



UNIVERSITY OF NAIROBI

**THE EFFECT OF ICT ON YOUTH PARTICIPATION IN THE
PRODUCTION OF PIGEON PEA: THE CASE OF MUKA SUB COUNTY,
MAKUENI COUNTY, KENYA**

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MANAGEMENT**

[MAY, 2014]

Declaration

I Mary Joan Kobe declare that this dissertation is my original work and has not been presented for degree in any other University.

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Dedication

This Dissertation is dedicated to my late parents Raphael and Teresa neither of who were able to witness the completion of my Master's degree, but who have always and continued to inspire me with their belief in doing the right thing and doing it well.

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I would like to acknowledge and extend my most sincere thanks to my supervisors Dr. Mugivane and Prof. Nyaga for their valuable support and accurate suggestions during the research and writing process. Thanks also to all the AICM lecturers who patiently and relentlessly discharged their duty of teaching and guidance to propel my academic steps to this enviable stage.

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And above all Glory and Honour to The Almighty God for wisdom, protection, provision and the unending favour through this programme.

ABSTRACT

The study evaluated the effect of Information Communication Technology (ICT) in increasing youth participation in production of Pigeon Pea; determined to what extent the youth use communication channels that are used to disseminate agricultural information; whether the access and ownership of Information Communication Technology (ICT) by youth has a relationship to their use in production of Pigeon. This was prompted by the realization that there were low numbers of youth participating in Agriculture. This is a distress call to increased productivity because of the aging farming community. The aged farmers are not ready to embrace modern farming; yet technology is one of the key options to deal with emerging challenges in agriculture. Pigeon pea was chosen as it is one the crops grown in Mukaa and because it's multiple benefits. Evidence is the fact that Youth have demonstrated an aptitude in developing, adopting and disseminating such technologies. Their leadership role in this sphere is evident in both developed and developing world. Research has been done on use of ICT in agriculture as a way of addressing challenges in uplifting the livelihoods of the rural poor. Work has also been done on use of ICT adoption both as a tool to promote youth as leaders in the ICT sector and to foster broader youth leadership and development programmes. Yet missing is the link between ICTs? Pigeon pea production and youth. The study covered purposively selected two wards of Malili and Kilome; representing both of Mukaa Sub County, Makueni County, Kenya. Trained enumerators were used to administer questionnaires to collect the required data from youth who were purposively selected using age $18 \leq 35$; individual youth was randomly sampled, every 5th family was visited and youth interviewed. For analysis, Statistical Package for the Social Sciences (SPSS) and excel and software was used to group findings in table, charts and Analysis of Variance (ANOVA) to test the hypothesis. The study revealed that use of ICT does increase participation of youth in production of Pigeon pea and access and ownership of ICT by youth had little relationship to their use in production of Pigeon. Recommended is need for more research in the same area and capacity in order to optimize the use of ICT in production of pigeon pea. This finding could be generalized to be used with the youth in the whole Mukaa Sub County. **KEYWORDS: Information Communication technology; Youth; agriculture; Pigeon pea production; Mukaa Sub County.**

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ABBREVIATIONS AND ACRONYMS

AICM	Agricultural Information and Communication Management
ANOVA	Analysis Of Variance
ASDS	Agriculture Sector Development Strategy
AU	African Union
CDF	Constituency Development Fund
FAO	Food and Agriculture Organization
GOK	Government of Kenya
IFAA	Innovation Fund for Agriculture and Agribusiness
ICT	Information and Communication Technology
ILO	International Labour Organization
KHCP	Kenya Horticultural Competitive Project
MDGs	Millennium Development Goals
NDE	National Directorate of Employment
PDA	Personal digital assistant
SEND	Social Enterprise Foundation of West Africa
SMS	Short Message Service
SPSS	Statistical Package for the Social Sciences
UNDP	United Nation Development Programme
UNESCO	United Nations Educational, Scientific, and Cultural Organization
USAID	United States Agency for International Development
WHO	World Health Organization
YEDF	Youth Enterprise Development Fund

CHAPTER ONE: INTRODUCTION

1.0 : Background of the Study

Youth are the future of every society (Ungar, 2004). This is because the youth are the ones who will inherit our mistakes and who can potentially drive the change (Sherrod, et al., 2002). We all aspire to develop youth, through their ideas, creativity and belief (Houghton & DiLiello, 2010). Yet all too often the youth are marginalized, disregarded, even demonized (Conchas & Vigil, 2010). Involving the Youth in agricultural development and decision making processes is critical to ensuring sustainable development in Africa (Braun, et al., 2000) and framing, this within the context of ICTs and entrepreneurship provides a valuable dimension to the discourse of agricultural modernization and prosperity

The world has been revolutionized by the rapid development and implementation of Information and Communication Technology (ICT) (Reijswoud, 2009). ICT combines the disciplines of information technology and communication technology (Mohamed, Murray, et al., 2010). From information technology and communication technology comes out the digital conversion of information technology and communication technology leads to data transmission through the Internet (Hashim, 2007). Likewise, the adoption of ICT is expected to influence all fields; labour relations, employment in labour market and agriculture included.

ICT includes a number of components; skills of accessing, recording, arranging, manipulating and presenting data or information using tools and software (Enrique ,et al., 2011). This ICT also includes communication technology which consists of telecommunication tools used to disseminate and access information. Literacy technology based on information in printed form such as book, journal and newspaper is also considered as ICT (Bawden, 2008). Besides these two, intermediate technology based on analog data or information such as electron magnetic waves such as radio, television and telephone (including mobile phone) also considered as ICT (Allen, et al., 2004). To adopt ICT in agriculture industry is an advantage for the youth agro-based entrepreneurs (Silva, 2009).

Their skill and knowledge in ICT cannot be argued. (Council, 2003; Golombek, 2002) concluded that youth is the most skilled group on ICT usage and they are always alert on any ICT updates. Moreover, according to this report, they must possess ICT tools such as mobile phone, internet and computer. There is no universally accepted definition of youth; youth have been described in many different ways; sometimes as a particular age group, as a stage of life or as an attitude. For statistical purposes, the United Nations General Assembly in 1985 for the International Youth Year first defined youth as people between the ages of 15 and 24. In 1995, when the General Assembly adopted the World Programme of Action for Youth to the year 2000 and beyond, it again defined youth as those within the age range of 15 to 24, but acknowledged that the age range varies among different countries and societies (Council, 2003).

The definition of youth varies depending on the institutional framework. While “youth “according to the World Bank and the United Nations are persons within the 15-24 age range. GOK (2007), in the National Youth Session Paper of 2007 (Youth National Policy), on the other hand defines Kenyan Youth as one aged between 15 – 30 years. This takes into account the physical, psychological, cultural, social, biological and political definitions of the term. Those in the age bracket of 30 years and below constitute about 75% of the country's population, forming the largest source of human resource. However, in the African definition of youth, marital status and economic potentialities were the major considerations in differentiating youths from adults.

Ovwohwo and Ifie (2004) stated that youths were considered as people who were not yet married and depended on their parents for social and economic survival, by this definition, a 50 year old man who was not married cannot be classified as an adult even if he has a stable means of livelihood. They stated further that in the religious African definition, youths were considered as people between the age of 15-40 years, irrespective of marital status and means of livelihood. People above 40 years join youth organizations in the mosques and churches. Closely allied to the religious-African definition is the social-personal definition. Under the social personal definition, any person could be regarded as a youth provided he is quite sound in mind, heart and body. The proponents

of this assertion are the older generation who feel that age categorization of youth was superficial and might be devoid of the strength and agility associated with youth. This is the labour force that is necessary to boost agriculture to the required 10% growth rate.

In its relationships to governments and organizations, Food and Agriculture Organization (FAO) uses a wide range of ages depending on the specific definition of "youth" used within a particular country or a specific organization. The age range surprisingly goes anywhere from 8 to 40. For global programming purposes, FAO defines the priority age range for youth development from 10 to 25. This definition, according to age category, may not, however, satisfy the universal interest due to the variations in laws, customs and constitutions.

According Adams (2008), people in these age range, comprise more than 50% of the population; (United Nations 2007), in 2005, 62% of Africa's overall population fell below the age of 25. The United Nations defines youth as persons between 15 and 24 years. The World Health Organization (WHO) identifies three categories of youth-adolescents (10-19 years), youth (15-24 years), and young people (10-24 years). The African Union (AU) considers youth as persons between 15 and 34 years of age. In Kenya, there are various aged based definitions of youth; National Youth Policy defines youth as persons aged 15-30 years.

The National Youth Policy vaguely states the definition; this takes account of the physical, psychological, cultural, social, biological and political aspects, which explain the Kenyan youth situation. The new Constitution defines youth as all individuals in the republic of Kenya who have attained the age of 18 years but have not attained the age of 35 years (GoK, 2010).

The youth development programmes which the government of Kenya has been implementing target persons aged 15 to 35 years. Lack of consistency in the definition of Kenyan youth reflects the difficulty that most African societies have in specifying the age bracket of youth. In African societies, responsibilities such as marriage are more

important in defining the category where one belongs, adult or youth (Okia, 2012). Adapted is this definition since it is universally accepted and applied by international agencies involved in youth programmes and activities and it is in context.

The world's youth population, ages 15-24, will become more and more concentrated in Africa and Asia between 2010 and 2050 (Bremner, et al., 2009). The number of young people across the world is increasing and today they are the majority in most countries including Kenya, where 15 to 34 year olds total 13.66 million, approximately 39% of the population (FAO, 2009b). This proportion of youth is expected to grow and form the bulk of the population in the next 10-20 years, a phenomenon referred to as a youth bulge. This trend has generated interest among development players hence the recognition that young people are important players in development.

According to (Hope, 2012). Youth bulges have become a global phenomenon and Kenya is no exception to this trend. In Kenya, the youth bulge presents a number of challenges for both the youth and the country. Youth represent the most abundant asset any community has or will have over the near future (Liang, et al., 2013). Nonetheless, there have been a considerable number of surveys conducted and reports and studies published that invariably conclude that there are persistent risks and challenges faced by Kenyan youth (Hill, 2013). The youth are, and will remain, a significant share of Kenya's population for the foreseeable future. There is therefore need to develop and implement appropriate strategies, policies and programmes to mitigate the risks and challenges they (the youth) face must be much more of a priority for the government than it currently is (Schoof, 2006). Any failure to provide appropriate opportunities for this large segment of the population could have enormous economic, political, cultural, and social consequences. Engaging the youth population fully is therefore no longer a choice but an imperative in the development process.

According to Scarpetta, et al., (2010). The global economic crisis has hit youth very hard. In the OECD area, the youth (15-24) unemployment rate rose by 6 percentage points in the two years to the end of 2009, to reach almost 19%. There are currently

nearly 15 million youth unemployed in the OECD area, about four million more than at the end of 2007. Young people in Africa are confronted with many difficulties when it comes to their integration in the labour markets and their research for decent and productive jobs. Youth unemployment, which is substantially higher than global adult unemployment, has been growing in the last decade. In spite of the dramatic economic, social and political consequences of African youth employment problems, few studies focus on this population (De, 2007).

According to (Schoof, 2006). Reducing youth unemployment is one of the major challenges facing most governments in the world for decades to come. With an estimated 88 million young women and men worldwide unemployed, the need for employment creation efforts focusing on youth is undeniable. According to a recent study conducted by the International Labour Office (ILO, 2012), youth are generally three and a half times more likely than adults to be unemployed. In 2015, approximately 660 million young people will either be working or looking for work -- an increase of 7.5 per cent over the 2003 figure. While bound up with the overall employment situation, this challenge has its own specific dimensions and therefore requires targeted responses. Within the framework of potential efforts and strategies to boost employment and job creation for young people, entrepreneurship is increasingly accepted as an important means and a valuable additional strategy to create jobs and improve livelihoods and economic independence of young people. It is an innovative approach to integrating youth into today's changing labour markets

The Millennium Development Goals have been widely accepted as a framework for setting priorities and measuring development progress in international development (Sachs, 2012). The goals and targets have been harmonized, in many countries, with existing national poverty reduction strategies (PRSPs) and sector plans. In the agriculture sector, the existence of the MDGs and their measurable targets help to focus policy makers (Food and Agriculture Organization, 2011). Attention on the interlinked priorities of food security, gender equality, and rural poverty and environmental sustainability. While ICTs receive an important mention in Target 18 of the MDGs,

ICTs have a vital part to play in bringing about the realization of Goal 1 (Clarke, et al., 2013); Waage et al., 2010), to eradicate extreme poverty and hunger, a goal which is associated with the specific target of reducing hunger by halve between 1990 and 2015, the proportion of people whose incomes is less than a dollar a day.

In its Rural Poverty Report 2001, the United Nations' International Fund for Agricultural Development stated that '75% of the world's poor live in rural areas, most of which make their livelihood in farming or farm labour (Dixon, et al., 2001). As this figure will drop only to 60% by 2020, a focus on rural poverty and agricultural development is crucial to the reduction of poverty overall.' In the long term, extreme poverty and hunger cannot be eradicated without an environmentally sustainable and efficient food production system that works for the poor, as well as income-generation opportunities for rural communities, enabling them to meet their basic needs including health and education for generations to come (Ifad, 2011).

According to (Misselhorn et al., 2012), the Vision 2030 is a Global blueprint, this has been adapted by Kenya who identifies agriculture as one of the six key sectors to deliver the 10 per cent economic growth rate per annum envisaged under the economic pillar, this is further exemplified in Agriculture Sector Development Strategy (ASDS) This further states that in Kenya, growth of the national economy is highly correlated to growth and development in agriculture (Ekbom, et al., 2001; Salami, et al., 2010). Envisaged in is creation of employment, increased income generation, increased food security and reduction of hunger (GOK, 2010). The same at the heart of the ASDS is the issue of support for youth in agriculture; sensitize them on lucrative ventures in the agricultural sector, and processing plants for value addition which will be established in rural areas to provide employment opportunities for the youth and to allow them to produce agricultural raw materials. Linkages between the Ministry of Youth and Sports and the agricultural sector will be established to offer incentives to the youth in farming either through the Youth Enterprise Development Fund (YEDF), Constituency Development Fund (CDF) or the Innovation Fund for Agriculture (IFA) and Agribusiness, among other funds.

Participation is a commonly used approach and concept within development (Hoogsteen & Woodgate, 2010). Through active participation, youth are empowered to play a vital role in their own development as well as in that of their communities (Mueller et al., 2011). It has long recognized that young people are a major human resource for development (Cavet & Sloper, 2004) and in that context they are key agents for social change, economic growth and technological innovation.

1.1 : Statement of the Problem

Youth participation in production of pigeon pea is low but on the other hand their participation in agriculture in Mukaa, Makueni like other parts of the country is crucial, and vital to facilitate food and nutrition security

Use of ICT enhances the participation of Youth in production of pigeon and agriculture in general (De, 2008). This is because it reduces the drudgery of traditional farming being one of the reasons for low numbers (Obert, 2012). This encompasses the utilization of modern technology (computerized green house), automated nutrient mixing and precision in air condition as opposed to traditional. This may also include use of e-produce marketing in horticulture especially fresh produce and flowers, processing and value addition these needs some good level of ICT knowledge and automated seed production. All these can be justified by the way youth like and manoeuvre ICTs with ease in fact most times the adults learn from them.

The challenge for today and the future is to increase the number of Youth Participating in agriculture (Davies, 2010) and to develop critical numbers to be able to step up food production, income generation, livelihood improvement and eradication of deviant behaviour.

A number of Programmes have strived by use of other strategies to increase the number of youth in agriculture (Magdoff, 2007) and a lot of research have been done on the use of ICT in Agriculture (Gakuru, et al., 2009). Moreover there are also research focus on youth and other areas of development (Hartley, et al., 2003 & Font, 2009) but rarely have scholars examined in a focused manner, the effect and use of ICTs in increasing youth participation in agriculture.

This study therefore seeks to bridge this gap by providing a more grounded picture of the perception and use of ICTs in increasing youth participation in agriculture and specific in production of Pigeon pea in Mukaa Sub County

1.2 : Justification of the Study

The purpose of this study is to evaluate the effect of ICT in increasing youth participation in production of Pigeon Pea, in Mukaa Sub County, Makueni County, Kenya. Youth is the active life of any country; they are good at manoeuvring ICT.

The low numbers of youth participation in Agriculture is a distress call to increased productivity because of the aging farming community who are not ready to embrace modern farming (Swarts & Aliber, 2013). Currently, most young people in all countries over the world know how to use a mobile phone without training (Walsh, et al., 2009). If they are empowered about the potential of using various applications on their phones in agriculture, they may be more interested in practicing it.

