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**CHALLENGES FACING ADOPTION OF ICT IN RURAL AREAS OF  
TANZANIA**

**William Ayub Mng'ong'ose,**

Bank of Tanzania, Alberto Gabriel Ndekwa, Ruaha Catholic University

**Prof Matern Victor,**

Prof –The Open University of Tanzania

**Abstract**

Agriculture is the backbone of the Tanzanian economy and it constantly experiences with advances in technology. Because of the rapid development of Information and Communication Technology (ICT) in the world, each Country or person has to concern their products and services more towards modernized ICT related manner. However, the status of ICT adoption in Tanzania is still backward, especially in agriculture and rural areas. Progress is slow and hence creating risk of a growing gap compared to other developing countries. Despite the fact that efforts for ICT development are in place, the adoption of ICT applications in agriculture in rural areas is still very poor. The aim of the present research is to investigate challenges facing adoption of ICT applications in rural Tanzania. Primary data was collected by the use of questionnaire and interviews later the given data were analysed by the use of Microsoft Excel and SPSS.

Findings reveal that adoption of ICT in agriculture in rural areas of Gairo is generally not promising as Majorities are more familiar with the mobile phone usage only compared to other form of ICT. The results were largely in agreement with those obtained in other areas study were they reported cost, no government support, insufficient and no ICT policy enforcement, poor infrastructure, lack of knowledge, lack of information about ICT for agriculture, internet, poverty of rural people and people resistance to change.

Unlike other countries, In Tanzania Lack of knowledge about ICT, lack of ICT tools and expertise, lack of government support reported higher impact on adoption of ICT in agriculture sector. In addition to this, new challenges were revealed to hinder adoption of ICT in agriculture in rural areas of Tanzania which were lack of electricity and lack of understanding of English language. Security and lack of trust were found to be challenges in other researches in literature review, but neither was found to be significant from the Tanzania results. Lastly the study recommends for the Government and other important players to increase effort in promoting and improving adoption of ICT activities in agricultural. Respondents suggested different measures to be taken including having ICT policies, improve ICT infrastructure and provide electricity and ICT tools in all rural areas of Tanzania.

**Keywords:** Tanzanian economy, backward, English language.

## **INTRODUCTION**

Information and Communication Technology (ICT) in Tanzania has been used and developed since the 1970's, and has made very important contributions to socio-economic development of the country, including rural areas.

ICT application and development in Tanzania strengthens the material, intellectual and spiritual growth of the whole nation. It promotes reform processes, speeds up the development and modernization of economic sectors and empowers the competitive capacity of businesses. It affectively supports an active process of integration of rural areas into the national, regional and global economy. It creates possibilities to leapfrog in successfully serving the cause of industrialization, modernization in rural areas.

In Tanzania, nearly 75 percent (URT, 2010) of the populations are living in rural areas. Developing agriculture and rural economy is one of the most important orientations of the Tanzanians Government. ICT has been creating not only opportunities but challenges to business in rural areas in narrowing the gap between different regions.

The Government of Tanzania is now into her fifth phase of leadership. The government initiatives towards ICT sector were vividly visible since the third phase government under President Benjamin William Mkapa. The third phase government was committed on steady economy growth of the country, in making this mission possible the government also had to employ resources in ICT sector so as to help in completing the mission. Measures taken by Tanzanians Government to promote development of ICT in the rural areas by formulating the National ICT policy in 2003 and later formulated Tanzania Communication Regulatory Authority (TCRA). Improve ICT infrastructure in different areas by building national fiber backbone, issuing licenses to more ICT companies and starting more ICT institutions provide knowledge to citizens. All based on a view to create favorable conditions and offering high preferences for ICT application for agriculture and development in rural areas.

Internet and ICT has been one of the major driving factors of economy success since it helps in production and dissemination of knowledge in a fast and acknowledged manner. The status of ICT use in Tanzania, however, is still backward, especially in agriculture and rural areas. Progress is slow, creating risk of a growing gap compared to other developing countries (Houghton, 2009). Despite the fact that efforts for ICT development are in place, the performance of ICT for agriculture in rural areas is still very poor. Therefore, there is a need to investigate what is happening in rural areas mainly what are the factors which influences adoption of ICT applications in these areas.

