economic activities of household members as well as social cultural factors, especially the level of education and social status in the community. The influence of the individual socio-

cultural factors on household income may vary from one community to another and may be difficult to isolate. Their impacts should therefore be investigated further.

Table 4. 16: Pair-wise comparisons of the coefficients of determination using t-test.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.351	1.454		2.305	.0220
Household demographic characteristics	0.450	0.213	0.684	2.113	.0356
Economic activities	0.865	0.22	0.609	3.932	.0001
Institutional Infrastructure facilities	0.772	0.371	0.672	2.081	.0384
Social cultural factors	0.568	0.198	0.582	2.869	.0045

Table 4.16 reveals that the regression equation above has established that taking all factors into account (household demographic characteristics, economic activities, institutional infrastructure facilities and social cultural factors) and the constant at zero household income was 3.351. The findings presented also show that taking all other independent variables at zero, a unit increase in the household demographic activities would lead to a 0.450 increase in the scores of household income in unbound project and a unit increase in the scores of economic activities would lead to a 0.865 increase in the scores of household income in unbound project in Chakariga county assembly ward in Tharaka-Nithi County. Further, the findings shows that a unit increases in the scores of institutional infrastructure facilities would lead to a 0.772 increase in the scores of household income. The study also found that a unit increase in the scores of socio-cultural factors would lead to a 0.568 increase in the scores of household income in unbound project in Chiakariga county assembly wards, Tharaka-Nithi County. Overall, economic activities had the greatest effect on the household income,

followed by institutional infrastructure facilities, then social cultural factors while household demographic characteristics had the least effect to the household income in unbound project. All the variables were significant at ($p < 0.05$).

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The purpose of this study was to assess the factors that influenced household income in Chiakariga Ward of Tharaka-Nithi County. The specific objectives were to determine the extent to which rural household income was influenced by demographic characteristics, economic activities of household members, institutional infrastructure facilities and social cultural factors. This chapter presents the summary of key findings, conclusions made from the findings and recommendations arising from the study. The limitations of the findings are indicated and attention drawn to areas requiring further study.

5.2 Summary of Findings

5.2.1 Influence of Demographic Characteristics

This study found that 71.5% of the respondents agreed that demographic characteristics had either very great (42.2%) and great (29.3%) impact on household income in the Unbound Project Area. Only about a third of the respondents said that demographic factors had either moderate or little impact on household income in the study area. The size of the family had the greatest influence on household income while the gender, marital status and education level of the household head had only moderate influence on household income. The gender, marital status and education level of the household head were apparently not crucial factors affecting family income. Large families had potentially large labor force at their disposal and could therefore be expected to generate and maintain higher income levels than small households. However, the income gains expected from a large family labour force were eroded by increased consumption of resources by such large families.

5.2.2 Economic Activities

The study found that, 71.5% (193) of the respondents indicated that economic activities of family members greatly influenced household income. Those considered economic activities of family members to have moderate or little impact on household income in the Unbound Project Area formed 28.5% only. Most of the respondents (40.4%) considered economic activities of family members have the very great influence on household income while 31.1%

considered economic activities to have great influence. The respondents indicated with mean of 3.570 that sources of livelihood influenced household income in Chiakariga County Assembly Ward. The respondents said that families with relatively stable sources of livelihood spent less money buying food, water and fuel wood. Sources of livelihood were considered to have the greatest effect on household income. Occupation of family members (formal employment, business, and farming), land ownership security, land holding size and off-farm activities they moderately influenced the household income in Chiakariga County Assembly Ward.

5.2.3 Institutional Infrastructure Facilities

The research found that institutional infrastructure facilities had very great (39.3%) and great (32.2%) impact on household income in the Unbound Project Area. It was only (18.9%) and (9.6%) of the respondents who said that institutional infrastructure facilities had moderate or little impact on household income in the Unbound Project Area respectively. Further more, the study found that access to electricity was perceived to have the greatest impact on household income in the study area whereas, agricultural production technologies, access to the market/distance to the town, access to the information and credit markets perceived to have moderate effect on household. On the five institutional infrastructure facilities evaluated, there was little variability in the responses of the various respondents, indicating considerable agreement among the respondents.