From previous cited works done on ICT and Agriculture, ICT and other areas of youth development there is possibility to have a link between agriculture, production of pigeon pea, youth and ICTs. This is because youth are people who have lots of ideas and like ICT innovation, which is why they are very attracted to ICTs. ICTs are being used in agriculture in many countries today and the fact that we are using ICT in agriculture should make this field more fashionable and attractive to the youth(De, 2008 & Aker, 2011). When we are talking about the use of ICTs in increasing the attractiveness of

agriculture for young people, there are two main functions that it may have; Firstly, ICTs can be used to sensitize youth on the importance of agriculture and change their perception about it (Dey, et al.,2008). While being promoted through empowerment/sensitizing programs by the government or other support organizations and secondly it can be used in automation of service; precision agriculture, management of information (Zhang, et al., 2002) and farm data, the marketing of the products and the access to market information, obtain, manage and share information with other stakeholders in agriculture.

Furthermore opting out of this new digital world is not an option. and many other successful initiatives demonstrate that entrepreneurs cannot afford to miss out on the opportunities that the digital revolution offers (Gershenfeld, 2012). Equally, any government serious about food security and meeting the Millennium Development Goals must be able to stay up-to-date with the latest thinking and policies if only to keep up with their farmers! Moreover, if we are to ensure sufficient food for the predicted 8.3 billion populations of 2030, it is not just agricultural production that needs revolutionary new technology but entire agricultural value chains.

1.3 : Structure of the Study

This dissertation is organized into five chapters. Chapter one introduces the back ground of the problem of the study areas, significance of the study, the research objectives, research questions and scope and limitations of the study. Chapter two covers the review of the related literature that includes conceptual explanation of the effects of ICTs in increasing youth participation in agriculture and the production of pigeon pea. Chapter three presents the research design and methodology that was used to carry out this research. Chapter four is the central theme or core of this paper where data is presented analyzed interpreted and discussed. Finally, Chapter five comprises summery, conclusions and recommendations of the findings.

1.4 : Objectives

1. To evaluate the effect of ICT in increasing youth participation in production of Pigeon Pea;
2. To determine to whether youth are accessing the communication channels that are used to disseminate agricultural information;
3. To assess whether the access and ownership of ICT by youth has a relationship to their use in production of Pigeon pea.
4. To get lessons from this experience that will inform employing ICT in Mukaa, Kenya and beyond.

1.5 : Hypothesis

H₀: Use of ICT does not increase youth participation in production of Pigeon Pea in Mukaa;

H₁: Use of ICT does increase youth participation in production of Pigeon Pea in Mukaa

1.6 : Research Questions

1. What is the effect of ICT in increasing youth participation in production of Pigeon Pea, versus the total farmer population involve;
2. To what extent are the youth using communication channels, that are used to disseminate agricultural information;
3. Is there a relationship between the access and ownership of ICT by youth to their use in production of Pigeon?
5. Are any lessons from this experience that could inform employing ICT in Mukaa, Kenya and beyond?

1.7 : Scope of the Study

The study was carried out in selected two wards formerly divisions of Malili and Kilome of Mukaa sub County, Makueni County Kenya. The scope of study is limited to evaluating whether the use of ICT could increase the level of Youth participation in production of Pigeon Pea in the two wards; Malili and Kilome in Mukaa Sub County see map below.

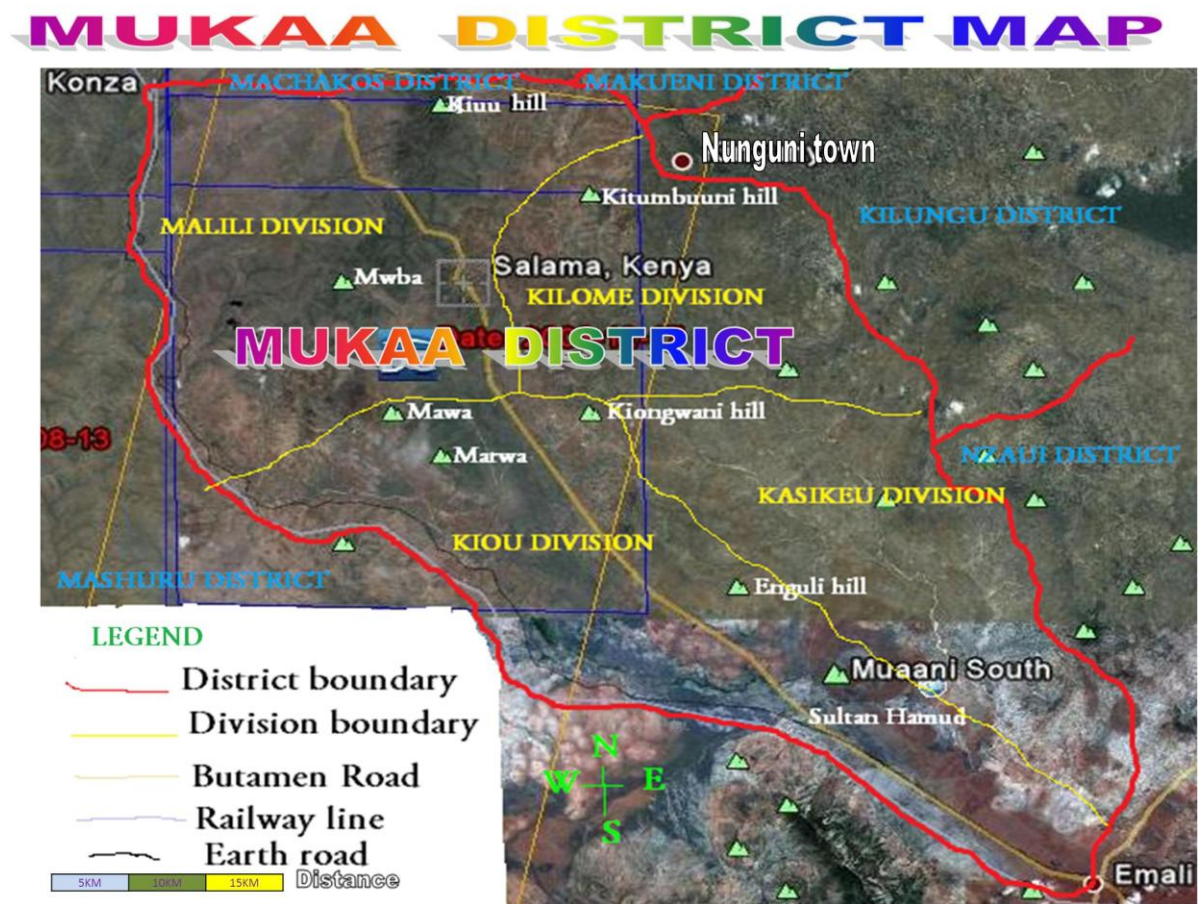


Figure 1. 1: Map of Mukaa Sub-County

Source: GoK, 2012

1.8 : Significance of the Study

This study could by no means be generalized to the whole Sub county of Mukaa and any Youth participation in Agriculture however it will inform use of ICT and Youth.

Their increase in Youth participation will translate into reduction of poverty from, value-addition and job creation in the targeted value chains. This is expected to translate to improved nutrition and food security for the house hold as well as over all social wellbeing ; health, education and reduced vulnerability. The food insecurity being experienced also may have been contributed by the fact that farmers have not been fast in taking up technology (Flora, 2010). The use Information Communication Technology can greatly help disseminate information (Heeks, 1999) to farmers increasing efficiency. (Rao, 2007). Most rural households have at least one mobile, although may or not be used to access the internet and often, this mobile phone belongs to youth in the the family (Kreutzer, 2009).

More employment for the youth is expected to be created when they adopt value addition by use of ICT. The youth can obtain real time information from the internet for good decision making, on agri business (Citroen, 2011) and value addition which would enable them starts agro-based industries. This information could enable them to draft good business plans and obtain loans from the banks to start their businesses (Sufi, 2007). The internet has also provided an opportunity to practice e-business(Lumpkin & Dess, 2004).

The bigger picture is engaging young people as producers and consumers in their own economies add a new significant element to overall economic activities (Engel et al., 2001). Young entrepreneurs who are inherently versatile, innovative, and driven by combined economic, communal, and environmental motives tackle development challenges more quickly and effectively than government and aid mechanisms (Koellinger, 2008). Youth innovations that bring together the objectives of business and development to create constructive, market-oriented approaches are the prescription for global success(Martinez, et al., 2005). The fortune of this critical mass is that this generation has the advantage of a particular technological knowledge that could drive

global constructive entrepreneurship. Adding a new crop of young people into the economy through entrepreneurship using ICT adds a substantial effort to increasing global workforce and making societies sustainable (Mutula & Brakel, 2007).

Therefore there is strong belief that participation of the youth in Production of Pigeon Pea will provide room for gainful employment for the unemployed youth in Mukaa in various levels of value chain from production to marketing and possibly processing. The Youth participation also may mean more farmers to improve on productivity of food for the masses in Mukaa and this being their staple food and nutrient rich therefore addressing not only food but also nutrition security. This will therefore be opportunities for youth in Mukaa to generate income, enabling them to meet their basic needs including health and education for their families. And finally the Pigeon Pea crop will give fuel waste and raw materials to feed our industries that contributing to the economy of Mukaa and our country at large.

Results from this study would be used to; inform the policy makers in order to come up with strategies for youth development; it may also accumulate knowledge for use by future researchers about the role of ICT in relation to youth participation in not only production of pigeon pea but the whole of agriculture value chain.

CHAPTER TWO: LITERATURE REVIEW

2.0 : Introduction to ICT and Agriculture

According (Bruinsma, et al, 2007; Hollenstein, 2004). “Information and Communication Technology (ICT) is a wide term that refers to all computer-based advanced technologies for managing and communicating information. It is broader than Information Technology (IT) which is defined as “the study, design, development, implementation, support or management of computer-based information systems, particularly software applications”(Cooper, 2000). It comes out that the information and communication technology (ICT) revolution has radically changed the world we live in(Abbott & Coenen, 2008). Young people in particular have demonstrated an aptitude in developing, adopting and disseminating such technologies, and their leadership role in this sphere is evident throughout both the industrialized and developing world (Farnworth, et al., 2008). In fact, it is common practice for adults to learn ICT skills from youth.

(Steinem, et al, 2007; Nyirenda, 2010). Agriculture is an important sector with the majority of the rural population in developing countries depending on it yet the sector faces major challenges of enhancing production, in a situation of dwindling natural resources necessary for production (FAO, 2009a). The growing demand for agricultural products, however, also offers opportunities for producers to sustain and improve their livelihoods (Jac, et al., 2007). Information and communication technologies (ICT) play an important role in addressing these challenges and uplifting the livelihoods of the rural poor (Jac, et al., 2007). The International Institute for Communication and Development (IICD) in The Hague, the Netherlands, has been engaged in various projects that focus on the use of ICT in the agricultural sector (Bouma & Jones, 2001) in recent years and the experiences of IICD and other organizations on How ICT can make a difference in agricultural livelihoods form the basis for the recommendations for future action in Commonwealth countries.

(Steinem, et al., 2007), explored the potential contribution of ICT, to the livelihoods of small scale farmers and the efficiency of agriculture sector in developing countries. The experiences and lessons documented here are placed in the context of their contribution to the Millennium Development Goals (MDGs) (Siriginidi, 2009). The Goals are widely accepted targets for international development, and are generally used as a guiding framework for setting priorities by international donors and developing country governments (Waage et al., 2010). ICTs are a relatively recent instrument in the fight to eliminate hunger and poverty, the World Bank in its 2002 Strategy Paper on ICT2 states that ‘Information and Communication Technologies are a key input for economic development and growth. They offer opportunities for global integration while retaining the identity of traditional societies. ICT can increase the economic and social well-being of poor people, and empower individuals and communities as confirmed by (Sinha, 2005). Finally ICT can enhance the effectiveness, efficiency, and transparency of the public sector including the delivery of social services (Khayyat, 2010). A general lesson from initiatives that employ ICT for development is that successes are possible, but that programs must be designed and implemented with care (Mofleh, 2008; Ngwenyama & Morawczynski, 2009). Early enthusiasm and claims that ICT would prove to be a panacea for development problems led to a number of false starts that have given ICT rather a bad reputation in mainstream development circles (Steinem, et al 2007. After his exploratory research it comes out that years of debate in the field of development about rusting tractors or failed infrastructure projects, feels as though exactly the same mistakes and shortcomings are being replicated in the rush to make the benefits of new ICTs available to all. What has been learned from such ‘rusting tractor’ scenarios is that success is not derived from inserting advanced communication technology into a poverty-stricken social context, with attendant low levels of literacy and empowerment, and expecting positive transformation to come about naturally.

Another case by (USAID, 2010), study in Bolivia showed that Smallholder farmers in the remote valleys of Vallegrande produce 70% of the vegetables consumed in the city of Santa Cruz. In spite of this fact, they found themselves in a disadvantageous position when the time came to take their products to the market. To address the situation, the project gathered and disseminated price information. Each morning at 6.00 am a market

reporter went to the market in Santa Cruz to collect prices, send them by e-mail to the rural information centre in Vallegrande 500 kilometers away, where they were broadcasted twice a day via the radio programme, “Farmer’s Mail”, reaching 60,000 farmers. The information improved the farmers’ negotiating position with the middlemen who collected and sold their produce. To complement the radio programme, the project set up five regional information centers equipped with computers and Internet access. To date, 630 members of producers’ associations have been trained in the use of basic ICTs and information analysis, allowing them to make better decisions regarding where and when to buy inputs and sell their produce. Each centre maintained a database of volumes and market prices at the community level, allowing farmers to understand and compare price developments and production patterns in the region. The service provided farmers with information they need to make decisions critical to their livelihoods. The centers were financially sustained by user fees for use of computers and the Internet. Internet access was provided through dial-up or shared satellite connectivity. ICT sectors were a combination of manufacturing and service industries that capture, transmit and display data and information electronically.

2.1 : Importance of ICT in Agriculture

Clearly, ICT encompasses a wide range of elements that include hardware and software, content generation, knowledge management as well as institutional and management processes (Reijswoud, 2009). Appropriate use of ICT in agriculture requires the application of relevant combinations of traditional and modern ICT (Gichoya, 2005). Agriculture in the 21st Century is one of the most diverse economic sectors (Stafford, 2000), encompassing individual farmers, farmer organizations, government agencies, research institutes, traders, multinational corporations, NGOS and many others. A productive sector depends on a fruitful and fair interaction between the diverse actors’ communication and information flows are critical to this process (Roberts & Sbihi, 2013).

Another case by USAID (2010), is on the increased profits for soybean farmers in Ghana,” the Social Enterprise Foundation of West Africa (SEND),” that promotes the cultivation of soybeans in the northeast of Ghana. The potential market for soybeans and their high nutritional value offer potential to enhance income for farmers as well as improve food security. Initially SEND provided extension services and built the capacity of farmers to produce and consume soy. However, it remained difficult to find buyers for the soybeans. At the same time, soy oil processors were having trouble finding sufficient volumes of good quality soybeans for their plants. By selling cooperatively, individual farmers became reliable suppliers to oil-processing companies. To bring the market actors together, the project established two offices in remote villages of Salaga and Kpandai. In one location internet connectivity via a VSAT was used, allowing for the exchange of commodity supply information by email or Skype. The other office communicates via mobile telephones. At the central SEND office, information was entered into a database to analyze the data and communicated with the buyers on quantities available, quality levels, and locations thereafter deals were negotiated. The farmers profited from an enlarged market and up-to-date information on market prices. Large scale buyers benefit from the efficient organization of supply and transport. Bosbel, a large oil producer, states that the project ‘was beneficial for both sides’. Whereas the project started only recently it already reached over 10,000 people in 41 communities and according to estimate farmers’ net income increased by 20%.

From M-Farm WEB it comes out that M-Farm offers smallholder farmer with three services: price information, collective crop selling, and collective input buying. They are currently collecting wholesale market price information on 42 crops in five markets in Kenya. Pricing information is collected weekly through independent data collectors using geo-coding to ensure that the prices are being collected from wholesale traders actually located in each market. The M-Farm mobile application gives monthly analysis of the crop prices in different markets, showing the price trends. Therefore, the farmer is able to make informed economic decisions on what to plant when, how to price his produce and where to sell.

On the other hand (OECD, 2005), in a paper on good practice in Kenya among other countries it comes out that ICTs have been used to provide farmers and fishermen access to information on weather, soil and crops, as well as up-to-date market and commodity prices. ICTs have also been used to create water maps, enabling villages to estimate monthly demand for water and its availability from various sources, as well as enabling the development of additional water sources and suggesting the allocation of available water in the event of shortages. Another programme can analyze and interpret long-term data to predict pest attacks one week in advance. The majority of these agricultural programs are funded through a collaborative effort by government agencies, research organizations' and private sector development partners from these cases (Byerlee & Fischer, 2002). Another case of flower production (Burke and Sewake, 2008). There is evidence that ICT has positive effect in agricultural production. When considering globalization, need to compete, the uncertain whether condition and the increased prices of farm inputs. All which necessitates for maximization of profit, there is therefore dire need for reliable and timely source of information (Lio & Liu, 2006).