The study focuses on the challenges which affects the adoption of ICT in rural areas of Tanzania in agriculture sector using Gairo District as the case study. Specifically, the study aimed to explore adoption of ICT applications for agriculture in rural areas.

## **LITERATURE review**

Literature survey or as popularly known as literature review is the second stage in research study where a researcher goes through secondary data so as to get the background of the research area he/she wants to research on. Mainly secondary data was used for literature survey but also primary data can be used at a minimal level. Primary data was used in the following stage of data analysis.

As far as the depth of this research we are going to survey most of the relevant publications about challenges facing adoption of ICT in rural areas for agricultural development in general. Different sources of information are to be used in this chapter. Sources include government publications, journals, articles, books and online resources.

## ***IMPORTANCE OF ICT IN AGRICULTURE***

The applications of ICT in agriculture are quite broad: ICT can be used to monitor pest thresholds in integrated pest management, provide relevant and timely information and agricultural services, map agro biodiversity in multiple-cropping systems, forecast disasters, and predict yields. Crop losses diminish as farmers receive relevant and timely information on pests and climate warnings through SMS technology. ICT can also lead to more optimal use of inputs. Increasing producers' knowledge of how to use and manage water, equipment, improved seed, fertilizer, and pesticide has improved the intensification of farm practices around the world.

Stienen (2007) argues that agriculture is an important sector with the majority of the rural population in developing countries depending on it. The sector faces major challenges of enhancing production in a situation of dwindling natural resources necessary for production. The growing demand for agricultural products, however, also offers opportunities for producers to sustain and improve their livelihoods. Information and communication technologies (ICT) play an important role in addressing these challenges and uplifting the livelihoods of the rural poor. Major benefits have emanated from using ICT in diverse areas of the food and agricultural industry including Livestock management, Diseases control Poverty alleviation, precision agriculture, product traceability, computerized irrigation systems, digital financing for farmers (i.e., Internet and mobile banking support), and computerized farm record keeping systems among others. Each of these applications increases the profitability of agriculture, reduces transaction costs, facilitates climate change adaptation, and improves livelihoods for the rural poor.

## ***ICT ADOPTION IN RURAL AREAS***

ICT adoption is the state of a specific country/society start using ICT in their day to day activities. ICT adoption in agriculture differs from country to country depending on country economic, social and political situations. There are countries (knowledge based economies) that adopted ICT for agriculture a while ago in mid 1990's while there some many other countries

who are still in the process of adoption, The United Republic of Tanzania is one of them. Adoption is usually not spontaneous, the technology has to be taught and learned - adopted to existing experiences and integrated into production. This research has explored the challenges that influence adoption of ICT to the livelihoods of small-scale farmers and the efficiency of the agricultural sector in Tanzania after reviewing adoption challenges in other countries.

In several countries where ICT adoption researches were done it focused mainly on computer adoption for general agricultural production. Warren et al. (2002), clearly demonstrated that, the adoption of ICT is strongly associated with the education level of the farmer and farm size and negative effect of age of the farmers. It is suggested that there is disparity in adoption between different sizes and types of farm. Several studies supported the argument that, the ICT adoption devoted much time and effort (ibid).

It's clearly demonstrated that challenges like lack of ICT proficiency, lack of ICT benefit awareness, too hard to use, lack of technological infrastructure, cost of technology, trust level in the ICT system, lack of training, system integration and software availability limit the use of ICT by farmers (Taragola and Gelb, 2005).

Pavic, et al. (2007) have shown that the adoption of ICT by SMEs is still lower than expected. Several barriers to ICT adoption have been identified, including: lack of knowledge about the potential of ICT, a shortage of resources such financial and expertise and lack of skills (Ndubisi & Jantan, 2003). Many studies have also focused on identifying the determinants that influence ICT adoption. Some studies looked into a broader perspective of Internet adoption and found that environmental factors such as government intervention, public administration, and external pressure from competitors, play the key role in the adoption and implementation of ICT, especially in e-agriculture [Daniel & Wilson, 2002; Lai & Hsieh, 2007; Scupola, 2003]. Other studies focused instead on the organizational factors, such as organization support and management support; however, few studies focused on skills and use among the owners. Very little is understood about the challenges of ICT adoption among SMEs business owners.