5.2.4 Social Cultural factors

The study noted that, 71.1% of the respondents indicated that social cultural factors of the communities greatly influenced household income but only 28.9% of the respondents showed moderate and little extent. The study further found that all the five aspects of social cultural factors namely; relief foods, green houses farming, irrigation programs, genetically modified products and model farming had moderate effects on household income in the Unbound Project in Chiakariga County Assembly ward. The five social cultural factors evaluated, had a little variability in the responses of the various respondents, indicating considerable agreement among the respondents.

5.3 Discussion of the findings

5.3.1 Household Demographic Characteristics

The findings showed that demographic characteristics of the household greatly influence the household level of income. These findings are in relation to Rashidi, Aukd and Mohammadian (2012) who stated that demographics have been widely cited to be key determinants of a household's income in both the rural and urban areas. Such demographics which have been cited by scholars as key determinants of household incomes include gender, age, marital status, professional affiliation and education level of owner of house, income of household, size of family, household composition and level of household expenditure.

The results also showed that family size as an aspect of household demographic characteristics has great effect on household income. This is in agreement with Galvez and Kleit (2011) that the size of a family may also be directly proportional to its demand for food and income to secure other necessities. In this study the size of a household as the sum total of a household head, spouse, off springs and dependants. The study noted that the larger the household size, the higher the income required to cater for their necessities. Such family size with large population that has many dependant members, will record low income but if family size is small, the expenditure will be less and hence income will be high. Marital status has also been established that has a significance effects on household income in Chiakariga county assembly ward. Those who were single were noted that they considerably have higher income that those who are married since they have less dependants compared to those who are married.

The level of education attained by the head of a household is also expected to influence access to information, decision making, income and consequently livelihood security of a household. Income of a household is therefore, household income expected to increase as level of education of its head increases. This is because educated household heads are likely to have higher income earning potential and more alternative income earning opportunities. According to Wasonga (2009), education provides an opportunity for households to diversify their livelihood portfolios especially through employment as a source of wage and remittances.

The study further found that the size of the family labour force greatly impacts level of household income. According to Galvez and Kleit (2011) wage transfers received from employed members is assumed to ease the dependency on livestock, crops cultivation and land resource base and reduce poverty. Household receiving remittances are therefore expected to be less dependent on livestock for their needs, and more secure in food and other needs than their counterparts that do not receive remittances.

Gender was also found to influence income of the individuals since gender has an impact on the willingness to save. Pan and Statman, (2010) noted there is higher degree of risk aversion among women than men. Floro and Seguíno (2012) also showed evidence that women do save more relative to men, even after an increase in women's income and bargaining power.

5.3.2 Economic Activities

The findings revealed that economic activities play an important role in determining household income. Engelhardt (2006) supports the findings by suggesting that income increase in the case of households that engage in multiple economic activities.

In particular source of livelihood of the household has an influence on their income. The argument brought forward by Ogato, Boon and Subramani (2009) is that households in marginal pastoral areas are characterized by few resources, low income, low level of human and social capital, and limited access to markets and service institutions like credit institutions, extension and plant protection hence are likely to have a low income. In addition, Rutten, 2012 anchored that crop and livestock production are the main income sources in addition to other non-farm income sources such as selling labor, charcoal and seasonal migration.

Occupation structure was also noted to have an effect on household income. People who engage in business activities and those who are employed were noted that they had higher income than those who only depend on farming activities. This is because the farming activities they have higher risks which associate with bad weather. Rutten (2012) supports the findings by noting that pastoral household income areas are characterized by seasonal fluctuations, which force people to engage in many activities like selling firewood and charcoal.