2.2 : ICT and Youth

ICT adoption can be used both as a tool to promote youth as leaders in the ICT sector and to foster broader youth leadership and development programmes (Stuart, Mills, & Remus, 2009). With an impact that is cross-cutting, ICT can, therefore, contribute to youth participation in a wide range of economic, social and political activities (Kahne, Lee, & Feezell, 2013). Example is a case where new technologies can be used for improving access to and quality of education for African youth (Leach, 2008). With the necessary infrastructure, technologies like online learning can bring a high standard of education to remote, rural communities (Brown, 2003). Moreover, in a global economy characterized by skill-intensity, young Africans increasingly require a range of ICT skills in order to get a decent job (Garrido, et al., 2009).

Equipping youth with such skills can also have a catalytic effect on innovation and entrepreneurship, contributing to economic development (Studies, 2010). ICT

entrepreneurship is evident on the streets of all African cities in vending kiosks, where young people provide such services as mobile phone calls, sale of recharge cards and repairs (Andrianaivo & Kpodar, 2011). The numbers of tele-centres in countries like Ghana, Senegal, Kenya and the proliferation of Internet cafés across the continent have also been a source of employment opportunities for youth (Falch & Anyimadu, 2003). Besides these small, informal businesses, ICT-related youth enterprise opportunities include: producing/reselling hardware, software and telecommunications products; data entry services; ICT-based business services; software customization; distance learning; computer training; consultancy; content provision; communication (e-mail/Internet/mobile); data processing (small business information systems) and ICT-based manufacturing systems.

ICT also facilitates youth participation in civic discussions, providing young people with a voice on a range of topics (Kahne et al., 2013). Electronic fora involving African youth have been successfully undertaken by international agencies like the United Nations (Morawczynski & Ngwenyama, 2007). Such initiatives not only assist young people to exchange and develop ideas, but also help inform policy makers and practitioners (Campbell et al., 2009).

In a rare case of a programme in Kenya, studied by IICD, “ICT technologies such as M-Farm were helping the youth connect directly with the markets. They were provided with ICT training to help farmers get information about farming practices and use multimedia to enrich their training in production techniques. It came out that they no longer entirely rely on the services of the exploitative middlemen and because of that, the youth had more money for the same products previously produced at a low price, because they believed the prices the brokers quoted to them”. In the same research were three groups; the second group saw the importance of ICT for improving the productivity and profitability of their farming activities. They used ICT to get more reliable market and production information for their existing crops, keep records and share information and create awareness on various technologies.

According to Beekman (2010), who works in the Netherland, who reported that youth can serve as an important focus group for rural development projects, especially in areas where the level of social capital is low and when institutional quality is poor (Stanton, 2011). For example, in his report it comes out that the younger generation tends to be more open for innovation than the older generation. Various authors however have pointed out that the youth has higher change than other age groups to move to urban areas in order to find a job in the informal sector or to become active in rebel groups in times of war when institutional quality is low. Focusing on the youth therefore, in programs that stimulate sustainable agricultural development, could improve social capital, reduce risk, and stimulate economic growth.

2.3: ICT, Agriculture and the Youth

From the literature review work has been done in use of ICT) in agriculture productivity, as a way of addressing challenges, in uplifting the livelihoods of the rural poor; work has also been done on the use of ICT adoption both as a tool to promote youth as leaders in the ICT sector and to foster broader youth leadership and development programmes. Yet the linkage between ICT, Agriculture and the youth remains unexplored.

It comes out that young people in particular, have demonstrated an aptitude in developing, adopting and disseminating such technologies, and their leadership role in this sphere is evident throughout both the industrialized and developing world. In fact, it is common practice for adults to learn ICT skills from youth. Evident of success in ICT and Agricultural production is a case ICT use in vegetable growing by Bolivia small scale farmers where price information is managed efficiently enabling efficient decision making in Production. We are told that Information was entered into a database to analyzed the data and communicated with the buyers on quantities available, quality levels, and locations thereafter deals were negotiated. In Ghana “The Social Enterprise Foundation of West Africa; The farmers profit from an enlarged market and up-to-date information on market prices, Large scale buyers benefit from the efficient organization of supply and transport. The same services of market information and farm produce

aggregation to take advantage of economy of scale are seen with M-Farm, Kenya. Evidence is seen in the rare case of a programme in Kenya, studied by IICD, “ICT technologies such as M-Farm were helping the youth connect directly with the markets. In this case the youth interviewed said they ICTs gave farming a different image and that it was increasingly seen as a profitable business. Youngsters easily grasp the ICT applications, acquired information, and jumped onto new market opportunities. These practices that have worked well with the farmers and the rare case of youth programme could be customized for Youth in Mukaa Sub County to enable production of Pigeon pea.

2.4: Pigeon Pea Production



Source: (Snapp et al., 2003).

Pigeon pea (*Cajanus cajan*) is a perennial member of the family Fabaceae. The fruits are pods, containing four to five seeds. The seeds can be a range of colours: light brown, but they can be cream, grey, purple or black, depending on the variety.

Pigeon pea is an important grain legume crop of rain-fed agriculture in the semi-arid tropics. Main pigeon pea producing regions are the Indian sub-continent, Central America and Southern and Eastern Africa. Pigeon pea is produced as a vegetable or export grain crop in southern and eastern Africa. In Kenya, pigeon pea is the third most widely grown pulse crop, and it is one of the fastest growing cash crops with an annual growth rate of 3% in the last decade. Green pigeon pea is being exported from Kenya to Europe (Snapp et al., 2003). The dry grain is also an important local pulse and export commodity in several African countries (Kenya, Malawi, Mozambique, Tanzania and Uganda) (Minja, et al., 1999). In Kenya, the International Crops Research Institute for the Semi-Arid Tropics (**ICRISAT**) is providing farmers with free seeds, this may interest the youth who are resource poor.

There are various uses for pigeon peas; The different parts of the pigeon pea plant reportedly have 39 different medicinal and cosmetic uses in 13 countries (Upadhyaya et al., 2006). They are a rich source of carbohydrates, minerals, and vitamins. Seed protein content ranges between 18-25%, and carbohydrate content from 51-58%. Other minerals include calcium, phosphorus, magnesium, and vitamins A and C (Odeny, 2007). Others are considered a valuable forage crop, a 'cheap' feed for poultry and for use in integrated crop livestock systems (Krauss, 1936; Upadhyaya et al., 2006; Franzluebbbers, 2007)

ICT would come in handy in accessing relevant information and knowledge on pigeon pea value chain and thus optimizing on the produce and products and hence getting value for inputs. Youth may be able to handle their own sustainable development activities in the process of pigeon pea production.

2.5: Theoretical Framework

Diffusion of Innovations theory and Participatory Communication Model was used to guide the study and this theory has had a significant effect (Dearing, 2009). Diffusion of Innovations is a theory that seeks to explain how, why, and at what rate new ideas and technology spreads through cultures in diffusion and is the process by which an innovation is communicated through certain channels over time among the members of a social system (Robinson, 2009). The diffusion communication model is based on the transfer information leading to Changes in ideas, increased knowledge, the adoption of modern attitudes and practices (Rogers & Shoemaker, 1971). The aim is a measurable change in behaviour that serves the goals of economic and political development (Morris, 2005; Quarry & Ramirez, 2009; Waisbord, 2001). Public relations campaigns, slogans, social advertising, corporate communication are widely used forms of diffusion communication. These methods are effective when it is necessary to provide facts, deliver messages, develop a brand, seek donor funding (Quarry & Ramirez, 2009), and for what (Tufte & Mefalopulos, 2009) calls communication about development, informing audiences about development initiatives, activities, and results? This model is useful in strategies aiming “to foster positive behaviour; promote and sustain individual, community, and behaviour

Participatory communication is a term that denotes the theory and practices of communication used to involve people in the decision-making of the development process. The more people are involved in assessing a problem, sharing perceptions, creating new knowledge and consensus, and planning solutions that facilitate their own change to address structural inequality (Tufte & Mefalopulos, 2009) the more sustainable the development process. Participatory communication strategies are based on a circular, rather than linear, two way dialogue process relying on meaningful participation rather than information transfer to stimulate change (Tufte & Mefalopulos, 2009). Good communication (Quarry & Ramirez, 2009) involves tailor made approaches rooted in the specific context and is based on these principles: “Begin with what people already know;

understand how they perceive their predicament; do not impose solutions; work with the method and media they prefer; be prepared to make mistakes; engage people as much as possible.

The above theories are relevant because it is possible to explain how, why, and at what rate new ideas and technology spreads through cultures in diffusion. They also show the process by which an innovation is communicated through certain channels over time among members who have characteristic pattern of relating, youth do have their ways and even their language. They are also relevant since our aim is change in behaviour development. Participatory communication theory is relevant because practices of communication (ICT) are to be used to involve youth in the decision-making, in this case take up production of pigeon pea.

2.6: Conceptual Framework

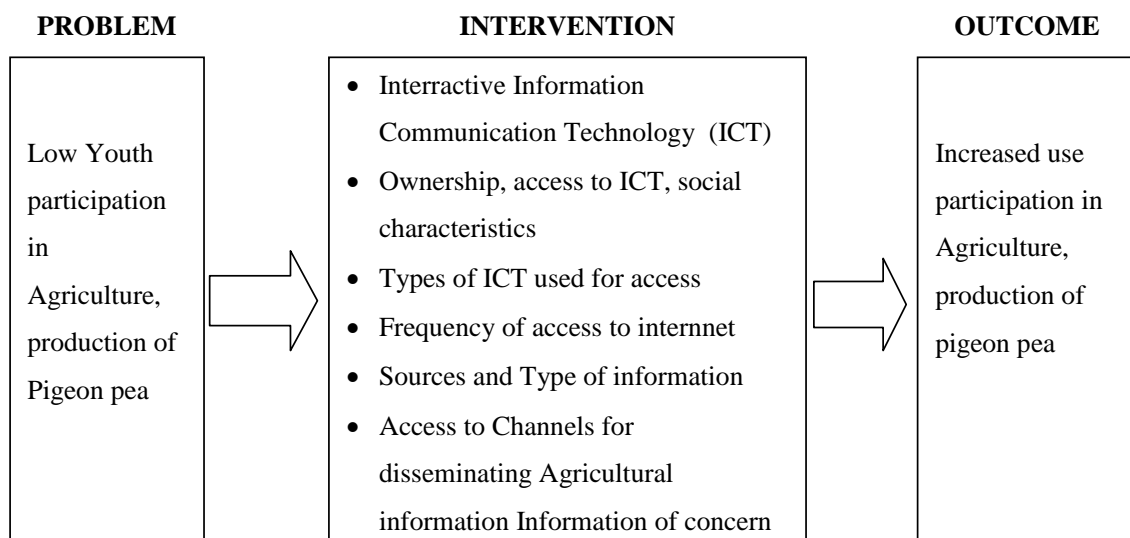


Figure 2. 1: Conceptual Framework

Source: aauthor-2014

CHAPTER THREE: METHODOLOGY

3.0 : Introduction

This chapter presents research design, population, sampling, data collection methods and instruments and reliability of instruments, data collection procedure and analysis techniques.

3.1 : Research Design

The study used cross sectional survey design because data was to be collected at once from the sampled population of youths. The youths were purposively selected by using age $18 \leq 35$ and being among the farming families in the two wards of Mukaa Sub County. Data was collected using structured questionnaire (see appendix) from a sample selected to represent the larger population. Random sampling was used to select individual youth, every 5th family was chosen and youth therein interviewed. In an event where the 5th was not in agriculture the 6th was interviewed. In this study purposive sampling was used to collect data at once because youth are a transition stage and any extra time would mean change of status of the youth. This design was meant to get youth at one stage given they are on transition.

3.2 : Research Methods

The study used both qualitative and quantitative methods in collecting and analyzing data. So the method was appropriate for this research since it explains in depth the role ICT in increasing youth participation in production of Pigeon pea.

The study used structured survey questionnaires to collect quantitative and qualitative data. Questionnaires were selected because they are a useful way of collecting information off a larger sample of people, in a wide range of settings to gather information about the opinions and behaviour of individuals (Freeman & De, 2002). There was then a focus group discussion to enrich the data collected.

Surveys are most common form of research method to collect primary data (Doody & Noonan, 2013). It is useful in describing e.g. frequency of some event or to assess' distribution of some variables such as proportion of population of different age groups, sex and knowledge attitude and adopting practices about particular issues and other information of similar nature about population.

3.3 : Population of the Study

In this study Youth who were within the farming community in the two wards formerly divisions of Malili and Kilome, Mukaa were targeted as the population. The population was preferred because of its attributes; age, numbers, level of energy, level of education and their ability to manoeuvre ICTs. Therefore the study focus on collecting data concerning this group (Youth) in relation to their use of ICT and its effect to their level of participation production in Pigeon pea in Mukaa, Kenya.

3.4 : Sampling Strategies

A purposive sampling technique was deployed in this study by use of age less than or equal to 35 years; that was the only the population deemed to be Youth adapting the universally acceptable definition of youth, (GoK, 2010). These further had to have been involved in Agriculture who were interviewed to get the numbers producing Pigeon Pea. The sample size was determined using a formula (Fisher et al, 1998) which requires prior information on a number of farm families in the study area, in this case 14,703 Farm families therefore 384 as the sampling frame. This assuming that in every farm family there is a youth.

3.5 Data Analysis

3.5.1 Reliability of Instruments

To establish the reliability of the instrument, the researcher pre-tested the questionnaire to fifteen youth who were drawn from Kiou Ward of Mukaa, a totally separate Ward from the area of study. The findings did not differ from the final study. This indicated that the instrument used was reliable. Qualitative data was collected by use of interview using questionnaire, observation to confirm e.g. gender and case studies used in literature

review and discussions. For analysis, SPSS and excel software was used to group data into tables and charts and ANOVA single factor was used to test the hypothesis. This was because there was only one independent variable that was being measured at either nominal or ordinal levels. The dependent variable measured at either the ratio or interval scale (Mugenda and Mugenda, 2003). Qualitative data was collected.

CHAPTER: FOUR RESULTS

4.2: Research Results

4.2.1: Gender

Distribution according to gender, majority of the respondents 67% were females while the remaining 33% were males, see fig 4.1 below

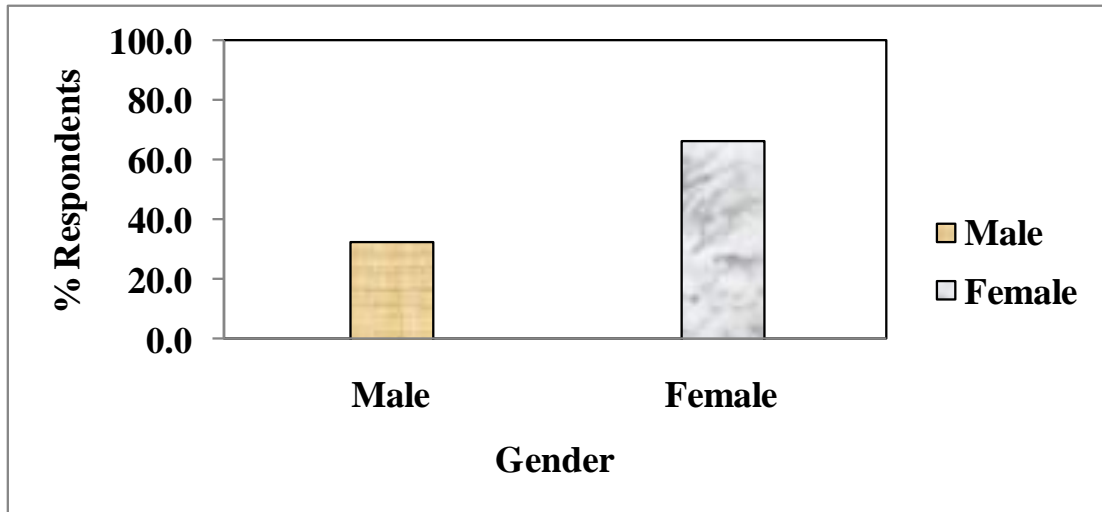


Figure 4. 1: Distribution according to gender

Source: aauthor-2014

4.2.2: Age Group

The study revealed that most of the respondents were 31-35 years were 65%. This was followed by those who were between 26-30 years at 27% while the remaining 8% were between 18-25 years see fig 4.2 below

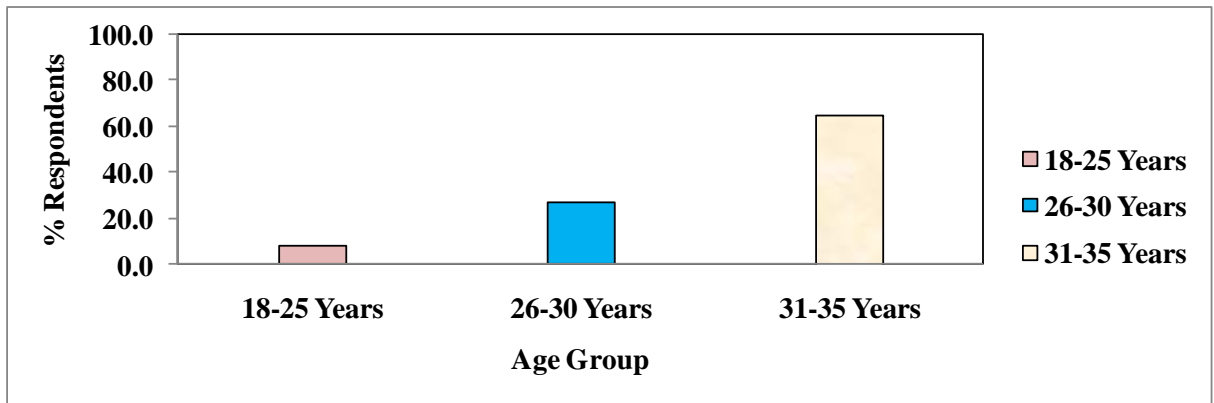


Figure 4. 2: Age group

Source: aauthor-2014

4.2.3: Marital Status

The study sought to establish the marital status of the respondents. It was noted that 63% of the respondents are married while 19.5% were single. The remaining 18% were widowed.