Houghton and Winklhofer (2004) report slow response of SMEs relating to adoption of ICT. Shields et al. (2003) find that characteristics of the firm and industry sector are contributory factors to the adoption and exploitation of ICT by SMEs. Kapurubandara et al. (2006) categorized internal and external challenges which influence adoption of ICT include owner manager characteristics, firm characteristics, cost and return on investments, and external barriers include infrastructure, social, cultural, political, legal and regulatory.

### **Adoption challenges in United Kingdom**

(Gibbons and Offer, 2006) on their research with title "Information and Communication Technology (ICT) Adoption – Results of a Survey of the England and Wales Farming Community" they found that the challenges facing adoption of ICT adoption in agriculture they found that traditional restraints, such as lack of training and cost, are no longer limiting

challenges for uptake. Instead poor IT skills, lack of familiarity through irregular use, or simply not knowing where to look for information, Internet connections in rural areas are slower are the challenges.

Adoption of ICT through the use of computerised decision support systems (DSS this was found to be influenced by Regional trends in access to computers, access to the Internet and use of decision support systems appear to be related more to farm size and to farm type.

Large farming organizations have enough resources to adopt ICT while on the other hand SMEs farming organisations have limited financial and human resources to adopt ICT. Duan et al. (2002) identified lack of ICT skills and knowledge in SMEs as one of the major challenges faced by all European countries, particularly in the UK, Poland and Portugal.

### **Adoption challenges in Brazil**

In Brazil, more than one-third (39.2%) of the population enjoyed Internet access in 2009 (ITU, 2010). While 23.85% of households claimed to have access to the Internet, only 5.92% had broadband connectivity (ITU, 2010). Several agencies of the Brazilian government have enacted universal digital inclusion policies as part of a three-fold national strategy that encourages adoption of personal computers, promotes universal access in public schools, and establishes public ICT access points (Mori & Assumpção, 2007). ICT diffusion in rural areas is concerned; scholars have identified a particular set of structural challenges that impact the rate and effectiveness of adoption. Unlike urban dwellers, rural residents may encounter particular challenges that hinder their access to ICTs. Chief among them is physical access to a telecenter, which can be too far from home or made distant due to precarious road conditions, unreliable or unstable electrical power grids, equipment maintenance, theft, and limited financial resources [Baggio, 2008; Hernandez et al., 2007; Mori & Assumpção, 2007; Sorj, 2003].

Individual attitude and behavior also have been shown to impact ICT adoption. Writing about digital inclusion in Brazil, Sorj (2003) highlighted the importance of individual motivation and self esteem as a driver for ICT use. Indeed, Wilson (2004) pinpointed motivation as the single common factor among individuals who are able to overcome structural and personal barriers to ICT adoption. Furthermore, an individual's ability to understand and appropriate the information accessed through ICTs can impact effective ICT adoption.

### **Adoption challenges in Brunei**

In examining the organizational challenges, for example, Lucchetti and Sterlacchini [2004] identify financial resources, technical skills, and firm characteristics as significant determinants of ICT adoption among agricultural SMEs. On the other hand, when Seyal and Abd Rahman (2003) investigate 95 small and medium business organizations of various types, they find that the major determinants of adoption are adoption attributes such as relative advantages, compatibility, trial ability, observability, and organizational attributes such as nature, size, and

type of agriculture. In a more recent study, Seyal et al. [2007] find that management support, government support, and perceived benefits are significant predictors that influenced SMEs in Brunei to adopt IT.

### **Adoption challenges in Peru**

Availability of telecenters was pointed out as another adoption factor. The benefits of telecenters operated by farmer organizations access to technical and market information from the Internet, for instance do not have to be limited to literate farmers who live close by. In BCO (2011) alliance paper with the title “Peru: ICTs and food security: The case of Huaral Valley” author narrated that The Peruvian Centre for Social Studies developed a project to establish a network of local telecenters with the help of local farmer organizations. An important aim is to provide information hubs for farmers so they can improve their practices and become more resilient to periodic water shortages that have followed diminishing rainfall. It is also important to distribute irrigation water fairly, so water use has been monitored and recorded in the information system and administered by the local board of irrigation users. Water use is now more transparent, and it is easier to monitor contributions toward maintaining and administering the irrigation systems.

