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Full Length Research Paper

ICT role for agricultural development and good governance

Gosa Delechew

Awassa College of Teacher Education

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It was attempted to identify the role of Information and Communications Technology (ICT) for promoting Good Governance and Agricultural Development in the context of southern Ethiopia. Active citizen participation, the provision of high-quality service delivery, influence on government decision-making and execution, the improvement of government-citizen relationship, and the creation of transparency, are among the indispensable roles that ICT can play. The overall implication is the prevalence of rule of law, the ultimate characteristic of good governance in a country. Such governance transformations significantly contribute to the promotion of agricultural development and the consequent long-term transformation of the economy. ICT can play a crucial role in benefiting resource-strapped farmers with up-to-date knowledge and information on agricultural technologies, best practices, markets, price trends, and weather conditions. The experiences of most countries indicate that rapid development of ICT, which facilitates the flow of data and information, has tremendously enhanced knowledge management practice in agriculture. However, the use of ICT for the accumulation and dissemination of knowledge and information is still low in Ethiopia, despite progress made over recent decades. Currently, among various ICT- related initiatives, radio is widely used to inform users on agricultural topics, including new and upgraded farming techniques, production management, and market information. Due to its strategic importance in reaching the majority of smallholders, attempts are being made to strengthen the delivery of knowledge and information through radio programs. Unlike previous trends in using traditional ICT tools (i.e., radio and TV), the use of modern ICT (computers, internet, mobile telephony, etc.) is achieving popular adoption in the small towns of the country. It is found that low infrastructural development is the main challenge for ICT in the rural areas of southern Ethiopia.

Key Words: ICT, Governance, Agricultural Development, Ethiopia

INTRODUCTION

Background of the study

Good governance and public sector management are central to socio-economic development, and constitute the primary means of social transformation. Both combined are the cornerstones of successful economies. The implication is that the realization of good governance is a foundation stone for development. Ethiopia needs to improve its record of environmental degradation and low agricultural productivity. At the same time, it must continue to enlarge the democratic space, encourage openness and foster the rule of law, in order to prepare the ground for sustainable development and poverty reduction. Therefore, good governance is the precondition for development. Easterly (2006) states that badly governed countries are poor countries, and that good governance tend to come together in packages.

Good governance must include effective citizen participation in public decision-making and management, accountability, legitimacy, transparency, the rule of law, and an open and enabling environment for addressing socioeconomic problems. This requires participatory democracy, and governmental capacity to respond to the increasing demands of development. It has been shown/argued that access to information and communication (ICT) in its own right plays an important role in promoting good governance (Coffey Int. Development, 2007). The ultimate manifestation of transparency is that kind of political environment in which there exists a climate of trust between the government and the governed. This time, for every aspect of development, each citizen tends to take responsibility and develops a sense of ownership to the development process within the country.

In a more relative speaking, The current government of Ethiopia is able to satisfy the most basic needs of the people, but the questions of accountability and transparency are still a subject of debate among scholars. As a result, many confirm that the long-term sustainability of the current effort at instituting participatory democracy characterized by free, fair and periodic elections as well as peaceful power transition will be less likely to bear fruit. In the 21st century, an important input for good governance that should not pass unnoticed is the role of ICT. For preparing the ground for good governance, in effective, responsible and accountable service delivery, the role of ICT is highly instrumental. And the best way for citizens to effectively participate in governance is through ICT tools such as the internet, mobile phones and news media (Hellstrom, 2009).