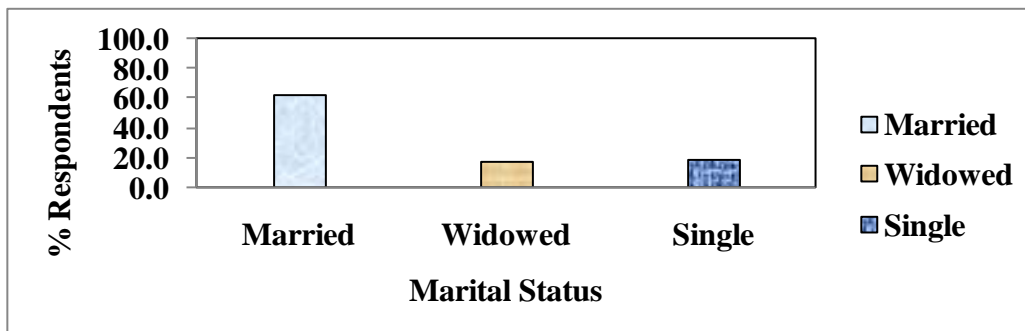


Figure 4. 3: Marital Status

Source: aauthor-2014

4.2.4: Having Children

The figure 4.4 below shows the distribution according to whether the respondents had children or not. Among the respondents, the study revealed that 73% of them had children while 27% did not have.

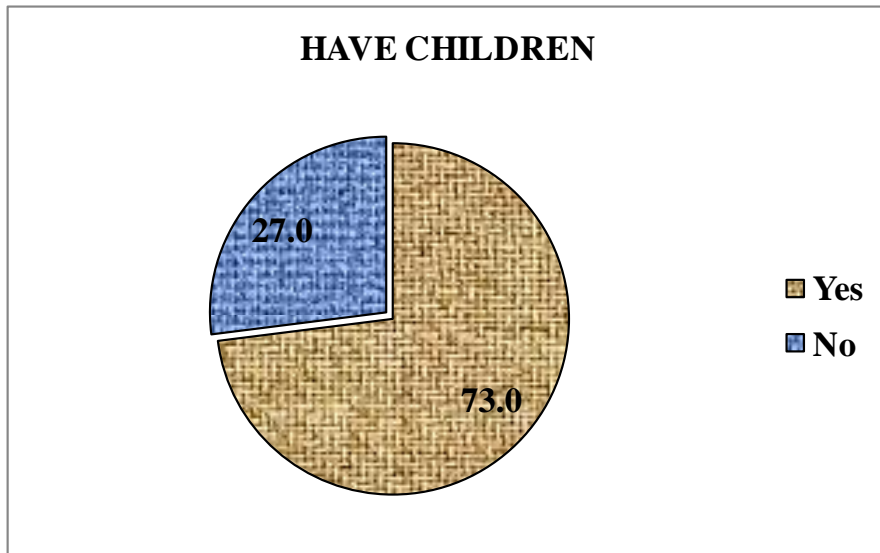


Figure 4. 4: Having Children

Source: author-2014

4.2.5: Major Source of Livelihood

The major source of livelihood for people in this area is agriculture and related business (production and sale of agricultural products) as was suggested by 89% of the respondents who are youth in the farming community of the two division of Mukaa. The other source of livelihood stated by the respondents is shop business which was mentioned by 11% of the respondents. In as much as there were some other options like pigeon pea production and other businesses, it happened that none of these were chosen as major sources of livelihood, Pigeon pea was grown as part of soil management and food but not for sale and therefore not considered as major source of livelihood. See Figure 4.5 below

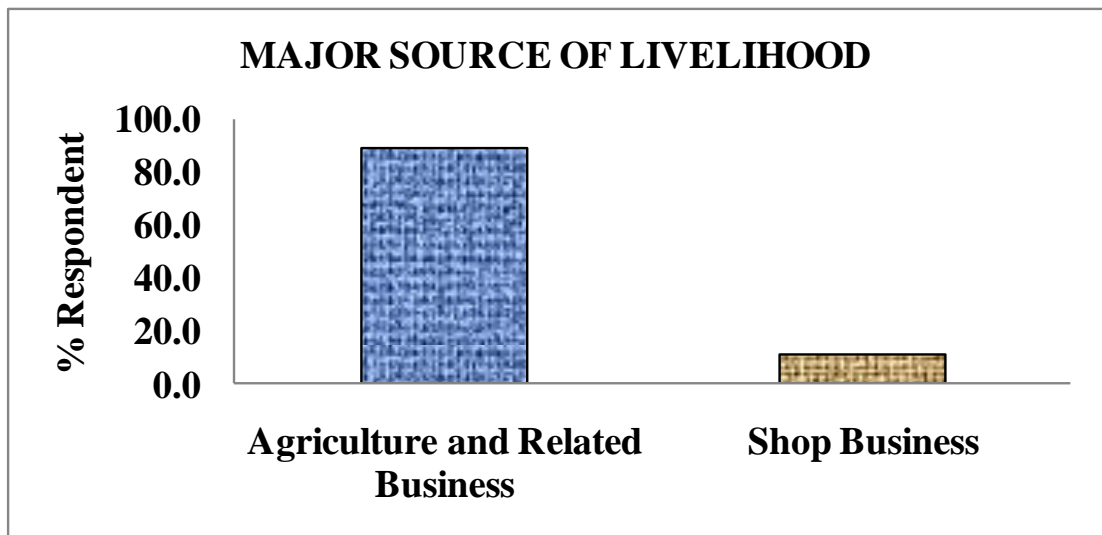


Figure 4. 5: Major Source of Livelihood

Source: aauthor-2014

4.2.6: Trained in Agriculture

Figure 4.6: below shows distribution according to whether the respondents had training prior to engaging in agriculture. It can be noted that majority of the respondents were not trained in agriculture as was identified among 88% of the respondents. Only 12% acknowledged that that they had undergone training in agriculture.

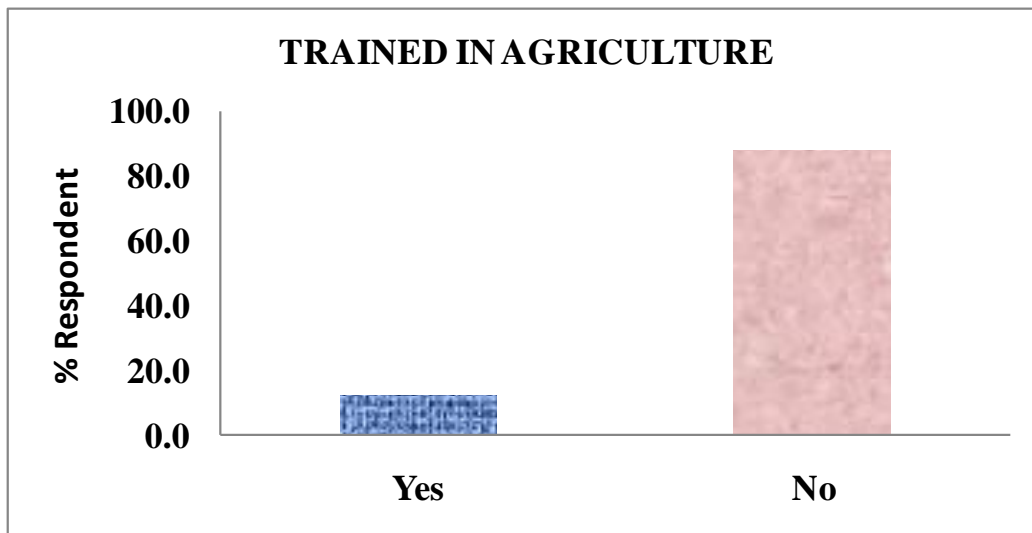


Figure 4. 6: Trained in agriculture

Source: author-2014

4.2.7: Starting Agricultural Work

The figure 4.7 below shows how the respondents started their agricultural work. Majority of the respondents started the work after they inherited it from either their husbands or parents. This was seen among 63.9% of the respondents. Others attained their agricultural skills through practice and are a total of 31.9% of the respondents. Those started agriculture after training was at 2.3% with those who started after getting information from neighbours, and other sources.

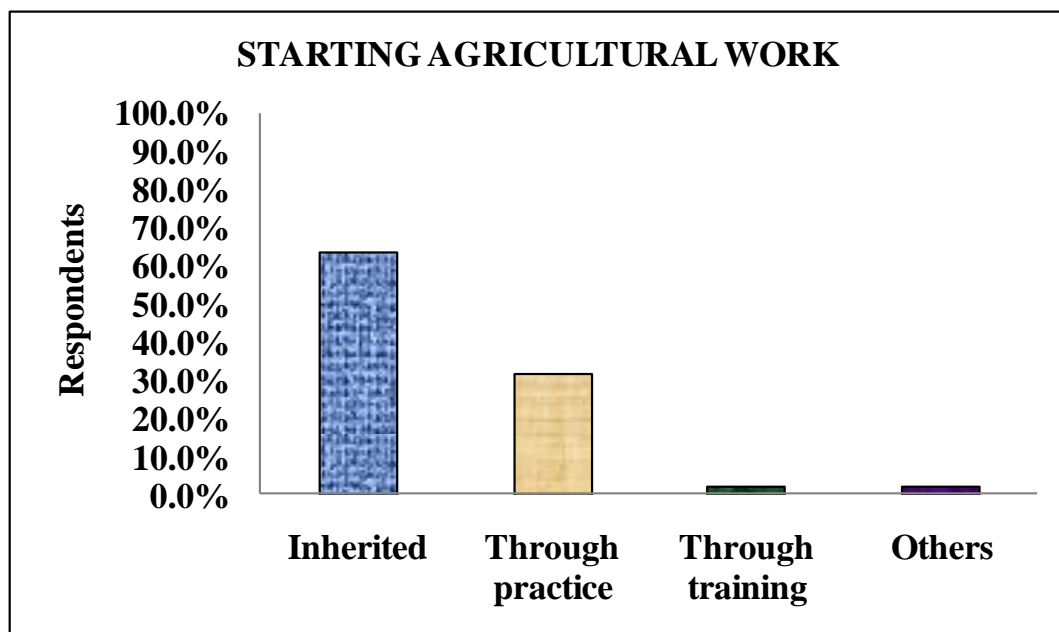


Figure 4.7: Starting Agricultural Work

Source: author-2014

4.2.8: Practicing Agriculture Alone or Group

Most of the respondents were noted to be practicing agriculture individually. This was mentioned by 98% of the respondents who said that they operate alone. The other 2% said that they practice agriculture as a group. See Figure 4.8 below.

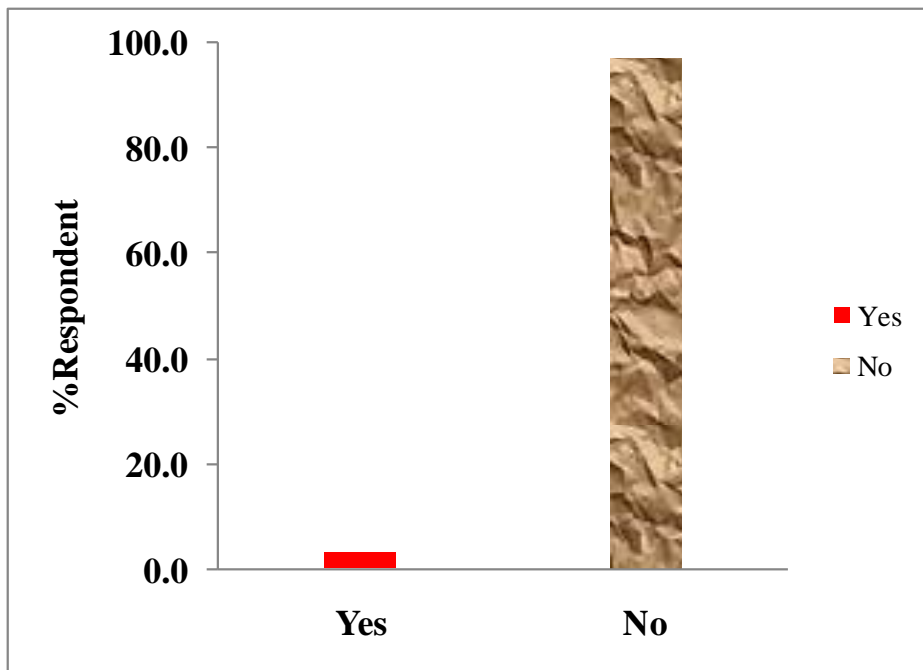


Figure 4. 8: Practicing Agriculture Alone or Group

Source: author-2014

4.2.9: Main Agricultural Enterprises

Livestock production was noted to be the most common agricultural practice among the people in this community. This was seen among 57% of the respondents. This was followed by crop production at 35%. Both agro processing and others like fish farming were at 4%.

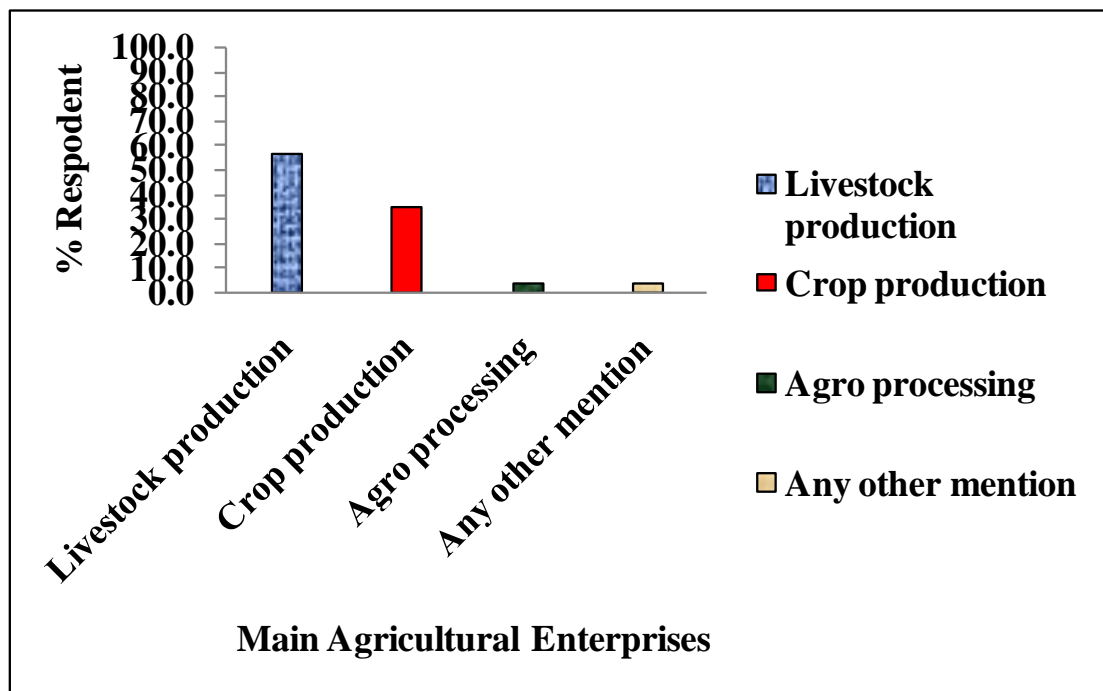


Figure 4. 9: Main Agricultural Enterprises

Source: aauthor-2014

4.2.10: Objectives of Engaging in Each Agricultural Enterprise

The major objectives of agricultural enterprises were noted to a source of livelihood to the community as was mentioned by 70% of the respondents. The remaining 30% said that the objectives of agricultural enterprise are educative. There were other variables like hobby, pressure from parents; peer influence was not considered by any of the respondents as an objective of the agricultural enterprises.