### **Adoption challenges in Sri Lanka**

Jayathilake et al. on their research done at Sri Lanka with a title ICT Adoption and Its Implications for Agriculture in Sri Lanka their survey shows 76.1% of respondents having ICT uptake problems in agriculture sector. The telecommunication and Internet result higher uptake problems whereas DSS (Decision Support System), precision farming and production model like new technologies result lower uptake problems because of their limited use due to lack of awareness of these technologies. The results suggested that the most important challenge which affects the use of ICT in agriculture is cost of technology. It shows 62.6% of tea sector and 42.9% of poultry sector ICT use is affected by cost of technology. Lack of training and inability of farmers to use ICT is the second challenge that affects. The challenges namely trust level in the ICT system; lack of technological infrastructure and lack of ICT proficiency are the third level category that affects the use of ICT in agriculture. It appears that the usage of mobile phone is very common among the tea and poultry sector. The use of mobile phone is high compared to other ICT application such as Internet, WWW, e-mail and DSS. Variable related to the ICT training and knowledge category.

On the other hand, The World bank report of 2008 discovers the Challenges that influence rural Women’s Uptake of ICT as follows

- Cultural attitudes discriminate against women’s access to technology and technology education: What would a woman farmer want with a computer?

- Compared to men, rural women are less likely to own communication assets, such as a radio or mobile phone.
- Rural women are less likely to allocate their income to use in public communications facilities, except when they need to communicate with family or to arrange for income transfers.
- Rural women are often reluctant to visit cyber cafés or public Internet centres, which are often owned by men and visited by men. The café culture often excludes girls and women.
- Rural women's multiple roles and heavy domestic responsibilities limit the time they can allocate to learning and using ICT, until and unless they realize the potential information benefits (and time-saving elements) of using these technologies.

### **Adoption in other African countries**

With the greatest percentage of illiterate people in developing countries, ICT face a tremendous challenge to be effectively used by the communities. Most developing countries are in the bottom rank on literacy. According to Ifinedo (2005:53) all countries in Sub-Saharan Africa with the exception of South Africa and its neighbors have a poor e-readiness score. This is evidenced by the fact that, there is a general lack of community awareness about the potential benefits and capabilities of ICT (Colle & Roman, 2003:396). Without a high level of ICT awareness, no community can fully participate in this networked world.

Lal (2007) investigating adoption of ICT in Nigerian SMEs and farmers, found that one of the major challenges inhibiting ICT diffusion and intensive utilization is poor physical infrastructure. In developing countries some of the ICT adoption challenges include legal and regulatory issues, weak ICT strategies, lack of R& D, excessive reliance on foreign technology and ongoing weaknesses in ICT implementation (Dutta et al., 2003).

ICT in agriculture organization in their research named "Increasing Crop, Livestock and Fishery Productivity Through ICT" pointed out that in order to facilitate adoption of ICT in rural areas Governments have to work with the private sector to ensure that the underlying infrastructure is in place and extended to rural areas; Agriculture could be proceed due to availability of financial services which rely on the availability of underlying financial and ICT infrastructure, such as payment systems, credit bureaus, central ATM switches, central financial platforms, mobile telephony, mobile data services, and Internet in rural areas. Non banks and banks can provide these ICT-enabled financial services for the rural sector: Mobile financial services, Branchless banking ATMs and Smartcards.

Services for sending and receiving cash via mobile phone, such as M-PESA, which has more than 13 million users in Kenya (The Economist, 2011), make it easier for farmer organizations to provide other services such as selling inputs and arranging more convenient payments for produce. For example, Zambia is testing an "e-voucher" project (Sibanda, 2010) in which

farmers who register with the scheme receive prepaid mobile phone vouchers worth about US\$ 50 to purchase inputs from agro dealers.