OBJECTIVES OF THE STUDY

1. To identify the obstacles that will affect the adoption of information and communication technologies (ICT for improved governance in southern Ethiopia.
2. To explore the role that ICT can play in improving governance in the study area.
3. To assess the impact of ICT on Agricultural Development within the Ethiopian context

METHODOLOGY

The study was based on both primary and secondary data. Initially semi-structured questionnaire was prepared and distributed to people of rural residence in southern Ethiopia. The sample population was selected randomly by appearing in the Regional Immigration office, located in Hawassa. At that office, there is a chance of meeting with different individuals from agrarian background. Using that chance, from the total 122 people appeared in one day in the office for the purpose of getting a national passport, 35 respondents were randomly selected using age, sex, and place they come. The questions concerned their perceptions with regard to the role of ICT for the promotion of good governance and agricultural development, opportunities as well as challenges encountered the adoption and proper functioning of ICT in Ethiopia. The responses were interpreted and analyzed using descriptive statistics. In addition to this, published and unpublished literatures were used to supplement the primary data.

LITERATURE REVIEW

ICT for Good Governance in Ethiopia

In a heterogenic state such as Ethiopia, Information and Communication Technology (ICT) is a potential tool for communicating and interacting with the citizens of the country. ICT enables Government-to-Citizen Information flow via the internet and vice versa. ICT facilitates Citizen-to-Citizen interaction by creating a virtual community that exchanges words, ideas and thoughts through the mediation of e -bulletin boards, e-mail networks, e-chatting, Skype and recently social networks. In this vein, ICT can also facilitate Citizen-to-Member of Parliament communication.

Agere (2000) as cited by Bemile, R. and Boateng, R. (2011), argues that, in the era of globalization, good governance (GG) appears simultaneously with concepts such as democracy, civil society, popular participation, human rights, and social and sustainable development.

GG can be seen as the prerequisite of a development process within a given nation. There is a general consensus among practitioners that GG should, among other things, be participatory, transparent, responsive, led

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by rule of law, effective, efficient, and accountable and have strategic vision in characteristic (UNDP, 1994). It ensures that the voices of the poorest and most vulnerable are heard in decision-making processes regarding the allocation of scarce resources.

The Figure 1 implies that, if a nation is in need of attaining sustainable economic and social development, everybody is required to contribute once own due. Without citizenry participation, no any attempt can bear a fruit.

The 20th and 21st centuries have witnessed major paradigm shifts in the conceptualization of development and governance. These phenomena are aided and propelled by a new —network intelligencell consummated in the introduction of information and communication technology (ICT). The world has also witnessed a reinvention of the whole process of governance that has impacted society in various ways. Through the internet and digital connectivity, today's world has come to be closer than ever before. Efficiency and processes of governance have been improved through faster information flow in the governance chain. Bottlenecks and cost of labor have been reduced across the world. Furthermore, ICT has opened new possibilities, and improved transparency and access to information as well as partnership and collaboration, leading to improved relationships between the citizen and state.

On the other hand, the paradigm shift from E-governance to M-governance can leverage the convergence of mobile and communication technologies to usher in a multi-modal approach to delivery of government services. Such service delivery can bypass the need for traditional networks of physical interaction and communication. Bypassing physical interaction has many effects, one of which is limiting the amount of corruption that can take place.

The successful implementation of sustainable hybrid governance requires supportive ICT infrastructure, government commitment, and active citizenry as shown in the diagram. This can be greatly achieved with the principles of subsidiarity–where matters should be handled by the smallest, lowest or least centralized competent authority–, and solidarity–unity that is based on common interests. If the Government can demonstrate these principles to its citizens by sharing authority with local administrators in different counties, the citizens must also respond with full participation and strong advocacy for important community issues.

ICT FOR AGRICULTURAL DEVELOPMENT

CONCEPTUAL FRAMEWORK

Changes in the pattern of agricultural production in many developing countries (brought by globalization and structural adjustment programs), whilst benefiting larger commercial farmers, have accelerated insecurity for many small-scale farmers. Farmers require access to agricultural information but they also need information on finance and credit. Small-scale and subsistence farmers have the least access to information and resources for improving productivity. Agricultural extension systems in most developing countries are underfunded and have had mixed effects. Much extension information has been found to be out of date, irrelevant and not applicable to farmers' needs (Garforth & Mulhall 1999, Norrish & Lawrence 1999).