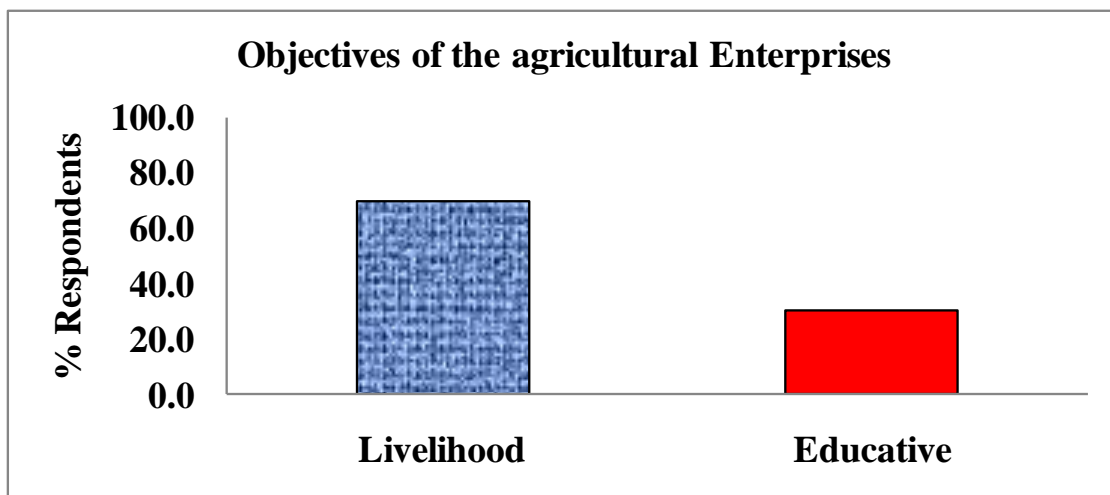
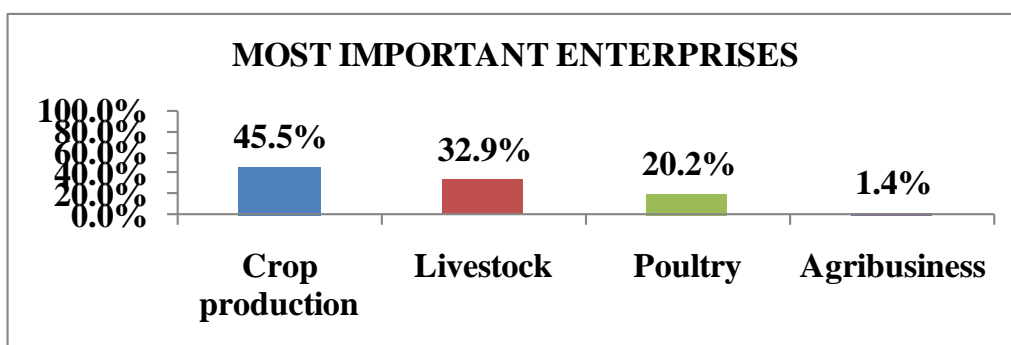


Figure 4. 10: Objectives of Engaging in Each Agricultural Enterprise

Source: author-2014

4.2.11: Most Important Enterprises

Crop production was identified by 45.5% of the respondents as the most important enterprises. This was followed by livestock production with 32.9% of the respondents while poultry keeping was at 20.2%. The last one was agribusiness which had mere a percentage of 2%.



Source: author-2014

4.2.12: Preference in Enterprises by Gender

The figure 4.12 below shows the preference of the enterprises by gender. Most of the respondents 83% said that there is no preference of the enterprises by gender. The other 17% said that there was preference of enterprises by gender where they went ahead and

noted that most male prefer keeping big livestock and crop production. The female were also said to be majorly in poultry and crop production especially vegetables.

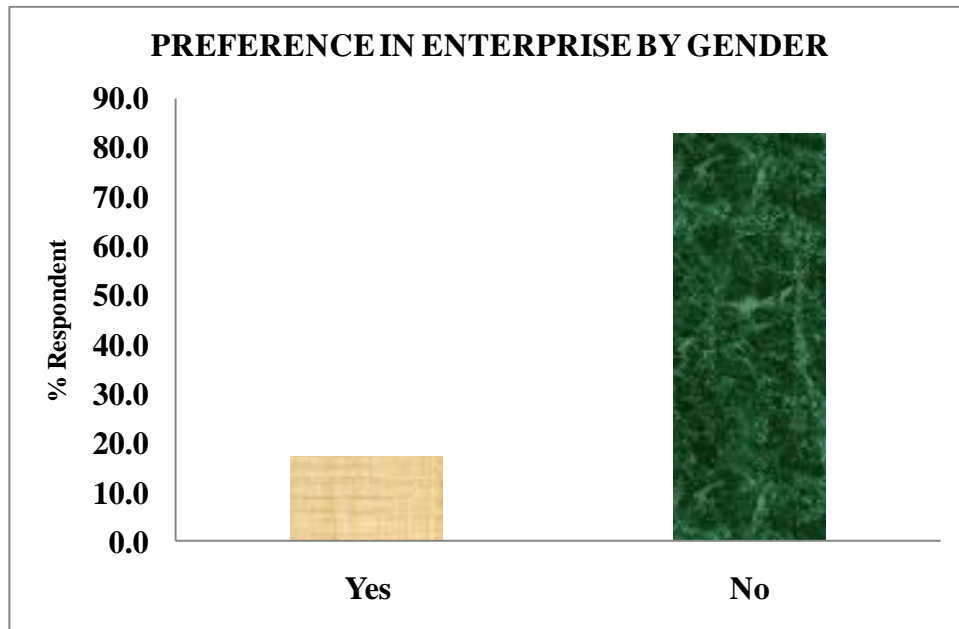


Figure 4. 11: Preference in Enterprises by Gender

Source: aauthor-2014

4.2.13: Production Practices

For each of the enterprise, the production technology identified by 77% of the respondents was use of arm machinery where majority mentioned ox plough. The other few mentioned tractor. The remaining production practice as identified by 23% of the respondents was zero tillage. Others like greenhouse, internet were not mentioned here as a production technology although when probed further it came out that they get agricultural information through their cell phone; these includes approved practices like early maturing crops and even greenhouse technology which means some level of technology blindness. See figure 4.13 below.

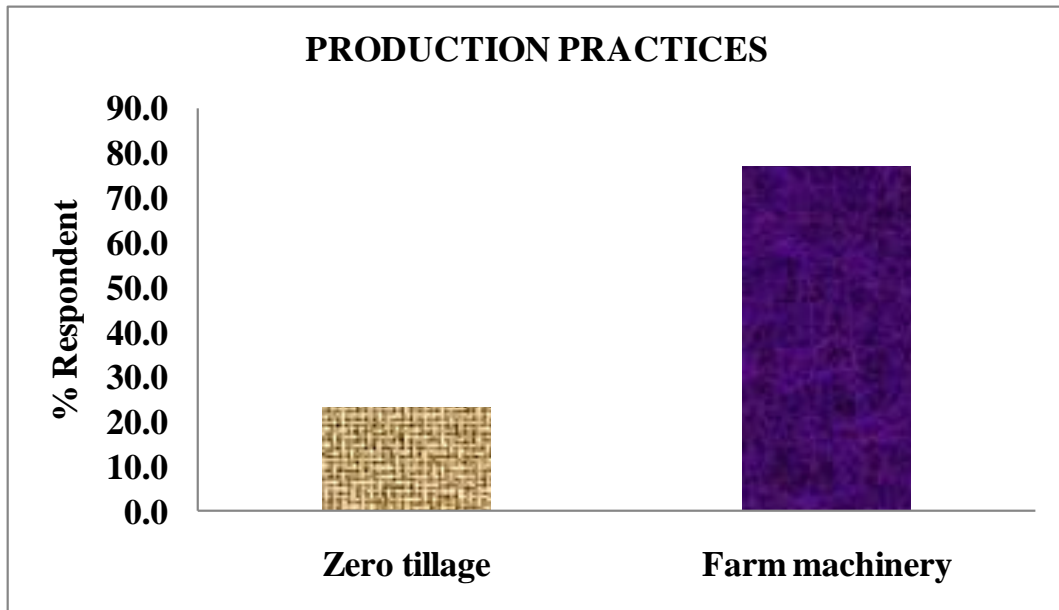


Figure 4. 12: Production Practices

Source: author-2014

4.2.14: Marketing

Most of the Young farmers market their produce through any other means as identified among 60% of the respondents. The other 39% did their marketing through neighbours while the remaining 1% did their marketing through radio.

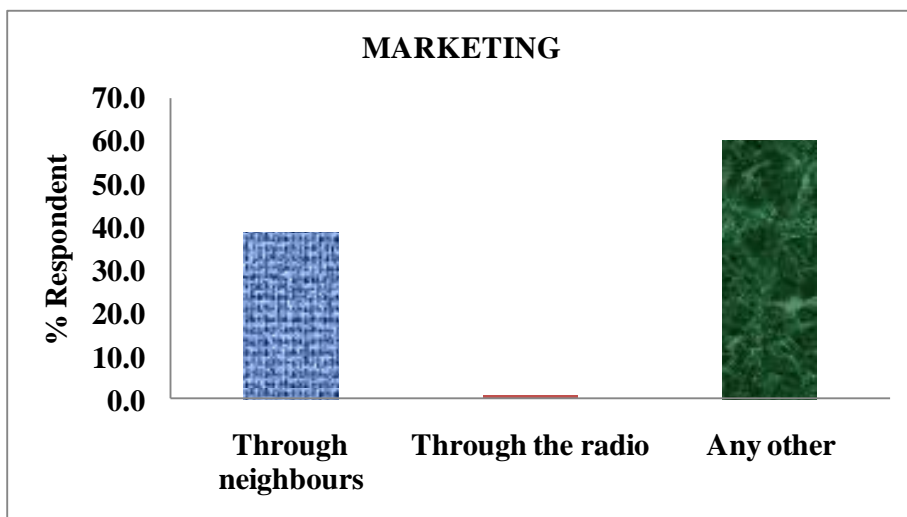


Figure 4. 13: Marketing

Source: author-2014

4.2.15: Income Range

The income ranges are generally notably, notwithstanding it is varied in four ways. 62.6 % of the population earns over 1000 shillings per day, while the least, i.e. 5.1 %, earn less than 200 shillings. The rest earn equally minimal amount, with 15.2% having incomes ranging between 300-500 shillings, and another 17.2 % earning between 600 – 1000 shillings per day. This is important because it is a direct contributor to what a single person or family can afford to spend and neighbourhood choices use of ICT included.

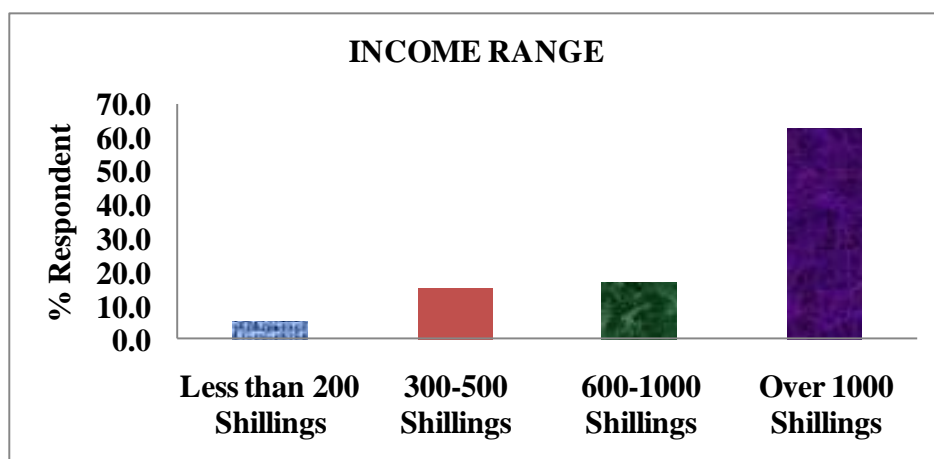


Figure 4. 14: Income Range

Source: author-2014

4.2.16: Source of Information

The information that supported agricultural practice was sourced from three main areas. From figure 17 below, 77.8% of the respondents acknowledged that that radio was the main source of information; while insignificant 1% received information from the internet. Another 9.1% of the respondents have been receiving agricultural information from government through agricultural officers; however, the remaining 12.1 % received from unexpected sources. See figure 4:16 overleaf.

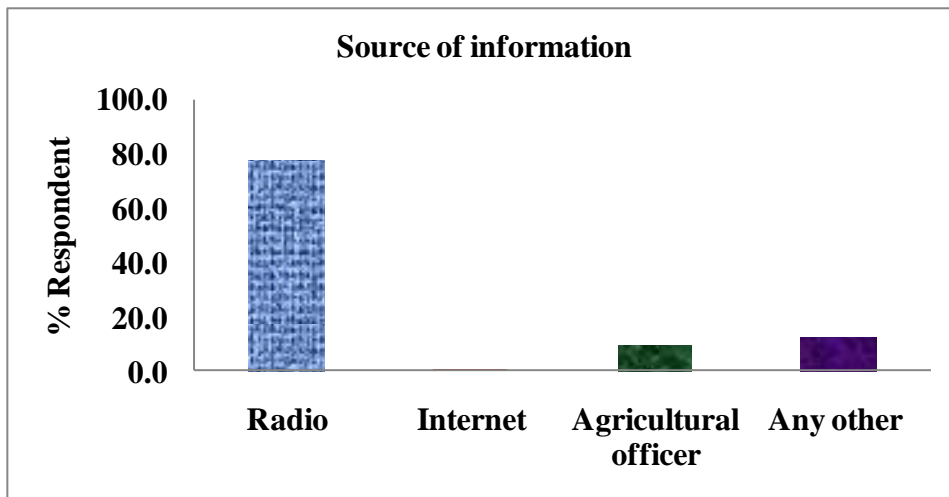


Figure 4. 15: Source of Information

Source: aauthor-2014

4.2.17: Access to Internet

Although internet was considered the least source of agricultural information, respondents accessed information from it from one medium: their cell phone. Overall this access constituted only 5% of cell phone users, while it is evident from figure below that 95% of cell phone users.

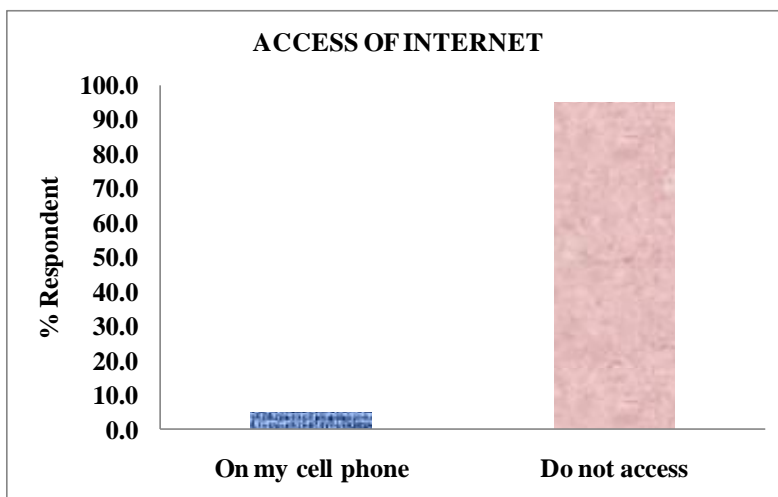


Figure 4. 16: Access to Internet

Source: aauthor-2014

4.2.18: Frequency of Internet Access At Least Once a Month

The frequency of the internet access is equally low, with 1.0 % of the respondents accessing it two to five times a month; while 4% of the respondents accessing six to twenty five times over the same period. On the other hand, 95% of the respondents did not access internet in a consistent pattern.

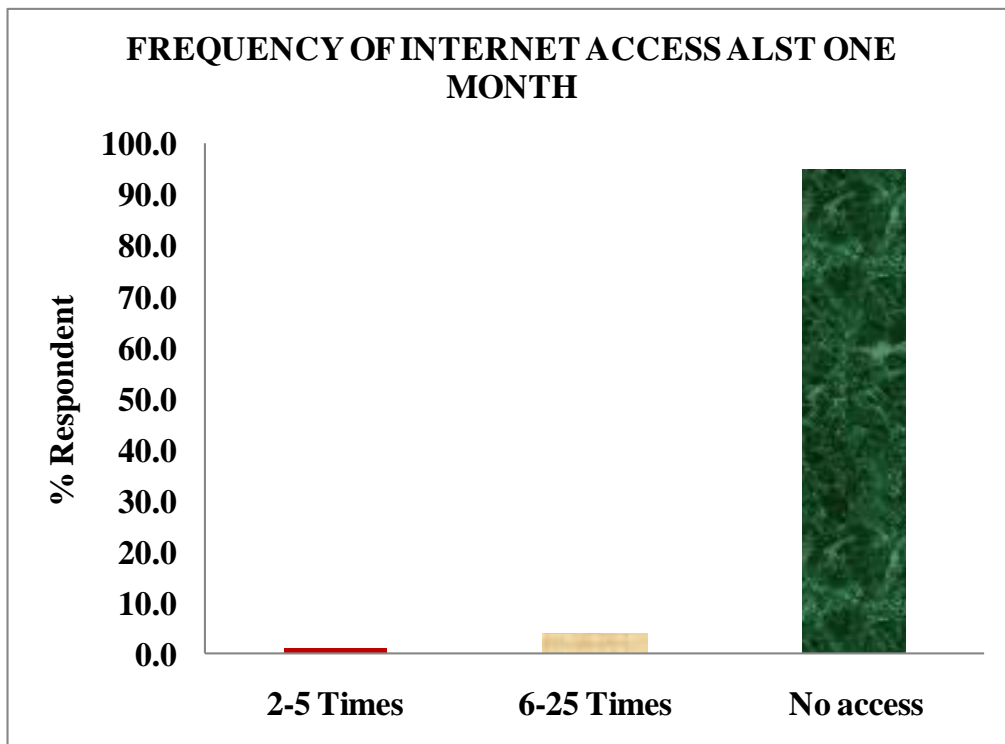


Figure 4. 17: Frequency of Internet Access At Least Once a Month

Source: aauthor-2014

4.2.19: Information frequently looked for

For most respondents 95% of the respondents did not find need to search for information on the internet? However those who search information on agriculture, entertainment and

general knowledge constitute 2%, 3% and 1% respectively, as illustrated in the figure 20: below.