According to Guerhazi and Satola (2005:25), elaborated the infrastructure investment needed for the uptake of ICT far exceeds the resources of most developing countries and is prohibitively expensive or not commercially viable. This can be very true if one considers countries most of the African countries. Wambui (2005:57) mention of the Sierra Leone's ICT infrastructure that is in great need of reform because of its poor shape. The country lacks communication facilities and the main efficient form of communication remains the radio. Jorge (2002:1) noted that telecommunications infrastructure is limited in most developing countries and costs are exceedingly high. The limited available infrastructure is mostly found in larger urban areas, thereby neglecting and depriving the rest of the individual farmers and firms in rural areas those in need of a steady flow and ready access to information and wider business networks (Galloway & Mochrie, 2005:37). This situation is not favorable since the majority of the world's poorest people dwell in the rural and poor areas, where there is little or no ICT infrastructure.

According to Jorge (2002:4), even when infrastructure is available, affordable access is a concern in most developing countries. Personal computers, faxes, printers and some ICT equipment are expensive and unaffordable to the majority of developing countries inhabitants, even for middle- class families, thereby cutting down the populations who are able to use the technology (Fors & Moreno, 2002:203). The initial costs of ICT and the ongoing expenses of maintaining them are very high and a number of people cannot afford those (Galloway & Mochrie, 2005:39).

## **METHODOLOGY**

This study is designed for people who are living in rural areas particularly Gairo District. It is based on research questions and applies both qualitative approach. The population was any citizen of Gairo district and used random sample to obtain respondents.

This study used two different methods of data collection which are questionnaires and documentary review. Questionnaires used to provide primary data and document review provide secondary data for discussions. A total of 80 questionnaires were administered in this study. Out of these, 54 questionnaires were returned giving a response rate of 67.5 percent.

Information collected through questionnaires was coded and analyzed using the Statistical Package for Social Scientists (SPSS) and Microsoft Excel version 2016, which is a special computer package for data analysis. The findings were summarized in tabular form for descriptive analysis, whereby graphs and tables were used in the discussion of the field finding



**FINDINGS AND DISCUSSION**

The chapter consists of two sections, the first section gives description of the respondents’ profile comprising of gender, age and their level of education and the second section of major findings.

***Respondents’ profile***

The results show that 57 percent were males and the rest 43 percent were females. as shown in table 4.1 below.

Table 4.1: Gender frequency and percentage of respondents

Sex	Frequency	Percentage
Male	31	57
Female	23	43
Total	54	100

Source: Data survey, 2017

Majority of respondents were males; this implies that men in rural Gairo were easy to accept to be respondents than females because equal chances were given to both males and female.

**Age of respondents**

The study further reveals that 22 respondents equals to 40.7 percent are aged between 18-34 years compared to 18 respondents (33.3 percent) that are between 35-44 years. Those with age between 45-54 years were 10 (18.5 percent) and the rest above 55 years were 4 (7.5 percent).

The results as can be seen on table 4.2 imply that most of respondents were young and energetic who are assumed to be starting a new life. This result also confirms young people are much more engaged in ICT activities than other groups. As said above young people are the major adopters of ICT services regardless of their gender

Table 4.2: Age of respondents

Age	Frequency	Percentage
18-34	22	40.7
35-44	18	33.3
45-54	10	18.5
55 and above	4	7.5
<b>Total</b>	<b>54</b>	<b>100</b>

Source: Data survey, 2017

**Education level of respondents**

Beside age groups, education also seems to play a role in ICT adoption and usage among youth in Tanzania. The study results indicate that 15 of respondents equals to 27.8 percent possess primary certificate while 26 respondents equals to 48.1 attained secondary education and 5 respondents equals 9.3 hold diploma holders. The rest 8 respondents equals to 14.8 percent hold university degree. Table 4.3 below shows results in detail.

Table 4.3: Education levels of respondents

Education level	Frequency	Percentage
Primary	15	27.8
Secondary	26	48.1
Diploma	5	9.3
University	8	14.8
Total	54	100

Source: Data survey, 2017

The results from table 4.3 above reveals that the information obtained from the respondents were relevant because all respondents are educated though at different levels as it can be seen. This could be summarized that majority have knowledge and capability to answer the questions asked in the questionnaires and understands what the researcher wanted from them. From the survey made, it shows that educated people with secondary and more are more prone to ICT and are potential ICT adopters in the country.