It is obvious that, while production and productivity targets are generally achievable, the country needs to adopt more cost-effective, innovative and modern approaches to agricultural knowledge management , and to reform and modernize its agricultural extension system (UNDP 2012). For this purpose??, the Ethiopian Institute of Agricultural Research (EIAR) and regional agricultural research centers have created systems delivering the results of agricultural research activities to farmers mostly through SMS, development agents and FTCs. EIAR oversees the work of federal research centers, and coordinates all agricultural research activities in the country. Regional Agricultural Research Centers (RARCs) are run by the respective regional governments within their regional bureaus of agriculture. Both EIAR and the RARCs have research-extension coordination departments, which are in charge of linking research activities to agricultural extension. These linkages are currently weak and need to be improved in order to use them as a vehicle for generating, transmitting and updating agricultural knowledge and practices of smallholder farmers (Davis 2010).

Making relevant knowledge accessible to the farming community helps to improve production and productivity, and brings higher returns. If the agricultural practices of smallholders are not backed up by modern agricultural knowledge and information, agricultural households are likely to remain trapped in low productivity, food insecurity and poverty. In the context of Ethiopia, knowledge management[1] in the sense of generating new agricultural knowledge and information and making it available for use by smallholder farmers is important in promoting sustainable livelihoods and reducing rural poverty. Figure 2

As shown in the diagram above, while knowledge management (the process of capturing, sharing and

[1] In its broader sense, knowledge management encompasses processes and practices concerned with the creation, acquisition, sharing and use of knowledge, skills and expertise and follow a circular flow and a
nonstop process that continuously updates itself (see Figure 2 above)

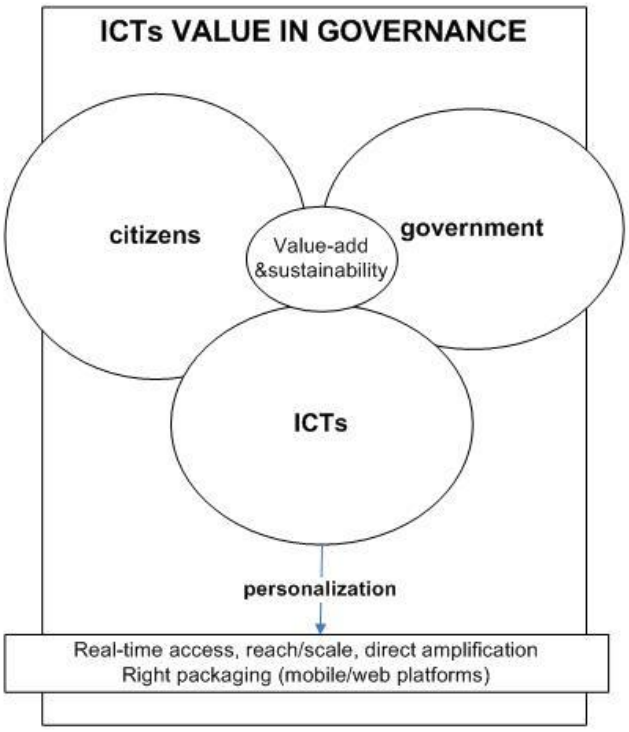

Figure 1. *Source: Hilda Moraa 2011*

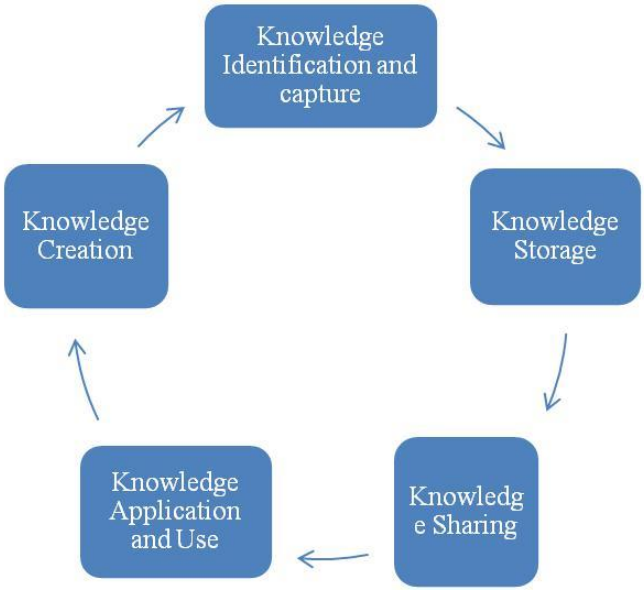

Figure 2. Source: Adopted from Cong et al. (2007)