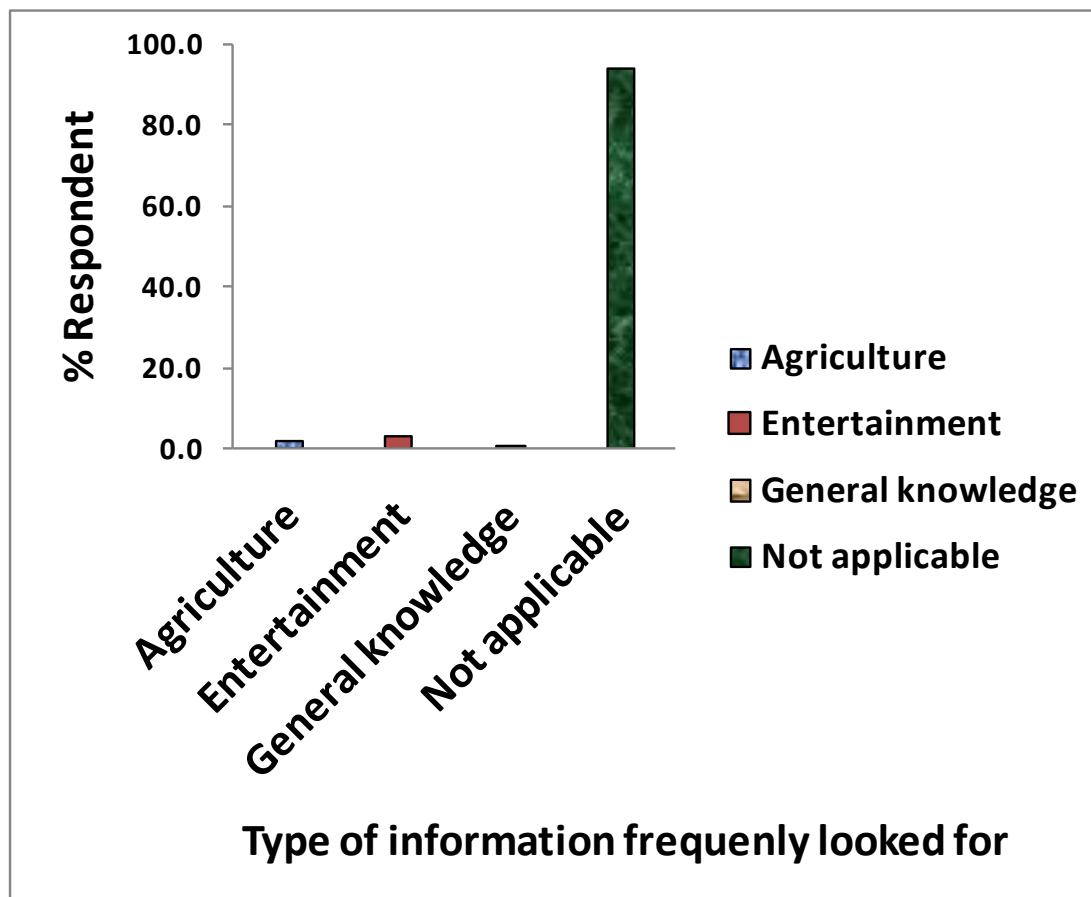


Figure 4. 18: Information frequently looked for

Source: author-2014

4.2.20: Channels Used to Disseminate Agricultural Information

There were several channels through which agricultural information is disseminated. See figure 4.20 below, about 83% of the respondents cited radio broadcast, while both internet and television constitutes of 2% each. However there are about 13% cited different channels which include interpersonal communication; Agro-based entrepreneurs, Refer to expert, Printed Media, local Newspaper from the one anticipated in the study.

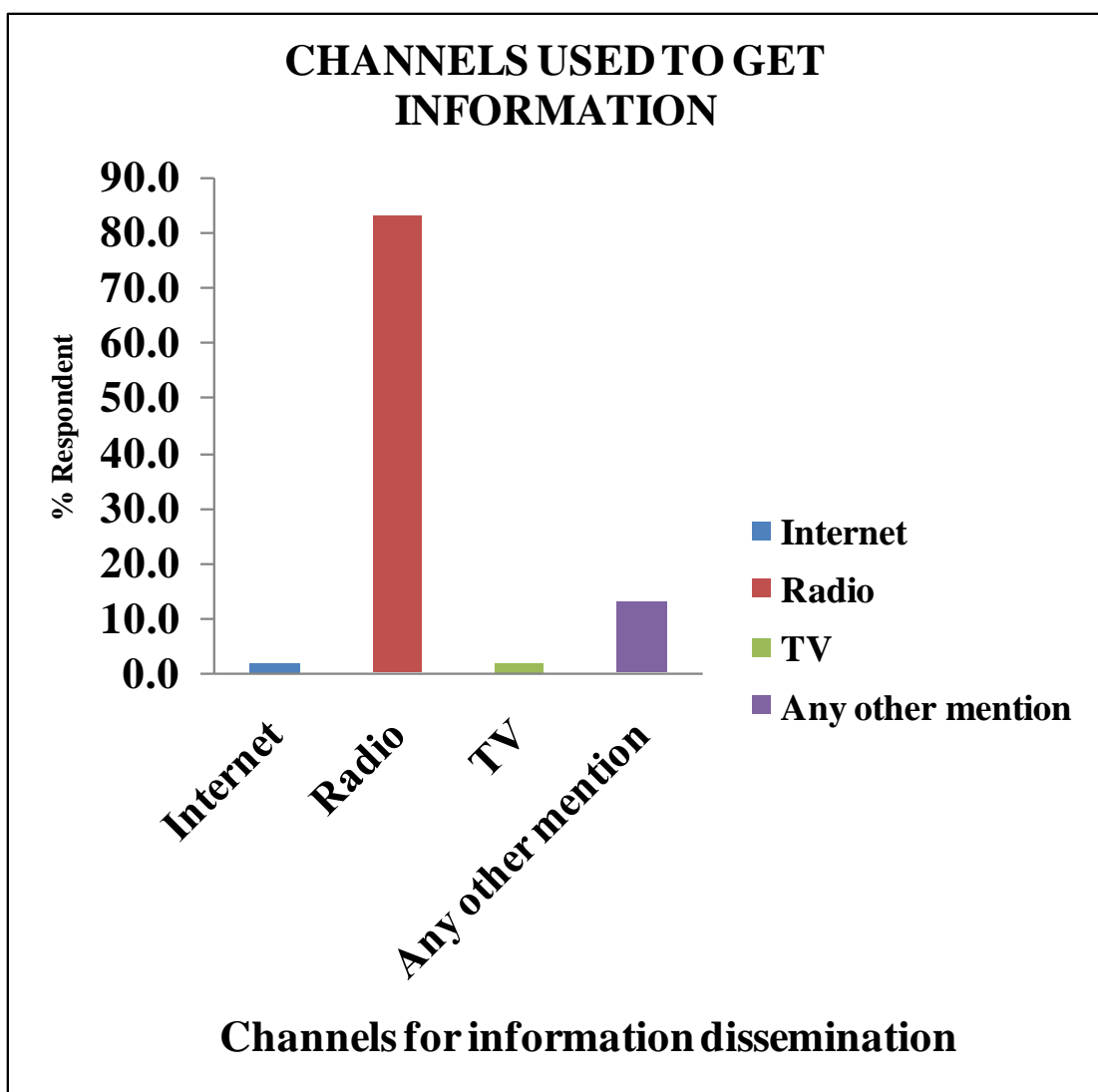


Figure 4. 19: Channels used to get information

Source: author-2014

4.2.21: Who Frequents the Channels Used to Disseminate Agricultural Information?

The table below shows the distribution is the response as to those who frequent channels used to disseminate agricultural information. It came out that youth were not using the same channels and that they are only used by adults 100%.

Table 4.1: Frequency to channels used to disseminate agricultural information

Variable		Frequency	Percent	Valid Percent	Source: aauthor-2014
Valid	Adults	100	100.0	100.0	

4.2.22: Whether the Youth Visit/Listen to the Channels?

The study revealed that the youth neither access nor listen to these channels for agricultural information dissemination.

Table 4. 2 : Whether the Youth Visit/Listen to The Channels

	Frequency	Percent	Valid Percent	Source: aauthor-2014
No	99	99.0	100.0	

4.2.23: Challenges When Sourcing Information

While 3.1% of the respondents agreed that challenges were manifest when sourcing information, there was a large segment constituting of 96.9% said they did not experience any challenges.

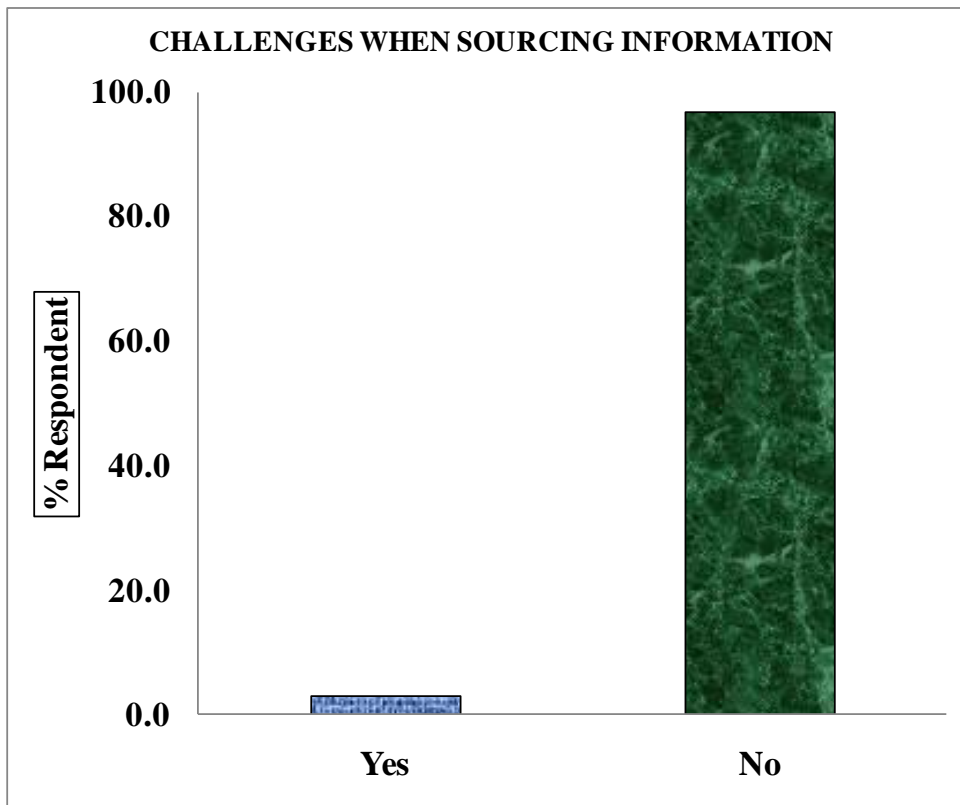


Figure 4. 20: Challenges when sourcing information

Source: author-2014

4.2.24: Have a Cell Phone

Cell phone is increasingly becoming an important tool among youth in agriculture. Figure 4.22 below for instance; show that 67% have cell phone, while 33% indicated that they do not own cell phone.

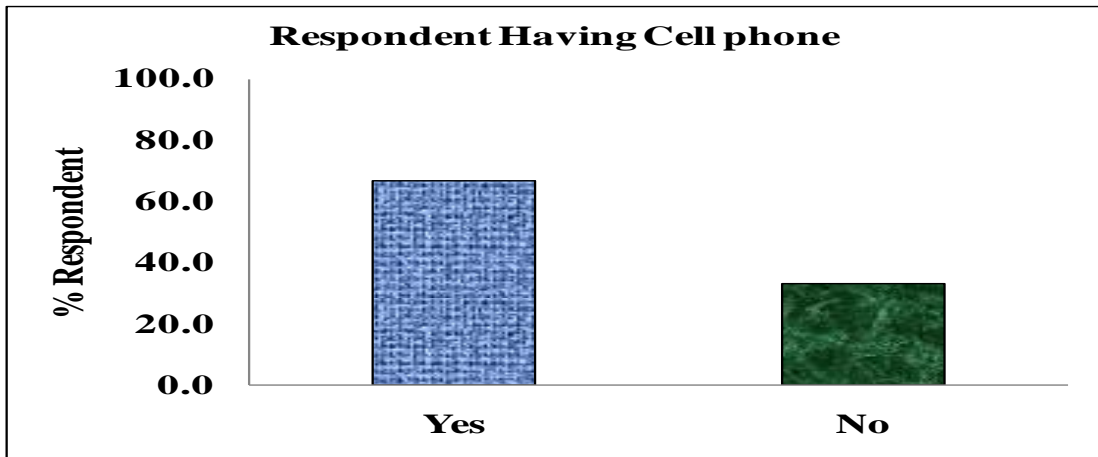


Figure 4. 21: Have a Cell Phone

Source: author-2014

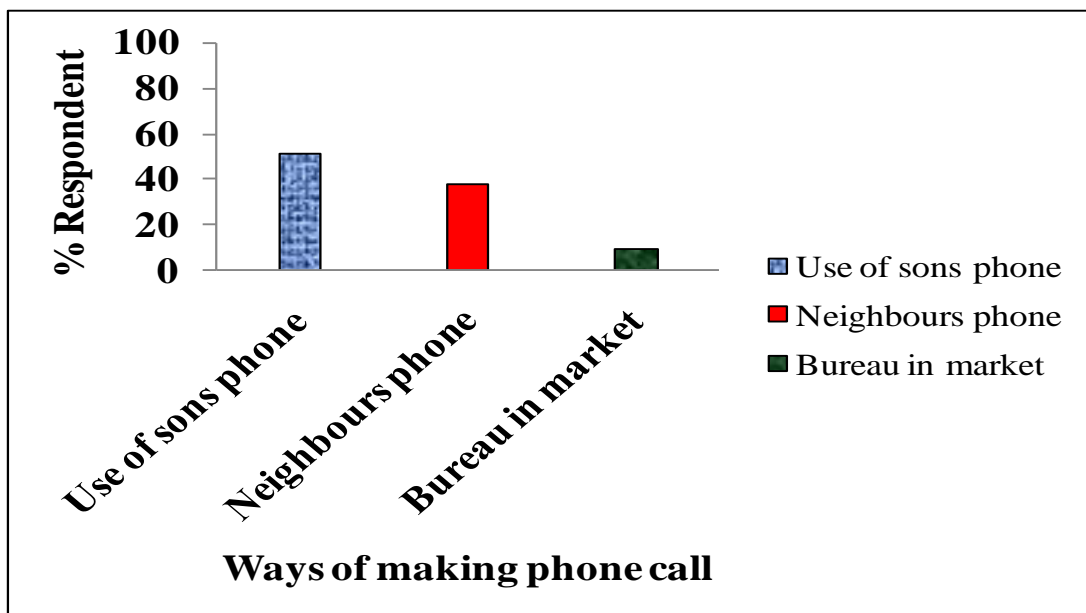


Figure 4. 22: Ways of making a phone call

Source: author-2014

4.2.25: Way of Making a Phone Call

Results show that 52% use their sons' phone, 38% use neighbours' and 10% use bureau in the nearest market.

4.2.26: Information of Concern

A significant proportion felt that there is information or issues that need to be addressed, although figure 15: below does not provide any particular order in which this ought to be done. A good number, 99% of the respondents agreed that they would want certain information to be addressed, while 10% did not express any particular concern. See Figure 4.24 below.