The study also deduced that land ownership security influences the household income of people of Chiakariga county assembly ward. Those individuals who own land have considerable high income compared to those who have no land ownership security. Households with land, utilizes their land into productive activities, which translates into high income but landless remains to be laborers. Owners of big land had high levels of income compared to small size owner. The reason being that big land owners are in a good position to transform their land to many income generating projects. They are not limited by the land size as those with small scale size of land. Finally the study noted that off-farm activities also affect household income in Chiakariga county assembly ward. Households that engaged in the many off farm activities were likely to have high income as compared to those who engaged in fewer activities.

5.3.3 Institutional Infrastructure Facilities

Institutional infrastructure is very key determinants of household income. Thorbecke (2007) comments that one important way to enhance house hold income is by improving access to credit facilities of farmers to enable them afford technologies and even essential inputs for production. The findings highlighted that access to electricity influences income positively or negatively in that the household who had an access to the electricity notably had higher income as compared to those who did not. Explanation of the finding is that access to electricity cuts off the expenses incurred by not being connected to electricity. Such as alternate use of fuel namely use of petrol to run machines or gas and wood for domestic consumption.

Agricultural technology also contributes to higher income. Modern technologies are fast and cut on labour costs leading to increased saving. The households who have access to markets had also higher income while those who did not have market access, recorded low income. This is all because market access provides means to access essential implements, also selling of products produced. To add on that information, access to markets was a key determinant of household income. Readily available information provided residents with different knowledge such as change in government policies and available market; this contributes to high income for those who have access to information as opposed to those who are not exposed to information. Finally credit market significantly affects the household income. Padmanabhan

(2006) put forward that credit programs have also been instrumental in encouraging farmers to take up new technologies. It is argued that financial credit is the most flexible form of transferring economic resources to the poor as one can buy anything that is for sale with cash obtained through credit.

5.3.4 Social Cultural factors

Social cultural factors influence household income to great extents. The results agree with Kemmler (2007) that there is continued emphasis on increasing rural income generating activities to rural households globally whose adoption at household level is quite low in the South Saharan Africa. The findings also revealed that modern farming affects the household income positively since it leads to increased income. Green housing and electricity programs play a great role in influencing household income. Household who engages in green house farming and irrigation programs were noted to have high income as opposed to those who do not. Electricity has been seen as a key factor in income generation and poverty alleviation. However, according to Mishra (2010), income cannot be a key determinant of electricity adoption and also there is a negative correlation between electricity adoption and income.

5.4 Conclusions

From the findings above, the study concluded that household demographic characteristics affect household income in Chiakariga County assembly ward in Tharaka-Nithi County. Education level was noted to have greatly caused the disparity in income of the households since those with high education level had high income while those with low level of education were associated with low income. The reason behind that was that a highly educated individual was able to secure good jobs with high wage while low educated persons cannot acquire good and well paying jobs. Gender of household head was noted to have distorted differences in income of households; male household heads were noted to have higher income as compared to female household heads. This is contributed by the fact that women are housewife as men go out to look for jobs. In relation to marital status those who were single had high income due to having few dependants as compared to those who were married. Family size and size of the family labor force also influences the household income in Chiakariga county assembly ward. Small family size with many members who are employed recorded a high income as opposed to large family size who were not employed.

The study also concludes that economic activities play an important role in determining household income. In particular source of livelihood of the household influenced the income of households in Chiakariga county assembly ward. Those who only depend on farming were noted to have low income as compared to those who are employed and business men and women. Occupation structure was also noted to have an effect on household income. People who engage in business activities and those who are employed were noted that they had higher income than those who only depend on farming activities. This is because the farming activities have higher risks which include, fluctuating and weather patterns or natural calamities. Land ownership security influences also the household income of people of Chiakariga county assembly ward. Those individuals who own land have considerable high income compared to those who have no land ownership security. Household with land utilizes their land into productive activities which translates into high income but landless remains to be laborers. Owners of big land had high level of income compared to small size owner. The reason being that big land owners are in good position to transform their land to many income generating projects. They are not limited to land size as those with small scale size of land. Finally study noted that off-farm activities also affect household income in Chiakariga county assembly ward. Household who engage in the many off farm activities were see to have high income as compared to those who were low income owners.