**MAJOR FINDINGS**

Analysis of the following questions helped to give in depth information about adoption of ICT applications for agriculture in rural areas and hence helped to address the research objectives

**Do you think there is a problem of acquiring ICT in agriculture?**

The results assert that the majority (44 respondents) equals to 81 percent of respondents said “yes” they agree that there is a problem of acquiring ICT in agriculture while 10 respondents equals to 19 percent opposed.

**What are the challenges limiting the use of ICT for agriculture in rural?**

Results in table 4.4 reveals that respondents cited different challenges as they limit adoption five seem to repeat frequently which were Lack of ICT tools and experts in rural areas, Poverty of the people in rural areas to fail to afford cost of ICT services, people’s behavior to resist change, Lack of proper information about advantages of ICT products in agriculture and Another challenge mentioned slightly is language problem as most ICT accessories are in English.

Table 4.4: Challenges limiting the use of ICT in agriculture

Reason	Frequency out of 54	Percentage	Rank
Lack of ICT tools and experts in rural areas	40	74.1%	1
Poverty can’t afford ICT costs	20	37.0%	4
Language	17	31.5%	5
Peoples culture to resist change	25	46.3%	3
Lack of information about ICT for agriculture	30	55.5%	2
Lack of online financial services	5	9.30%	6

Source: Data survey, 2017

**What do you think are problems on adopting ICT in agricultural sector?**

Results reveal that 41 respondents cited lack of knowledge as the problem, 34 selected no government support and no ICT policy for agriculture, 29 told that infrastructure is the problem, electricity was also selected by 24 respondent while cost was selected by 23 respondent lack of internet in rural areas was cited by 20 only 8 respondent cited security as a problem on adopting ICT in rural areas. Therefore, it implies that lack of knowledge, infrastructure, government support, electricity, and internet and cost are the main challenges which hinder adoption of ICT in rural areas of Gairo.

Table 4.5: Problems on adopting ICT in agricultural

Reason	Frequency out of 54	Percentage	Rank
Electricity	24	44.4%	4
Mobile operators	5	9.3%	8
Internet	20	37.0%	6
Infrastructure	29	53.7%	3
Cost	23	42.6%	5
Lack of knowledge	41	75.9%	1
No government support	34	63.0%	2
Security	8	14.8%	7

Source: Data survey, 2017

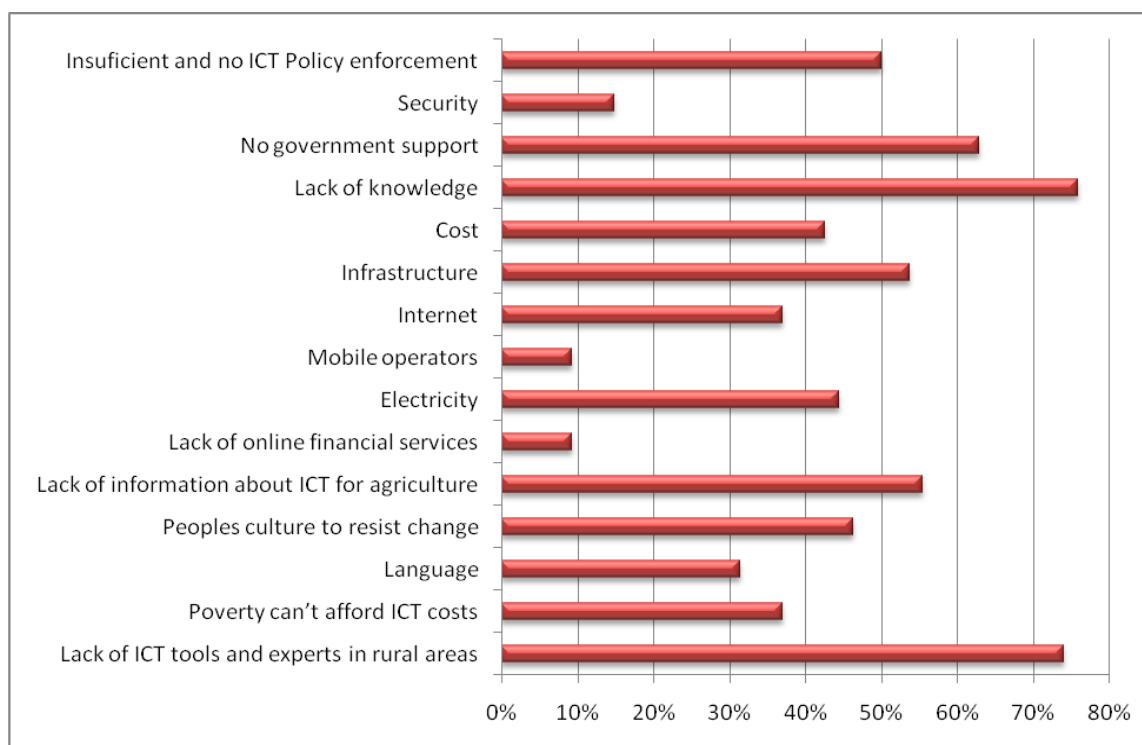
### **Is there any application security fear of using ICT in agricultural activities?**