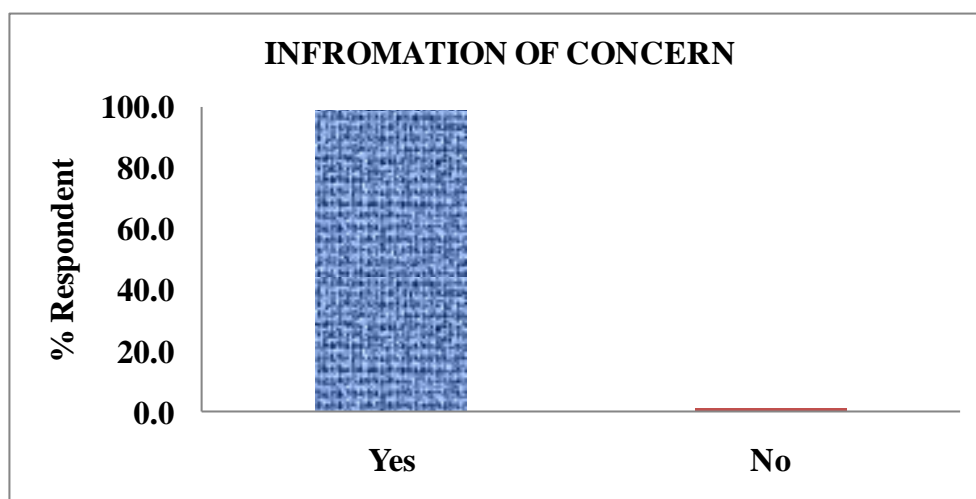


Figure 4.24: Information of Concerns

Source: aauthor-2014

4.2.27: Information of Concerns to be addressed

Since majority of respondents acknowledge that certain issues need to be addressed, the study segmented these issues into; pests and disease control in crops, soil management, irrigation, seeds, poultry and livestock, marketing of agriculture produce and planting time in order of their preference. Figure 12 below, thus show that 25.7% and 25.3% preferred pests and disease control in crops and soil management respectively; while very few, about 2.4% of the respondents, considered planting time as a concern.

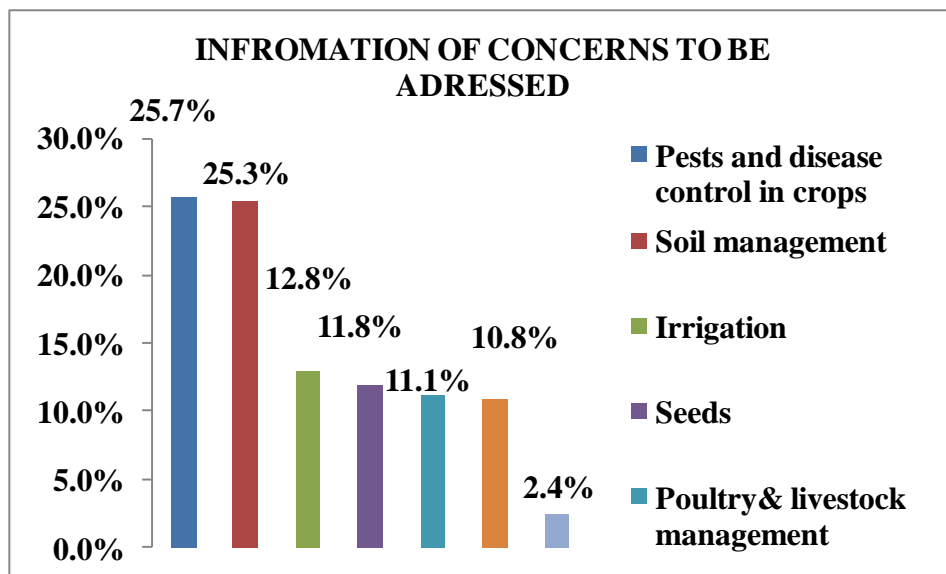


Figure 4. 23: Information of Concerns to be addressed

Source: author-2014

CHAPTER FIVE: DISCUSSION, RECOMMENDATIONS AND CONCLUSION

5.0 : Introduction

This chapter presents the discussion of results, draws conclusions according to the findings on each of the study objectives and gives recommendations as per research objective.

5.1 : Discussion

5.1.1: Effect of ICT in Increasing Youth Participation in Production of Pigeon Pea versus the Total Farmer Population Involve

Cell phone is increasingly becoming an important tool among youth in agriculture. Figure 7, for instance, show that 67% have cell phone, while 33% indicated that they do not own cell phone. These results are related to those by (Samah, et al., 2012) although not exact to those especially the variable **ICT** possession among youth agro-based Entrepreneurs, which depict that mobile phone was the most popular ICT tool among youth agro-based entrepreneurs where 98.5 percent of respondents possessed this device. From this study it comes out that the respondents all know the importance of this device in their daily life and their business as what the general public admits. It also comes out that the entire respondents use mobile phone whether they own or not.

Although internet was considered the least source of agricultural information, respondents accessed information from one medium, their cell phone. Overall this access constituted only 5% of cell phone users, while it is evident from figure below that 95% of cell phone users who are Youth in Agriculture in the two divisions have not embraced it as an appropriate medium for sourcing agricultural information. These results are similar to another study by (McKenzie, 2007), which gives the main reason for many youth to use ICT is entertainment playing games, downloading music, and talking with friends. In another study by Samah, et al., (2012), on factors influencing the perception of youth agro-based entrepreneurs towards the role of ICT in increasing agro-business

productivity where they looked at the variable: Level of ICT usage and other sources to gain agriculture information their results also indicated that mobile phone was not the most frequently used ICT tool in sourcing for agricultural information by Youth agro based entrepreneurs. The highest ICT tool used was television where 78.4 percent viewed television at always level compared to 74.6 percent respondents who always used mobile phone. Further probe during our interview revealed that youth used the mobile phone more for social connection, this is confirmed in another study in Tanzania, Selecting Social Media Applications to Increase Participatory Communication in the Education-Entertainment project, (Yarde, 2010) They looked at Youth using Online ICT this revealed that their content contribution is limited to the basic functions of online chats and posting images.

5.1.2: Determine to What Extent Are the Youth Using Communication Channels that are used to Disseminate Agricultural Information

There were several channels through which agricultural information are disseminated; about 83% of the respondents cited radio broadcast, while both internet and television constituted of 2% each. However there were about 13% cited different channels which include interpersonal communication; Agro-based entrepreneurs, Refer to expert, Printed Media, local Newspaper from the one anticipated in the study. Furthermore it was noted that these channels are only used by adults at 100%.

The youths were not interested in channels used to disseminate agricultural information. This puts it clearly that for youth to be on board at the same time have the adults access from the same channels there has to be a change of strategy in disseminating agricultural information to get a common channel accessed by all for dissemination agricultural information. The results on this variable is similar to results found by(Samah, et al., 2012) who looked at Factors Influencing the Perception of Youth Agro-based entrepreneurs towards the role of ICT in increasing agro-business productivity and one of the variables they also looked at ICT possession among youth agro-based entrepreneurs; It came out that radio and Telephone possession was encouraging and that slightly more than 90 percent of respondents interviewed possessed these two channels, thus reflecting

its potential to be main channels for agricultural information dissemination. Another finding on similar variable is (Hayrol, et al., 2009) Evaluated the Use of ICT in Agricultural Technology Delivery to Farmers in Ebonyi State, Nigeria and it came out that agricultural communities prefer to use traditional ways instead of using ICT, they prefer asking their neighbours and relying on traditional mass media such as television, radio and newspapers.

5.1.3: Assess Whether The Access And Ownership of ICT By Youth Has a Relationship to their Use in Production of Pigeon.

Cell phone is increasingly becoming an important tool among youth in agriculture, for instance, it came out that 67% the respondents have cell phone, while 33% indicated that they do not own cell phone. These results are related to although not exact to results found by (Samah, et al., 2012) in variable **ICT** possession among youth agro-based Entrepreneurs, it depict that mobile phone was the most popular ICT tool among youth agro-based entrepreneurs where 98.5 percent of respondents possessed this device. It seems that they knew the importance of this device in their daily life and their business as what the general public admitted.

Although internet was considered the least source of agricultural information, respondents accessed information from it from one medium, their cell phone. Overall this access constituted only 5% of cell phone users, while it is evident from figure below that 95% of cell phone users who are Youth in Agriculture in the two divisions have not embraced it as an appropriate medium for sourcing agricultural information. These results are similar to results by Samah, et al., (2012) in their study factors influencing the perception of youth agro-based entrepreneurs towards the role of ICT in increasing agro-business productivity where they looked at the variable: Level of ICT usage and other sources to gain agriculture information their results also indicated that mobile phone was not the most frequently used ICT tool in sourcing for agricultural information by Youth agro-based entrepreneurs. The highest ICT tool used was television where 78.4 percent viewed television at always level compared to 74.6 percent respondents who always used mobile phone. Further probe during focus group discussion revealed that youth used the

mobile phone more for social connection; this is confirmed in another study in Tanzania, *Selecting Social Media Applications to Increase Participatory Communication in the Education-Entertainment project*, (Yarde, 2010). They looked at Youth using Online ICT this revealed that their content contribution is limited to the basic functions of online chats and posting images. In another ICT related study by (Font, 2009). The phenomenal growth of information and communication technology (ICT) especially the Internet has affected youths in developed and developing countries alike. Although progressing at a slower rate in developing countries than in any other parts of the world, Internet connectivity is also transforming the face of Africa. This paper presents a study that examines what Nigerian youths use Internet for and which of the Internet use has adverse effect on the youth's social life. It reveals that majority of youths use Internet for e-mail, making use of Yahoo followed by Hot-mail, and the study also reveals that over 50% of youths interviewed visit pornographic sites.

In my study majority of respondents acknowledge that certain issues need to be addressed, the study segmented these issues pests and disease control in crops, soil management, irrigation, seeds, poultry and livestock, marketing of agriculture produce and planting time in order of their preference; 25.7% and 25.3% preferred pests and disease control in crops and soil management respectively; while very few, about 2.4% of the respondents, considered planting time as a concern. Looking at the kind of information at stake here one sees decisions which to be made at the right time there is going to be value for money, this calls for use of ICT because of its attribute of giving real time information and therefore reliable as seen here below:

Access to price information which will inform farmers on the accurate current prices and demands of the products. Hence, the farmers will be able to competitively negotiate in the agricultural economy and their incomes will be improved.

Access to agriculture information which according to the review of global and national agricultural information systems done by IICD with support from DFID in 2003, there is a need for coordination and streamlining of existing agriculture information sources, both internationally and within the developing countries. The information provided is usually

too scientific that farmers cannot comprehend. Therefore, it is vital that the local information be relayed to the farmers must be simplified.

Access to national and international markets increasing the level of access of farmers is very vital in order to simplify contact between the sellers and the buyers, to publicize agricultural exports, facilitate online trading, and increase the awareness of producers on potential market opportunities including consumer and price trends.

Increasing production efficiency; due to several environmental threats such as climate change, drought, poor soil, erosion and pests, the livelihood of farmers are unstable. Thus, the flow of information regarding new techniques in production would open up new opportunities to farmers by documenting and sharing their experiences(Stefansson, 2002).

Creating a conducive policy environment through the flow of information from the farmers to policy makers, a favourable policy on development and sustainable growth of the agriculture sector will be achieved(Stefansson, 2002).

In irrigation apart from giving information it may also give instructions for automation and control resulting not only in right decision and maximizing profit but also bringing down the drudgerous nature of traditional farming(Cummings, 2004).

From the results of the study it comes out that the information that supported agricultural practice was sourced from three main areas; 77.8% of the respondents acknowledged that that radio was the main source of information; while a paltry 1% received information from the internet. Another 9.1% of the respondents have been receiving agricultural information from government through agricultural officers; however, the remaining 12.1 % received from unanticipated sources, this brings out the fact that there need for awareness creation on the need of information and use of ICT to source for information.

5.1.4: Study Lessons that will Inform Strategies for employing ICT Based Knowledge Management efforts Mukaa and Kenya and beyond.

From the results of this study there is digital divide among youth in agriculture as seen in the fact that very few access internet, while majority responded that they have no need to access which could be attributed to the fact that most of them, may not see any connection between information and agribusiness.

Seen is technology blindness since when asked the technology they are using in agricultural practices, information technology is not in any of the options the respondents mentioned.

There is lack of awareness on the importance of agricultural information and the process of accessing useful information; this can be confirmed from the fact that the majority respondents had cell phone. This is the same ICT tool most rural people have and use to access agricultural information yet the numbers of those practicing agriculture using it for accessing agricultural information are worrying (Joseph & Andrew, 2008) same is the case of this study. The kind of information sourced for by Youth practicing agriculture; they access more of social related information than they do to agriculture this may only reflect the lack of seriousness they put on their source of livelihood.

The results (Table 5.1) revealed that more than two third of respondents in agriculture (67.%) were female, thus fits with general situation found out there. (Mehl, et al., 2007) also found contributing dominance in agriculture field.

Table 5. 1 : Profile of Respondent

Variables	Response	Frequency	Mean
Gender	Male	33	37.91
	Female	67	
Age	18-25 Years	8	
	26-34 Years	27	
	35 Years	65	
Marital status	Married	63	
	Widowed	18	
	Single	19	
Have children	Yes	73	
	No	27	
Source of livelihood	Agriculture and Related Business	89	
	Shop Business	11	

Training in agriculture	Yes	12
	No	88
Practice alone or in a group	Yes	2
	No	98

Source: author-2014

It might be one of factors to the perception that agriculture involves a lot of resilience and for which is why women generally dominate (Food and Agriculture Organization, 2011). See table 5.1 above, a meagre 12 percentage of those practicing have prior training in agriculture and related. Towards the end of interview were discussion to tie the loose ends and it came out that more than half of the respondents had no formal education. This is similar to a study in the rural India (Parvathamma & Pattar, 2013).

From the study it therefore comes out that something must be done to sustain those youth already practicing, capacity build them on need for access and of information in agriculture and attract more youth especially those with some level of education to change the perception that agriculture is only for those having lower education or none. Most of the respondents were (65.0%) were 35 years old followed by 26-34 years old (27.0%) and 18-25 years old (8.0%). Mean age of the respondent was 37.91 years. Most respondents 73% were married and had children of their own or in their custody. This study found that majority of youth, 98 % interviewed were practicing alone while 2% were practicing as a group, this call for awareness to encourage them to form groups in order to benefit from the advantage. Critical in this study that Agriculture and related businesses is the major source of their livelihood- 89% of respondents

Table 5. 2: ICT Access to Information and Channels for Agricultural Dissemination

Variable	ICT	Frequency	Mean	SD
Information source to support agricultural practice	Radio	77	1.78	1.488
	Internet	1		
	Agricultural officer	9		
	Any other mention	12		
How to access internet	On my cell phone	5	3.85	0.567
	Do not access	95		
Internet access in past one month	2-5 Times	1		0.278
	6-25 Times	4	3.94	
	No access	95		
Information frequently looked for	Agriculture	2	3.87	0.544
	Entertainment	3		
	General knowledge	1		
	Not applicable	94		
Channels used to get information	Internet	2	2.26	0.705
	Radio	83		
	TV	2		
	Any other mention	13		

Source: author-2014

ICT Access to Information and Channels for Agricultural Dissemination

The study depicts that mobile phone was the most popular ICT tool among the youth in Mukaa 63 % percent of respondents possessed this device. It reflects the importance of this device possession among the public and also it is a positive development that agriculture community is not hesitating to accept the importance of this device in their businesses although it comes out that a meagre 5% use it to access information, only 5% use it to access information. (9) Radio is still one of the main information tools possessed by youth; it is also the main channels for agricultural information dissemination followed by any other which includes expert, neighbour and even sensitization session than Internet and Television at 2%. However the study also brings out that the youth are not accessing the channels used to disseminate agricultural information to get agricultural information but for social means. The frequency of information search wanting 94% do not see the need, 3% look for entertainment, 2% for agricultural information and 1% for general information. The mean for these channels is 2.26, information frequency looked for is 3.87, frequency in access 3.94, How to access internet 3.85 and Information source to support agricultural practice 1.78.

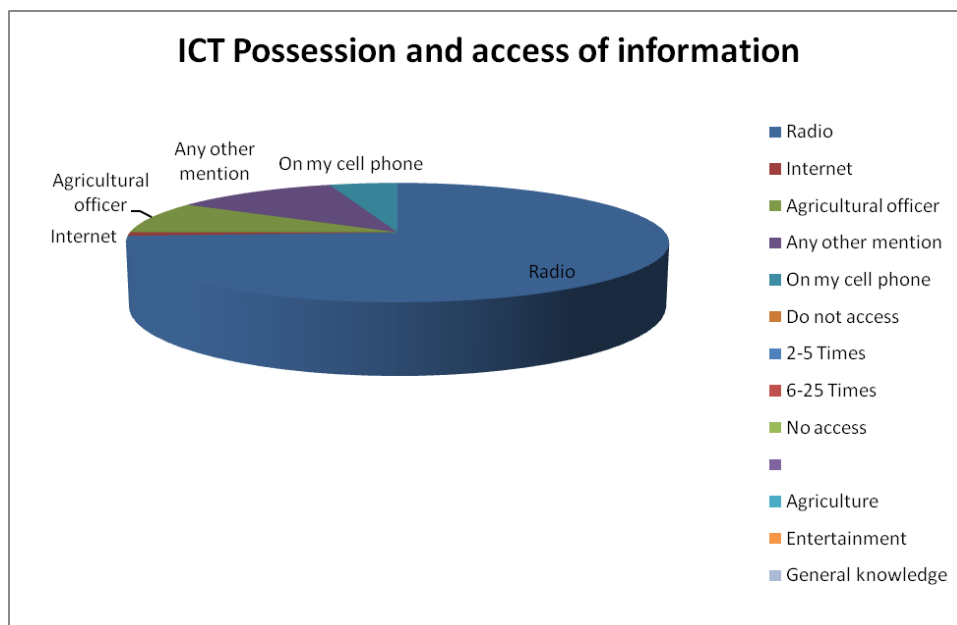


Figure 5. 1: ICT Possession and Access of Information

Source: author-2014

The pie chart above shows ICT Possession and Access of Information; it comes out despite having the ICTs, access to information is limited for agriculture related and production of pigeon pea.