Furthermore the study concludes that institutional infrastructure facilities have an effect on household income in unbound project in Chiakariga county assembly ward, Tharaka-Nithi County. Those who had access to electricity recorded high income. This is explained by the fact that those accessed electricity cut off the expenses that were incurred by not being connected to electricity hence increasing in income. The study also noted that agricultural technology also contributes to higher income because residents who employed modern technology in their farming activities recorded high income since modern technologies are fast and cut on labour cost leading to increased saving. The household who had access to market and information had also higher income while those who did not have market access records low income. This is all because market access provides means to access essential implementations and also selling of products in global or wider markets.

Finally the study concludes that social cultural factors influences household income in Chiakariga county assembly ward. Access to credit markets, agricultural production technologies, information, markets/distance to the town and electricity increases household income in unbound project in Chiakariga county assembly ward, Tharaka-Nithi County.

5.5 Recommendations

The study recommends that

5.5.1 Recommendations for Management action.

- Different stakeholders in Chiakariga county assembly ward should consider household demographic characteristics when determining household income in Unbound project.
- Education Sector should be promoted and encouraged by different stakeholders in the county. This can be done by persuading the government to construct schools near the households' residents.
- Basing on income disparity in gender, government should come up with income generating activities which are beneficial to the household and particularly women should be encouraged to get involved in those activities in order to reduce the gap of income between male and women.
- The study also recommends that married people to go for family planning initiates in order to have the size of the family which they can bring up without struggle.
- In relation to economic activities and influence on household income in Chiakariga county assembly ward, the study recommends that farmers should be encouraged to utilize their farm and farming resources accordingly so as to earn more benefit from farming.
- Farmers should be encouraged to engage themselves in non-farm activities beside farm activities in order to sustain their farm sector income and to increase their standard of living in all rural areas.
- Extension agents should provide information to the farmers about which sector is more profitable in terms of their income earning motive.

- The government also has to expand access to modern technology of farming in order to lead to efficiency production.
- Concerning institutional infrastructure the study recommends that government should provide credit facilities to household of Chiakariga county assembly ward on a low interest rates, which most household can afford.
- Also rural electrification projects initiated by the government to install electricity in rural area should find its way in Chiakariga county assembly ward and install electricity to the household this will enable the household to access electricity at a lower cost and hence increase in income.
- Further the study recommends the government should make available important information especially concerning the market
- Rural infrastructure such as road network should be improved to enable residents to have access to market at ease.
- The study finally recommends that household of Chiakariga county assembly ward should be encouraged to involve in modern farming, green housing production as well as genetically modified products produce which will really boost their income.

5.5.2 Recommendations for further Studies

- This study advocates for further studies to be carried out in other areas. Such areas may include identifying other factors which have effects on the household income in Unbound project. Such studies may be carried out using various other measures such as political influence on household income in unbound project.
- Further studies on this topic could be carried out over a longer period of time. Such a longer period could be helpful given that significant effects of factors influences household income in Unbound project could take a longer period than one year to be realized as considered in this study.

- Since there is a 26.6% error term, other studies should work at other factors not tackled by the study. The study can be done by focusing on different variables not tackled in this study.
- In future research to evaluate the household income in addition to questionnaires, other tools such as (interviews and observations) can be used to evaluate factors that influence household income in unbound project.
- The study suggest that to accurate generalize the results, the studies corresponding this research has to be done in other counties apart from Tharaka-Nithi County.