using knowledge and techniques) is one possible model for assisting agricultural development being taking place in Ethiopia (if and only if, appropriate linkages between academic and research institutions and the agriculture sector. For the circular flow of knowledge management to take place, both knowledge, that is

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sufficiently better than the existing knowledge, and the means for transmitting it, must both be available. In addition, the consumers of knowledge must be willing and able to use the better knowledge that is made available. The role of ICT is indispensable to deliver and disseminate such information.

More than ever before, access for information is widely observed using mobile technology with the increasingly developed social networks such as face books, which are adopted by rural farmers in Ethiopia.

Various entities are engaged in the creation and development of information and knowledge. Likewise, several repositories and intermediaries play their role to bring information and knowledge to ultimate users. Agricultural knowledge is created from modern and indigenous sources. The modern knowledge is created through scientific research (and is therefore explicit knowledge) conducted by universities and research institutes. Indigenous or tacit knowledge refers to traditional knowledge, innovations and practices of local communities, and is developed outside the formal education system.

Agricultural information and knowledge created from these sources is stored in various forms before it is disseminated for use. The main repositories include publications, audio-visuals, and websites. The stored knowledge and information is then disseminated to users, such as rural farmers, through intermediaries, notably during training courses, field visits, exhibitions, publications, and using traditional forms of ICT (TV and radio), modern forms of ICT (internet, mobile phone, etc), and others. Figure 3 shows the flow of agricultural knowledge and information from creation to end-use.

As (Islam 2010) cited by (UDP 2012) has argued, effective knowledge management is achieved when the right knowledge and information is delivered to the right person at the right time in a user-friendly and accessible manner that helps the recipients to perform their jobs efficiently. The outcome of effective knowledge management includes improved productivity and performance of the agricultural sector.

DATA PRESENTATION AND ANALYSIS

DESCRIPTIVE STATISTICS

About 67% of the 122b respondents claimed that radio is the only, most effective and exploited information communication technology addressing up-to-date information for farmers in most of the rural areas of Ethiopia. Minoriies of 10% and 23% argued that mobile SMS and mobile Facebook, respectively, are recently contributing a lot for delivering important information for the farmers widely. This implies that, despite the outdated and ancient forms of ICT, like radio, in rural areas, modern forms of ICT like computers, TV, and other newly introduced technologies are still not widely adopted.

Also studies, without including the recent developments in ICT adoption and usage, in its prior publications, WB, and according to the data obtained from the country diagnostic report of the World Bank issued in March 2010, the coverage of ICT in Ethiopia is one of the lowest in Africa. At the time of WB assessment, the internet bandwidth benchmark for low income countries was about 20 times higher than that of Ethiopia (UNDP 2012). Studies conducted by Adam, 2010 and others have argued that the monopolistic market structure that exists in Ethiopia's fixed internet and mobile markets is one of the major factors behind the slow development of its ICT sector.

Thus, despite the fact that ICT has immense potential in disseminating agricultural knowledge and information, the low level of ICT infrastructure in Ethiopia is believed to have hindered the sector from realizing its potential. This has inhibited the effectiveness of FTCs in creating and delivering agricultural knowledge for use by rural farmers to increase productivity and production and to enhance efficiency. In most places, FTCs are not connected to modern ICT infrastructure and services. As a result, research-extension-farmer linkages are weak and costly, as such linkages have to be fostered through physical contact such as training, field demonstrations, field day programs and advisor.