Results show that 38 respondents equals to 70.4 percent there is no fear of using ICT for agriculture while the rest 16 respondents (29.6 percent) opposed. This also implies that ICT security is not one of the challenges which influence adoption of ICT in rural areas.

**Adoption challenges**

After doing the analysis of what are the influential challenges towards the adoption of ICT applications in agriculture in rural areas of Tanzania the case of Gairo, here we are going to look what are the collective reasons in summary which influence users from adopting ICT applications in their agricultural activities. Figure 4.1 below shows the summary of findings for this research.

Figure 4.1: Challenges facing adoption of ICT for agriculture



Source: Data survey, 2017

**Conclusion**

The primary motive towards undertaking this study was to know challenges facing adoption of ICT applications in agriculture in rural areas of Tanzania the case of rural areas of Gairo. Thus the study examined the actual usage of ICT in Tanzania as well as going into questioning individual farmer on how they perceive adoption of ICT adoption in rural areas.

The first group of major reasons which influences farmers in Tanzania from adopting ICT applications includes Lack of knowledge about ICT, lack of ICT tools and expertise, and lack of government support. The second-high ranked group of reasons includes poor Infrastructure in rural areas, lack of information about ICT for agriculture, Cultural behaviors and people

resistance to change and insufficient and no ICT policy enforcement for application of ICT in agriculture. The third is lack of electricity in rural areas, lack of internet, poverty of rural people as a result they cannot afford the cost of ICT adoption in agriculture. The other challenge which was also mentioned to influence adoption was English language as most of rural people do not know English.

From the survey, we found out that lack of knowledge and ICT awareness has a direct relationship with adoption of ICT application in Tanzania. ICT awareness level in Tanzania is still low and same applies to ICT adoption level.

The adoption level is low in rural areas of Tanzania because ICT infrastructures are not well developed although the government and other ICT players are working hard on developing the infrastructures.

### **RECOMMENDATIONS**

Its undeniable fact adoption of ICT applications for agriculture requires huge investment in terms of monetary capital and knowledge/human capital. Therefore, ICT players and Government in Tanzania must really look into prospective adopters and take respective measures to make sure that they adopt and make use of ICT services in the country.

From the conducted survey we have seen important challenges which influence adoption of ICT applications in rural Tanzania. Therefore, the sector must survey each of the challenge in details and see how they can take advantage of each challenge in increasing ICT usage in rural areas of Tanzania for agricultural success. This can only be achieved with more research on each challenge and put the findings of the researches into practical use and hence accelerate the rate of adoption.

The comparison between ICT adopters and non adopters differ in direction. Adopters perceive ICT in a more positive way while non-adopters perceive it in a negative direction due to the challenges explained above. ICT sector and government must employ extensive and sustainable measure so as to make sure that even non-adopters perceive ICT as a positive move towards agricultural development of the country and its citizens. Challenges facing adoption should be taken as advantage or opportunity for ICT players and improve them to increase ICT adoption and usage in Tanzania.

ICT development in rural areas like Gairo has shown positive impact in agriculture when applied. Areas of success may be that of agricultural extension; access to market information; access to finance and access to whether information. Therefore, this study recommends for the Government to improve agricultural environment by building good ICT infrastructure in all rural areas of Tanzania since almost 80 percent of agricultural business originates in rural areas. This will be done by constructing last mile connectivity to farmers for internet, building enough telecenters and ensure proper availability of electricity.

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