REFERENCES

- Abdullah, S. & Markandya, A. (2012). Rural Electrification Programs in Kenya: Policy conclusions from a valuation study. *Energy for Sustainable Development*, 16(1), 103-110.
- Babbie, E. R. (2010). *Introduction to Social Research*. Wadsworth Cengage Learning.
- Bankable Frontier Associates. (2014). *South African Financial Diaries and the Mzansi Initiative: Five Years Later*. Retrieved from http://www.finmark.org.za/wp-content/uploads/r_findiaries.pdf
- Barnes, D. (2005). *Transformative Power: Meeting the Challenge of Rural Electrification*. ESMAP Knowledge Exchange Series No. 2. The World Bank. Washington, DC.
- Barrett, B. C., Bezuneh, H. & About, M. (2011). The Response of Income Diversification to Macro and Micro Policy Shocks in Cote d'Ivoire and Kenya.
- Barretta, C. B, Reardonb, T, & Webb, P. (2001). Non-farm Income Diversification and Household Livelihood Strategies in Rural Africa: *Concepts, Dynamics, and Policy Implications*: pp 1-31.
- Brett, E.A (2003). Participation and Accountability in Development Management. *Journal of Development studies*, Vol.40, No.2. Routledge, Part of the Taylor and Francis Group.
- Bryman, A. & Bell, E. (2011). *Business Research Methods*. Oxford university press.
- Campbell, D.J. (2009). Response to Drought Among Farmers and Herders in Southern Kajiado District, Kenya: A comparison of the 1972- 1976 and 1994-1995. *Journal of Human Ecology* 27 (3): 377-416.
- Chambers, R. (1997). *Whose Reality Counts? Putting the Last First*. London: Intermediate
- Cote, S. & Healy, T. (2001). *The Well Being of Nations: The Role of Human and Social Capital*. OECD: Paris.

- Creswell, J. W. (2009). *Research Design: Qualitative, Quantitative and Mixed Methods Approaches (3rd Ed.)*. Los Angeles: Sage Publications, Inc.
- Dugdale, A. (2011). *Economics and Development Studies*. London: Routledge.
- Dupas, P., & Robinson, J. (2009). *Savings Constraints and Microenterprise Development: Evidence from a Field Experiment in Kenya*. January 24, 2009
- Edwards, S. (1996). Why are Latin America's Savings Rates so Low? An International Comparative Analysis, *Journal of Development Economics*, 51, 05-44.
- Ellis, F. (2013). *Peasant Economics Farm Household and Agrarian Development*. Second edition ed. Cambridge University press, Cambridge, Great Britain.
- Engelhardt, G. (2006). House Price and Home Owner Saving Behavior, *Regional Science and Urban Economics* 26, 313-336.
- Fernandez, S., Otero, L., Vivel, M., Rodeiro, D. (2009). Determinants of the Europeans' retirement savings, *Working Paper*, University of Santiago de Compostela.
- Floro, M. & Seguino, S. (2012). Gender Effects on Aggregate Saving: A Theoretical and Empirical Analysis, *Working Paper 11271*, Munich Personal RePEc Archive.
- Galvez, M. & Kleit, R. (2011). The Location Choices of Public Housing Residents Displaced by Redevelopment: Market Constraints, Personal Preference or Social Information? *Journal of Urban Affairs*, 33(4).
- Gerrans, P. & Clark-Murphy, M. (2014). Gender Differences in Retirement Savings Decisions, *Journal of Pension Economics and Finance* 3, 145-164.
- Goldberg, N., & Karlan, D. (2008). Impact of Credit: How to Measure Impact, and Improve Operations Too. *Innovations for Poverty Action*. Working paper, January, 2008. New Haven.
- Haggblade S., Hazell, P., & Reardon, T. (2010). The Rural Non-farm Economy: Prospects for Growth and Poverty Reduction. *World Development*, 38(10), 1429-1441.