With regard to the role of ICT for good governance, almost all (98%) respondents stated that they are able to attend the alternatives argued by each political party and are able to decide their position as to whose policy option is sound for administering the country in the future. A recent study conducted by Guchteneire and Mlikota, 2007, state that in many developing countries of Latin America, citizens can absorb any kind of political awareness through electronics media, till one can argue that professionalism has nothing to do in the today's information chain.

The same proportion of respondents indicated that they could take lessons regarding the consequence of corruption causing a serious criminal offense while case reviewed in every day TV program. Individuals who are found guilty of corruption are seen wen sentenced to several years' stay in jail. This condition has created a negative attitude towards corruption.

About 45% of the respondents indicated that with the full introduction of mobile technology since 2001, the business transaction has enhanced four times since the introduction of mobile technology. The rest 21% and 46% stated that mobile technology has improved their life and the lives of their family members by providing information such as sophisticated health institutions and vacant positions for job seekers in other places respectively.

The low level of access to ICT infrastructure is also believed to have slowed the sharing and exchange of knowledge and information generated at research

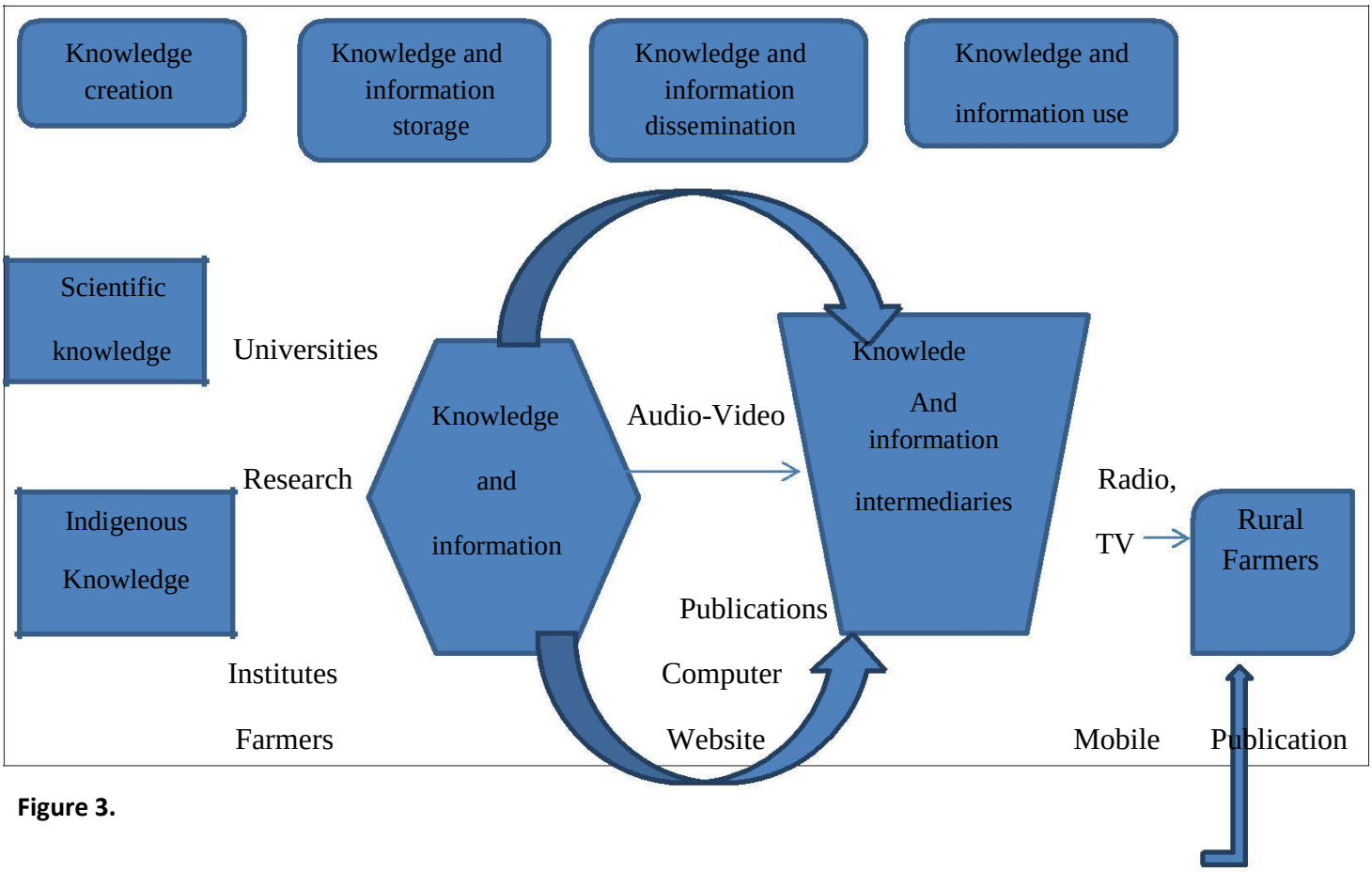

Figure 3.

centers at national and regional levels. Relatedly, electricity infrastructure coverage in the rural parts of the country remains low despite recent efforts to extend the electricity grid to rural areas through the rural electrification program. The low level of electricity coverage has in turn inhibited the expansion of ICT services to rural areas.

Although necessary , access to ICT infrastructure by itself is not sufficient for the dissemination of knowledge and information to occur through it. Access to ICT infrastructure must be accompanied by access to ICT services. In this respect, the other challenge is how to make ICT services both affordable and available in venues or modes that are convenient to smallholder farmers (UNDP 2012). Availability of venues refers to the presence of various access points, particularly information kiosks, tele-centers, call-centers, and so on, in a manner that is accessible to the majority of the farmers. These services are not adequately available and