Table 5.3 : Age, Gender versus ICT Possession and Access of Information

Variable	Responses	Frequency	Mean	SD
Information source to support agricultural practice	Radio	77	1.78	1.488
	Internet	1		
	Agricultural officer	9		
	Any other mention	12		
How to access internet	On my cell phone	5	3.85	0.567
	Do not access	95		
Internet access in past one month	2-5 Times	1	3.94	0.278
	6-25 Times	4		
	No access	95		
Information frequently looked for	Agriculture	2	3.87	0.544
	Entertainment	3		
	General knowledge	1		
	Not applicable	94		
Gender	Male	33		
	Female	67		
Age	18-25 Years	8	3.79	
	26-34 Years	27		
	35 Years	65		

Source: author-2014

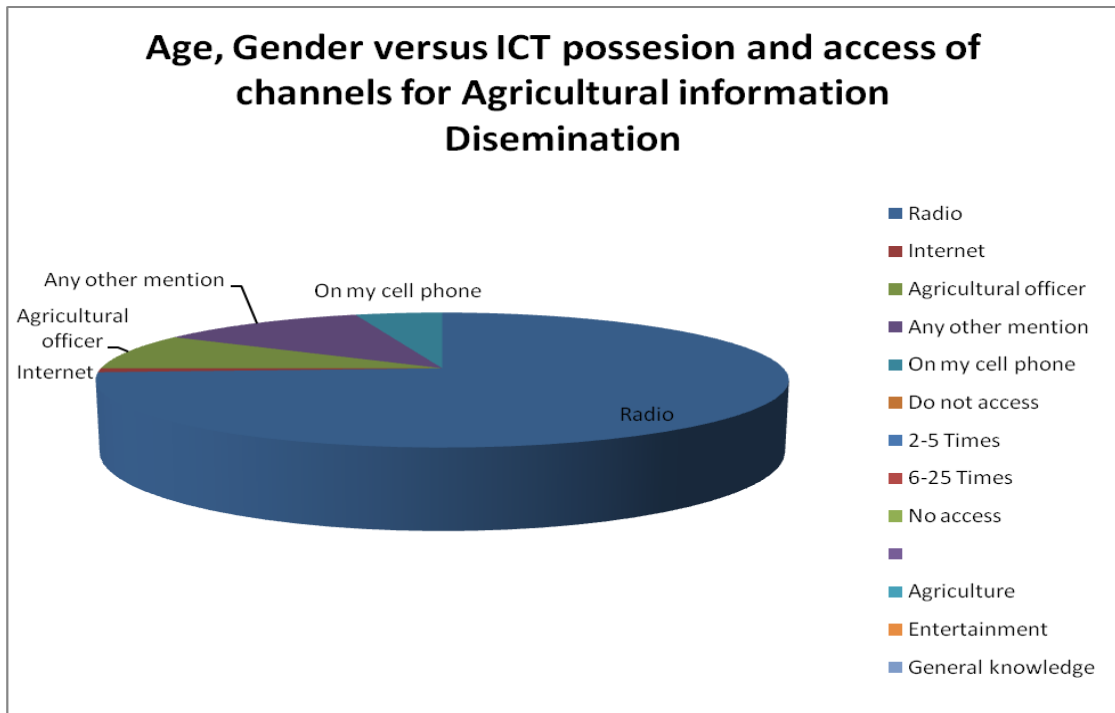


Figure 5.2: Age, Gender versus ICT Possession and Access of Information

Source: author-2014

H₁: Use of ICT does increase youth participation in production of Pigeon Pea.

Table 5. 4: Hypothesis Testing by ANOVA Single Factor

Anova: Single Factor		a	0.05				
					LSD	29.2861	
SUMMARY					HSD	38.9665	
Groups	Count	Sum	Average	Variance	Scheffe	82.4604	
Frequency	11	499	45	1833.85	Post Hoc Frequency	%	0
Percent	11	499.0	45.4	1833.85	%	0	
Cumulative Percent	7	487.4	69.6	1220.91	Cumulative Pe	24.2713	24.2713 69.6349
Colored cells have significant mean differences							
ANOVA		Reject Null Hypothesis because $p < 0.05$ (Means are Different)					
Source of Variation	SS	df	MS	F	P-Value	F crit	
Between Groups	20906.1	2	10453	9.1326	0.001	3.26742	
Within Groups	40060.5	35	1144.58				
Total	60966.5	37					

Source: aauthor-2014

From the results above table 5.4 ANOVA Single we cannot reject the null hypothesis and therefore conclude that Use of ICT does increase youth participation in production of Pigeon Pea. Similar but not exact results were seen in a recent study commissioned by IICD, on how access to ICT stimulates innovative production amongst youngsters, changes their image of farming and increases their social status.

The research findings by IICD, showed a substantive trend of youngsters displaying an increased interest in farming, caused by the creation of stronger farmer organizations with an amplified focus on the market (value chain development). This interest in farming was further strengthened by ICT providing access to markets and information to boost production. Farming was increasingly seen as a profitable business. Youngsters easily grasp the ICT applications, acquire information, and jump onto new market opportunities.

Unlike what the results revealed from the study of Mukaa, Kenya, as a country needs youth in agriculture who have some level of education. This is because of the emerging challenges of globalisation. The need to have market oriented enterprises, specialization, and awareness of Climate change and sustainability of natural resources management issues. There is also need to maximize on economies of scale, maintain high level of mechanization and Automation, high level of access to all inputs, information being key.

5.2: CONCLUSION

Majority of youth who are in agriculture were female, 35 years age, involved in agriculture while very few are in production of Pigeon pea production but not as a major source of livelihood.

They had very little formal education or training in agriculture.

The main ICT tools possessed and used by the Mukaa youth who are in agriculture was mobile phone which they also used to access agricultural information from the WEB based systems, others are radio and television.

Usage of computer and internet must be improved as one of the alternatives and cutting edge ICT to produce knowledgeable farmers. ICT has an important role to play in reducing poverty by improving the flow of information and communication. It is a valuable tool for information sharing and raising awareness within the wider community development to combat poverty and advance Millennium development goals.

Majority of respondents believed that ICT will help them to provide information they need, enhancing their networks. It will also provide them updated agricultural information.

Since electronic media have high level of usage, agricultural programmes should be intensified and extended strategically to target the youth Agriculture programs aired on radio form that have big impact on the audience and which are accessible to majority of the Mukaa farming community.

Related agencies like Department of Agriculture and youth in agriculture and likeminded organization beginning with the Government of Kenya, UNDP, FAO and USAID, should take initiative for conducting ICT courses to be attended by youth in Agriculture. This is as a preparation to produce e-Farmer.

Youth group who are in agriculture should persistently improve their ICT knowledge by exposing them to the latest and existing ICT tools. This can be done based on the fact that we are in e government and ICT centers are increasing in this country.

The youth in agriculture admitted the ICT benefits yet usage of computer, internet, personal digital assistant (PDA) is still very low level. Worse still the majority admitted owning ICT and using to access internet but not for agricultural information, this is assign of technology blindness which should be thrushes training and exposure to information technology.

5.2 : RECOMMENDATION

I would recommend that more research be repeated on this topic in other part of the country. More research should be carried to find out why a good number of youth are not using ICT in production of pigeon pea, this is to get to the root of the problem; Find out from the youth in agriculture what could be done to change the situation for better.

Today, most young people are connected to the internet and to get through them, there is no easier way than to use ICT itself. The negative perception that young people have on agriculture can be changed by making videos, publishing articles on success stories of young entrepreneurs using ICTs in agriculture for them to realize that choosing agriculture for a career is not that bad after all, since they can do a "cool" job, be independent and successful at the same time. In addition, this can be done at a national, regional or international level by organizing radio/TV shows or competition on the use of ICTs in agriculture, so as to capture more young people as those who are not connected to the internet also will be targeted.

There is need for more focus and concerted efforts on increasing awareness of ICT usage for agriculture by the youth if they have to optimize the economic benefit of its adoption. The results of the study recognize the need for more training information sourcing and sources by use of ICT. Other recommendations include better promotion of successes in agricultural business, improving opportunities for youth in rural areas using ICTs, providing funding arrangements and policies that support youth. These may be in the area of agribusiness and youth companies engaged in the development of ICT solutions for agriculture. Develop online and traditional mentorship schemes for young farmers, promote youth interest in agriculture through prizes, scholarships. The findings of this research will provide a foundation for future research and will help policy makers in understanding the current state of affairs of the usage and impact of ICT in Agriculture and Agribusiness.

Recommended is also need for promotion of drought tolerant and short duration, early maturing crop/varieties e.g. Formation of viable Common Interest Groups and link them with micro finance institutions, Formation of organized marketing groups and engagement ICT in all areas of the value chain including e-marketing. Promotion of growing of improved varieties of Pigeon peas and value addition, training on good agricultural practices including access to relevant real time information, together with enhanced water harvesting and Promotion of conservation Agriculture.

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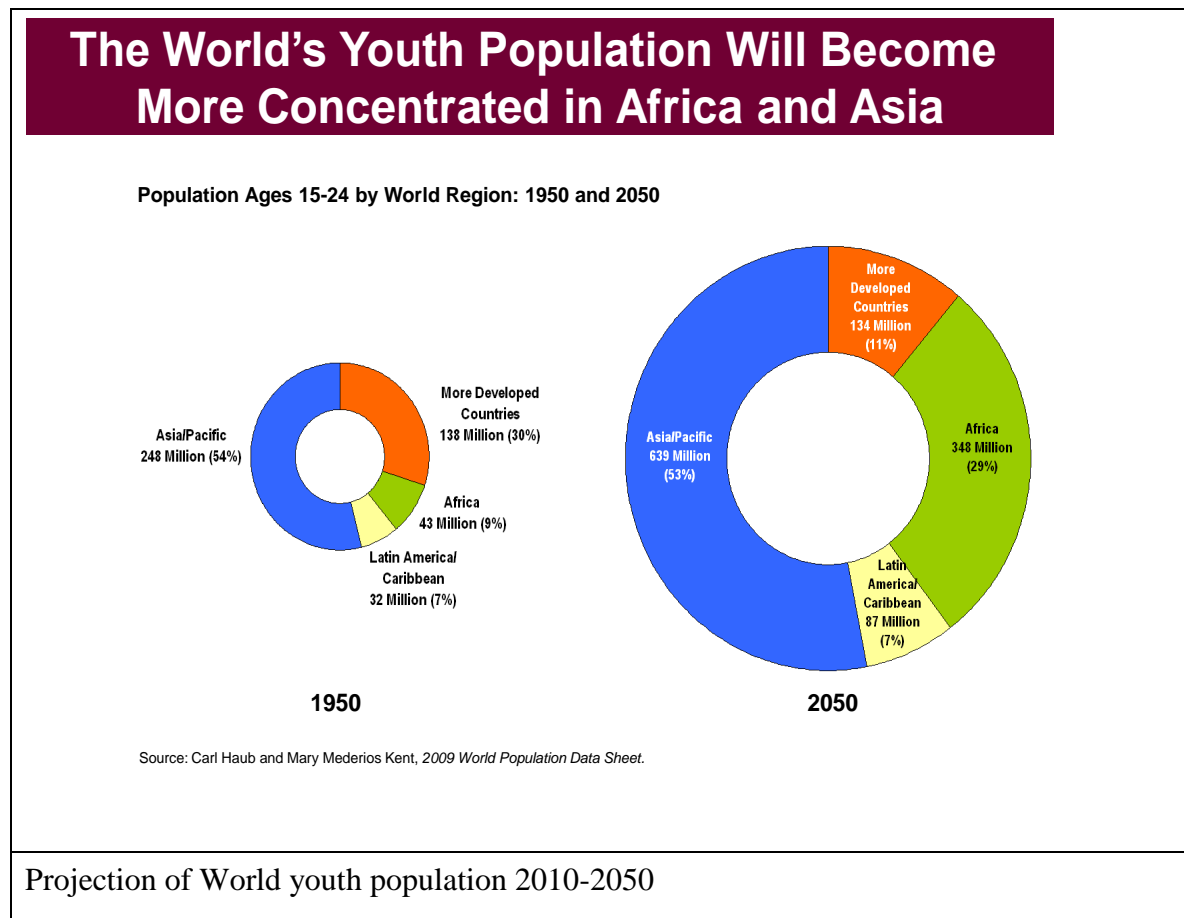
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Appendix

Main challenges and suggested way forward for the district

Some of the challenges include; In adequate and erratic rainfall, lack of affordable credit, poor marketing channels for horticultural crops, inadequate technical and impassable access roads, pests and diseases, lack of processing/cold storage facilities for fruits especially mangoes, poor agricultural practices and seasonal rivers.



Instrument for Data Collection research Instrument for Youth in Mukaa Producing Pigeon Pea in Sub County

The questionnaire is intended to evaluate on the effect ICT use in increasing Youth participation in production of Pigeon Pea in Mukaa sub county, Kenya as a requirement for an award of a Master of Science in Agricultural Information and Communication Management of the University of Nairobi. I therefore request you to fill this questionnaire. I assure you that all information provided will be handled with confidentiality. I shall be very grateful for your contribution.

Instructions

1. Respondent number.....Sex: M.....F..... Tick one
2. What is your age group in full years?

18-25	1
26-34	2
35	3
Any other Explain	4

3. What is your marital status?

Married	1
Divorced	2
Widowed	3
Any other	4

4. Do you have any children under your care?

(Yes, No) Tick one

5. What is your major source of livelihood?

Agriculture and related business	1
Pigeon Pea production	2
Shop Business	3
Any other business mention	4

6. Do you have training in Agriculture? (Yes , No) Tick one
7. How did you start your work in Agriculture? Briefly Explain
8. Do you practice alone or in a group?(Yes , No) Tick one if yes give the names of other members
9. What are the main Agricultural Enterprises you engage in?

Livestock production-state type	1
Crop production-state type	2
Agro processing-state kind	3
Agribusiness-state kind	4
Any other mention	5

10. What are the objectives of engaging in each Enterprise? State the objectives

Livelihood	1
Hobby	2
Pressure from parents	3
Peer influence	4
Educative	5
Any other mention	6

11. What are the most important Enterprises? Mention all

12. Is there any preference in these enterprises by different gender groups?

(Yes, No) Tick one, if yes arrange depending on priority starting from the highest, briefly explain each

13. For each Enterprise what production practices or technologies do you use? List them

Use of Information Technology , mention	1
Zero tillage	2
Greenhouse technology	3
Farm machinery, mention	4
Any other	5

14. How do you do your marketing, briefly explain?

Through the Internet, Briefly explain	1
Through Neighbours	2
Through the Radio	3
Any other	4

15. What is your income range per day?

<200	1
300-500	2
600-1000	3
>1000	4
Any other state	5

16. Where do you source the information to support the Agricultural practice that you do?

Radio	1
Institution mention	2
Internet	3
Agricultural officer	4
Any other mention	5

17. How do you normally access internet

On my cell phone	1
On public Cyber	2
On my relative's Cell phone	3
Any other mention	4

18. How many times in the past one month have you access the internet

Once	1
2-5	2
6-25	3
Any other	4

19. What kind of information do you frequently look for?

Agriculture	1
Entertainment	2
General knowledge	3
Any other mention	4

20. Which channels do you use to get this kind of information and which are your favourite?

Internet	1
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Radio	2
TV	3
Any other mention	4

21. Are there any challenges you go through while sourcing for the information?
22. (Yes, No) Tick one, if yes mention all. Which areas of the challenges do you need mostly to be addressed for you to be effective?
23. Which channels are normally used to disseminate agricultural Information in this area?

Local Radio station	1
Internet through cell phone	2
Tele Vision	3
Any other mention	4

24. Who mostly frequent these common channels used to disseminate Agricultural Information?
25. Do the youth by any means visit these channels or listen to the channels?(Yes, No) Tick one
26. If yes, can you estimate the percentage of youth visiting the channels used to disseminate agricultural information
27. Do you have a cell phone? (Yes, No) Tick one
28. If you do not have a cell phone, how do you normally make a phone call (Give a statement)
29. Are there any Information concerns that you would like to be addressed? List a few in order of priority

Source: aauthor-2012

Sources of Error

The risk that the interviewer may bias the responses given.

Response rates may also be reduced because some people may be unwilling to give up their time to be interviewed.

Others may not take part because they prefer the anonymity of a self-completed questionnaire