- Haynes, P. (2009). Before Going Any Further With Social Capital: Eight Key Criticisms to Address. *Ingenio Working Paper Series - Working Paper No. 2009102*
- Hsueh, L. (2010). The Relationship Between Housing Price, Tenure Choice and Saving BEHAVIOUR in Taiwan, *International Real Estate Review* 3, 11-33.
- Kapoor, S. (2009). *Domestic Resource Mobilization in Poor Developing Countries*.G-24 Policy Brief No. 54.
- Kemmler, A. (2007). Factors Influencing Household access to electricity in India. *Energy for Sustainable Development*, 11(4), 13-20. 95
- Ketlogetswe C., Mothudi T.H., & Mothibi J. (2007).Effectiveness of Botswana's Policy on Rural Electrification. *Energy Policy* 35(2):1330-7.
- Kibaara, B.W. (2005). *Technical Efficiency in Kenya's Maize Production: An Application of the Stochastic Frontier Approach*. Master's Thesis, Colorado State University, USA.
- Kilic, T., Carletto, C., Miluka, J., & Savastano, S. (2009). Rural nonfarm income and its impact on agriculture: evidence from Albania. *Agricultural Economics*, 40(2), 139-160.
- Kinyanjui, K. (2011). *The Challenges of Youth Bulge in Africa: Marginalization, Conflict and Peace Building*. Unpublished paper, Nairobi.
- Kothari, C. R. (2012). *Research Methodology: Methods and Techniques*. New Delhi, India.
- Kristjanson, P., Krishna, A., Radeny, M., & Nindo, W. (2004).Pathways out of poverty in western Kenya and the role of livestock. PPLPI *Working Paper* No. 14. Food and Agriculture Organization, Rome, Italy.
- Kumar, R. (2005). *Research methodology: A step by step for beginners*. London: Sage publication.
- Laiglesia, J. & Morrisson, C. (2008). Household Structures and Savings: Evidence From Household Surveys, *Working Paper*, OECD Development Center.

- Laiglesia, J., & Morrisson, C., (2008). Household Structures and Savings: Evidence from Household Surveys, *Working Paper*, OECD Development Center
- Maikasuwa, A., & Ala, A. L. (2013). Determination of profitability and resource-use efficiency of yam production by women in Bosso Local Government Area of Niger State, Nigeria. *European Scientific Journal*, 9(16).
- McKenzie, D. (2007). Using Global Positioning Systems in Household Surveys for better Economics and Better Policy. *The World Bank Research Observer*, 22(2), 217-241.
- Mishra, P. K. (2010). Alleviating Energy Poverty Through Innovation: The case of Jyotigramyojana (Rural lighting Scheme) of Gujarat. World Energy Congress.
- Morisset, J., & Revoredo, C. (2015). Savings and Education: A life-cycle model applied to a panel of 74 countries, *Working Paper 1504*, The World Bank.
- Mugenda, O.M., & Mugenda, A.G (2003). *Research Methods, Quantitative & Qualitative Approaches*, Acts Press, Nairobi
- Muhangi, D. (2007). *Private Sector Involvement in Decentralization and Community Participation In Uganda*, In Asimwe, D. and Nakanyike, M. (Eds). Decentralization and Transformation of governance in Uganda. Kampala: Fountain Publishers.
- Ngethe, J. M. (2014). *Investigations into Challenges Faced by Primary Schools Head Teachers in the Implementation of Free Primary Education*. A case of Ruiru Division of Thika District, Kenya; Unpublished MEd Thesis, Kenyatta University.
- Nudamatiya, A. B., Giroh, D. Y., & Shehu, J. F. (2010). Analysis of Micro-finance Impact on Poverty Reduction in Adamawa State, Nigeria. *Journal of Agriculture and Social Sciences*, 6(4), 91-95.
- Nyoro, J. K., M. Wanzala, & T. Awour. (2002). Increasing Kenya's Agricultural Competitiveness: Far level issues. Tegemeo Institute of Agricultural Policy and Development and Kenya Agricultural Research Institute, Nairobi, and Michigan State University, East Lansing.