accessible to farmers in Ethiopia. A recent study conducted by (Chekol, 2009) as cited in UNDP 2012, pointed out that there are only three public tele-centers per 10 thousand people and even existing service centers are unlikely to be sustainable, and extension to rural areas is a challenge due to lack of funds. Therefore, the other critical factor hindering the widest possible exploitation of the ICT services is the low level infrastructural development in the rural areas.

The issue of affordability poses also another challenge to accessibility of ICT service, especially among subsistence farmers. Moreover, although the tariff for modern ICT services such as mobile phone, internet, and fixed lines in Ethiopia is one of the lowest in Africa, prices are not that low in purchasing power terms when one takes into account the low levels of household per-capita income (Adam, 2010).

Regarding the usage of ICT, 98% of the total sample respondents responded that they are using ICT, in one way or another. And among these respondents, 77% are argued that they use only mobile services and the rest 21% claimed to use both radio and Mobile.

The UNDP 2012 study confirmed that radio transmission covers over 80 per cent of the country and that about half of the Ethiopian households own a radio. This makes radio programs one of the most cost-effective channels for conveying agricultural

knowledge and information to the rural community. There is potential to strengthen the use of radio to enhance research-extension-farmer linkages in Ethiopia. This is one of the opportunities for the development of ICT in Ethiopia.

Many of the respondents recommended that it would be good, if the proper function of telecommunication in delivering appropriate network systems, as they are consuming their balance while the required communication between the two parties remain unfinished business. An emerging body of research shows that the reduction in communication costs associated with mobile phones has tangible economic benefits, improving agricultural and labor mobile phones has tangible economic benefits, improving agricultural and labor market efficiency and producer and consumer welfare in specific circumstances market efficiency and producer and consumer welfare in specific circumstances and countries (Jensen, 2007; Aker, 2008; Aker, 2010; Klonner and Nolen, 2008). What worsens the problem along with this hand is the low and evolutionary expansion of mobile phone coverage in Ethiopia, due to the fact that Ethiopia, Somalia and other West African states are land-locked countries.