- OECD. (2013). *The Impact of Trade Liberalisation on Jobs and Growth: Technical Note*. OECD Trade Policy Working Papers No. 107, OECD Publishing.
- Ogato, G.S., Boon, E.K., & Subramani, J. (2009). Improving Access to Productive Resources and Agricultural Services Through Gender Empowerment: A case study of three rural communities in Ambo District, Ethiopia. *Journal of Human Ecology* 27(2): 85-100.
- Oketch, M., & Ngware, M.W. (eds.) (2012). *Urbanization and Education in East n Africa: African Population and Health Research Center*. ISBN 978-9966-21-175-0.
- Padmanabhan, K. H. (2006). *Rural Credit, Lessons for Rural Bankers and Policy Makers*. London: Intermediate Technology Publications.
- Pan, C., Statman, M. (2010). Beyond Risk Tolerance: Regret, Overconfidence and other Investor Propensities, *Working Paper*, SCU Leavey School of Business.
- Pole, C. J., & Lampard, R. (2010). *Practical Social Investigation: Qualitative and Quantitative Methods in Social Research*. Pearson Education.
- Rashidi, T., Aukd, J., & Mohammadian, A. (2012). A Behavioral Housing Search Model: Two-Stage Hazard-Based and Multinational Logit Approach to Choice-Set Formation and Location Selection. *Transportation Research*. 46, 1097-1107.
- Ruda, C. (2010). Stagnation or Transformation of a Dual Economy Through Endogenous Productivity Growth. *Cambridge Journal of Economics* 2007:31, 711-741.
- Rutten, M. M. E. M. (2012). *Selling Wealth to Buy Poverty*. Verlage Breitenbach Publishers. Saarbrücken, Germany.
- San V., & Portes, L. (2009). On the Distributional Effects of Trade Policy: Dynamics of Household Saving and Asset Prices. *The Quarterly Review of Economics and Finance* 49:3, 944-970.
- Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research Methods for Business Students*. London: Prentice Hall.

- Sekaran, U. & Bougie, R. (2010). *Research Methods for Business: A skill Building Approach*. John Wiley.
- Sibanda,S. (2004). Who gets to Drop out of School in South Africa? The role of Individual and Household Attributes. *African Population Studies*. 19(1), 99-117.
- Suri, T., Tschirley, D., Irungu, C., Gitau, R. &Kariuki, D. (2008). *Rural incomes, inequality and poverty dynamics in Kenya*. Tegemeo institute of Agricultural Policy and Development. Egerton University, Kenya.
- Thorbecke, E. (2007). *Linking Globalization to Poverty*. Policy Brief, No 2, UNU-WIDER.
- Tzanakis, M. (2013). Social Capital in Bourdieu's, Coleman's and Putnam's theory: Empirical Evidence and Emergent Measurement Issues. *Educate* 13(2), 2-23.
- Van Rooij, M., Lusardi, A. &Alessie, R., (2011). Financial Literacy, Retirement Planning and Household Wealth, *Working Paper 313*, De Nederlandsche Bank;
- Wamukonya, N. (2011). Socio-economic Impacts of rural Electrification in Namibia: Comparisons Between grid, solar and un-electrified Households. *Energy for Sustainable Development*, 5(3), 5-13.
- Wang, X. & Wen, Y. (2011). Can Rising Housing Prices Explain China's high household Savingrate? *Federal Reserve Bank of St. Louis Review* 93, 67-87.
- Wasonga, V.O. (2009). Linkages Between land-use, land Degradation and Poverty in Semi-arid Rangelands of Kenya: The case of Baringo district. PhD Thesis, University of Nairobi, Kenya, Nairobi, Kenya.
- Winkler, H. (2011). Access and Affordability of Electricity in Developing Countries. *World Development*, 39(6), 1037-1050.
- Winters, L. A., McCulloch, N. & McKay, A. (2010). Trade Liberalization and Poverty: The Evidence so Far. *Journal of Economic Literature* 42:1, 72-115.
- Zibran, M. F. (2012). Chi-Squared test of Independence. *Department of Computer Science, University of Calgary, Alberta, Canada. [online].[Cited 2013-08-12]*.

APPENDICES

Appendix 1: Transmittal Letter.

Mary Wanjiku Marius
P.O BOX 1813-60200
MERU.

Dear Sir/Madam,

**REF: REASEARCH ON THE FACTORS INFLUENCING HOUSEHOLD INCOME
IN UNBOUND PROJECT CHIAKARIGA COUNTY ASSEMBLY WARD, THARAKA
NITHI COUNTY IN KENYA.**

The researcher is a student at the University of Nairobi carrying out a study on the factors influencing household incomes in Chiakariga ward.

This is an academic research that is part of the partial fulfillment for the award of a degree of Master of Arts in Project Planning and management.