At present, almost all woredas have infrastructure that enable them to be connected to the network and have access to internet, telecommunication, video conferencing and databases at national level. In addition, more than half of the kebeles in the country were linked to the network by the time of the assessment by Adam (2010). Thus, the presence of such modern ICT initiatives can be considered to be a good opportunity to enhance the flow of agricultural knowledge and information in the region in particular and in the country in general.

CONCLUSIONS

ICT represents the introduction of a new form of political relationship in which individuals in society, their representatives, social groups, social and political organizations, and pressure groups, among others, can act directly over governments. ICT introduction to improve local governance represents a decisive step in the democratization of public information and in citizen-government-citizen or citizen-citizen-government interactions. The citizen-government relationship recognizes and warrants that government authorities will fulfil public demands and priorities.

The use and the potential for expanding ICT depend essentially on a physical base. Magnifying this base will guarantee the necessary infrastructure for the implementation of information technologies, as the case of the internet demonstrates. An adequate physical base is fundamental, that is, to expanding the telecommunication system, extending telephone lines, lowering the costs of system access and utilization time, reducing equipment costs, lowering provider services costs, and, most of all, establishing entry points that facilitate public access, following the example of Internet Cabins (tele centers) in Peru. Having done that, the next step is to prepare an ―educational base‖ that is, preparing youth and adults to use information technologies.

The major challenges inhibiting the use of ICT in disseminating agricultural knowledge and information include the low level of access to ICT infrastructure and services, and need to be addressed. The existing potential for extending the current ICT infrastructure to reach rural farmers, coupled by the presence of wide area radio service coverage across the country, should be exploited to implement ICT-based knowledge and information dissemination in the short term. Policy and investment priorities that government and its partners should consider in order to promote cost-effective knowledge management in agriculture have been highlighted. Priorities include extending the existing ICT infrastructure to reach FTCs and woreda agricultural offices, establishing rural ICT kiosks, establishing and strengthening community radios, integrating ICT at all levels of education, and making ICT hardware affordable to users. Mobile phone platforms offer good opportunities for reaching farmers and knowledge intermediaries, and their use for disseminating knowledge and information should be explored and enhanced, and the design of interventions should benefit from existing lessons and experiences of many countries in Africa and Asia. These initiatives, we believe, will assist the government to rationalize its expenditures in the sector, streamline

the agricultural extension system, speed up agricultural transformation and attain the objective of doubling agricultural production and productivity in the effort towards the eradication of poverty in the country.

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Appendix

Semi-Structured Questionnaire

I. Background Information

Name:_____

Age:_____

Place of birth:_____

Job:_____

Educational Status:_____

Marital Status**:**_____

II. ICT related Information

1. Do you use any kind of information communication technology?

1) Yes 2) No

2. If your answer to the above question is yes, what are these?

1. Mobile 2. Radio 3. Mobile and Radio 4.Television 5. All of these technologies

3. Do you use any social network for getting information regarding the one that support your farming practices?

1. Yes 2.No

4. If your answer to q3 above is yes, what is that?

1. Facebook 2.Radio News 3. Skype 4.None of them

5. If your answer to the same q,is no, what is the reason behind?

1. Financial constraint to buy the technology

2. Lack of awareness about the importance of ICT

3. Dis regard to ICT

4. Lack of know how to operate the instruments

6. If you have the trend to get information using any kind of ICT, did you benefited from such information?

1. Yes 2.No

7. If your response is yes, what was this information about?

1. Harvesting of the crops

2. Sowing seeds on time

3. To detect the prediction of rain availability

4 To commercial purposes, getting market information

5. for all of the above

8. From which of the ICT instrument do you get the latest information?

1. Mobile SMS 2. Radio 3. TV 4.All

9. What are the opportunities that enable you to use ICT in your locality?

1. The benefit that you get from the media

2. The cost of the instruments

3. The desire to use ICT

4. None

5.Specify any_____
_____
_____
_____

10. What are the factors that affect you from using ICT?
Specify_____
_____
_____
_____ _____