I kindly request your input through filling this questionnaire. Kindly note that your honest responses will be purely for academic purpose and as such, will be very confidential. Any additional information relevant to this research will be highly welcomed.

Your acceptance to complete this questionnaire is greatly appreciated.

Thank you in advance.

Yours Sincerely,

Wanjiku Marius

Appendix 2: Research Questionnaire

This questionnaire is to collect data for purely academic purposes. The study seeks to find out the **FACTORS INFLUENCING HOUSEHOLD INCOME IN UNBOUND PROJECT, CHIAKARIGA COUNTY ASSEMBLY WARD, THARAKA-NITHI COUNTY, KENYA**. All information will be treated with strict confidence. Do not put any name or identification on this questionnaire.

Answer all questions as indicated by either filling in the blank or ticking the option that applies.

SECTION A: DEMOGRAPHIC INFORMATION

1) What is your highest academic qualification?

Certificate	[]	Diploma	[]
Bachelor's degree	[]	Primary level only	[]

2) How many years have you been in Tharaka-Nithi County?

Less than 1 year	[]	1-5 years	[]
6-10 years	[]	11-15 years	[]
More than 15 years	[]		

SECTION B: FACTORS INFLUENCING HOUSEHOLD INCOME

Household Demographic characteristics

3) To what extent do household demographic characteristics affect household income in Chiakariga County Assembly Ward, Tharaka-Nithi County?

Very great extent	[]
Great extent	[]
Moderate extent	[]
Little extent	[]
No extent	[]

8) Please indicate the extent that the following economic activities affect household income in Chiakariga County Assembly Ward, Tharaka-Nithi County.

Where: 5- Very Great Extent 4-Great Extent 3-Moderate Extent
 2-Low Extent 1- No Extent

Economic activities	1	2	3	4	5
Sources of livelihood					
Occupational structure (Employment, Business, farming)					
Off-farm activities					
Land holding size					
Land ownership security					

9) In what ways has economic activities affected household income in Chiakariga County Assembly Ward, Tharaka-Nithi County?

.....

Institutional infrastructure facilities

10) To what extent do institutional infrastructure facilities affect household income in Chiakariga County Assembly Ward, Tharaka-Nithi County?

- Very great extent []
- Great extent []
- Moderate extent []
- Little extent []
- No extent []

11) Please indicate the extent that the following aspects of institutional infrastructure facilities affect household income in Chiakariga County Assembly Ward, Tharaka-Nithi County.

Where: 5- Very Great Extent 4-Great Extent 3-Moderate Extent
 2-Low Extent 1- No Extent

Aspects of institutional infrastructure facilities	1	2	3	4	5
Credit markets					
Agricultural production technologies					
Access to information					
Access to markets/distance to the town					
Access to electricity					

12) In what ways has institutional infrastructure facilities improved community resilience in the arid and semi arid lands?.....

Social Cultural factors

13) To what extent do social cultural factors affect household income in Chiakariga County Assembly Ward, Tharaka-Nithi County?

- Very great extent []
- Great extent []
- Moderate extent []
- Little extent []
- No extent []

14) Please indicate the extent that the following aspects of social cultural factors affect household income in Chiakariga County Assembly Ward, Tharaka-Nithi County.

Where: 5- Very Great Extent 4-Great Extent 3-Moderate Extent
 2-Low Extent 1- No Extent

Aspects of social cultural factors	1	2	3	4	5
Irrigation programs					
Model farming					
Green houses farming					
Genetically modified products					
Relief foods					

15) In your opinion, how has social cultural factors improved household income in Chiakariga County Assembly Ward, Tharaka-Nithi County?

.....

Household Income

16) What is the average monthly household income for your family?

17) What has been the trend of the following aspects of household income in your County for the last ten years?

Aspects of Household Income	Greatly Improved	Improved	Constant	Decreasing	Greatly decreased
Total off-farm income					
Agriculture wage income					
Non- Agriculture wage income					
Rental income/ property income, or transfers					

18) What be done to increase household income among families in your County?

.....

The end

Thank you for your participation