

Review on Application of Mobile Phone for Agricultural Communication and Innovation in Ethiopia

Tariku Bachano

Jimma University, College of Agriculture and Veterinary Medicine,
Department of Rural Development and Agricultural Extension,
Specialization on Agricultural Communication and Innovation, Ethiopia

Abstract: The mobile phone is one of the more exciting forms of ICT, particularly in the context of developing nations. It has the potential to allow countries to leapfrog older technologies and begin conversing with the rest of the world in terms of economic performance. The rapid uptake and popularity of mobile phone applications by rural farmers have led to the development of unique and innovative approaches to using these applications in solving some salient issues faced by farmers. Several studies have revealed some innovative examples; it has been reported that farmers use mobile phones to coordinate access to agricultural inputs. Different factors that influence the use of the mobile phone has, high cost of available technologies, inadequate infrastructure and low ICT skills, poor and expensive connectivity, inappropriate ICT policies, language barriers, low bandwidth, inadequate or inappropriate credit facilities and systems. The objective of this review is to clarify the use of mobile phones in agricultural extension in that hindered factors to its application by rural farmers.

Key words: Agriculture • Ethiopia • Information Communication • Innovation • Mobile phone

INTRODUCTION

Mobile phone application for agricultural communication and innovation is believed to play a pivotal role in disseminating information and linking farmer with clients in the agricultural value chain. Information communication technology is helping and has some unlimited potentials to help improve the livelihoods of the rural communities and can increase the income and in the long run help in the fights against poverty. Expansion of mobile phones' coverage is considered one of the remedies for such an information problem. The percentage of the world's population with mobile phone coverage rose from around 12% in 1999 to around 76% in 2009. Almost three-fourths of the world's mobile phones in 2010 were in developing countries.

In many developing countries, more people have access to mobile phones than to older technologies like telephone landlines, newspapers and radio [1]. For instance, telephone access in Sub Saharan Africa (SSA)

has been much lower than in developed regions, although an exponential increase in the total of mobile phones subscriptions from 53% at the end of 2005 to 73% at the end of 2010 has now put the region on a path for continued expansion in communications connectivity.

According to Adam [2], assessment of the ICT sector performance review states that Ethiopia has some ICT related opportunities that can be utilized in the dissemination of agricultural information to the users. Information is currently regarded as a factor of production like other factors such as labor, capital and land [3]. The mobile phone is one of the more exciting forms of ICT, particularly in the context of developing nations. It has the potential to allow countries to leapfrog older technologies and begin conversing with the rest of the world in terms of economic performance. According to Dutta and Lanvin [4], about 12% of the world's population lives in areas without mobile coverage. Of those that are uncovered, 92% live in rural areas. An estimated 427 million people without coverage of

Corresponding Author: Tariku Bachano, Jimma University, College of Agriculture and Veterinary Medicine, Department of Rural Development and Agricultural Extension, Specialization on Agricultural Communication and Innovation, Ethiopia.

mobile phone from this number 52% of those without coverage are located in Sub-Saharan Africa, South Asia and South-East Asia.

Ethiopians rural development depends to a large extent, on the quickness of agricultural development. To bring substantial development in the agricultural sector access of timely, reliable and relevant agricultural information is a critical factor. Information is currently regarded as a factor of production like other factors such as labor, capital and land. In rural parts of Ethiopia, where access to information on an individual basis may be costly & also unavailable, such arrangements are believed to have the potential to bring the required information to the rural community in the most cost-effective way [5]. In general, this conducted research review will deeply assessing the usage of mobile technology in agricultural development and identifies the affecting adoption of mobile technology in Ethiopia.

Nowadays information and communication technologies (ICTs) have the potential to transform agriculture in a rural area. The focus here is to know how ICTs can participate in the development of agriculture through mobile phones in the rural area of Africa [6]. According to Tegegn *et al.* [7], in Ethiopia, most agents use individual extension methods (farm or home visits and use of contact farmers) to communicate and disseminate agricultural technologies to farmers. Agents are also working under areas characterized by lack of infrastructural facilities such as transportation.

Conventional extension methods such as a farm or home visits and the use of contact farmers do not provide the needed agricultural information on a timely basis [8]. The impact of mobile phones on development will, however, in the end, be determined not only by the number of owners of SIM cards and subscription rates but also by the actual ways in which mobile phones are used and the benefits that Africans derive from using mobile phones [9]. It is important to know factors that lead to efficient use of mobile phones for communicating educative agricultural extension messages. It is also necessary to know the extent of mobile usage in agricultural extension as well as the interaction between mobile phones and broadcasts media on issues related to agriculture. Therefore, this research review will examine the use of mobile phones for communicating agricultural information and investigated factors constraining its use in agricultural extension advisory services in Ethiopia, particularly in the rural areas of the country.

This review will be used to examine factors that constrain the use of the mobile phone in rural agricultural extension innovation helps service provides and stakeholders who work with farmers in the agricultural sector to put into consideration these important factors. The objective of this review to find out the application of mobile phone for agricultural communication & innovation in Ethiopia, to explore mobile phone application for expansion of agricultural communication and innovation in Ethiopia and to review and explore factors those limit the application of mobile phones for agricultural communication and innovation in Ethiopia.

Mobile Phone: Electronic devices that are used for voice communication and the exchange of data through text messages. Audios and videos can be applicable over a network with other mobile phones and computer devices.

Mobile Phone Application for Agricultural Communication and Innovation: Mobile phone for agricultural information system characteristics was also referred to as intangibility, the inseparability of production and consumption, potential variability, perish ability and lack of ownership [10]. The key product of mobile services that have been directed towards agricultural productivity, weather information, market prices, agro-processing and other messages that enhance farmer's rural livelihoods through the extension systems [11]. M-Agriculture is the more recent term used to describe the various mobile technology-based services, which are used in the agriculture sector. The term has evolved from the term e-agriculture, to specifically mean the mobile phone services developed in the past few decades. Globally there are a few hundred different services in use, developed by both private companies and international organizations [12]. Several m services have already been developed that deliver information to farmers either on-demand or by sending updates via SMS or audio recordings. M-services may also serve to facilitate farmer-to-farmer or farmer-to-buyer relations, such as sharing of experiences on farming practices and market information related to prices, supply and demand [13].

The Role of Mobile Phones in Agricultural Development: The theory of diffusion of innovations is central to the adoption, use and attendant benefits of mobile phone technology application in agriculture, particularly by smallholders. When an innovation is introduced into any

setting, it offers three valuable intuitions into the process of social change. Such intuitions include what quality attributes make an innovation spread, understanding the needs of the different user groups and the role played by peer networks in ensuring the spread of the adoption. The use of mobile phones to aid agricultural development requires adequate knowledge of the technology and the perceived impacts it has, as well as an assessment of the opportunities and barriers reinforced by the local social structure of the user communities.

Mobile phone adoption by farmers is predicated on the perception that it is better than most other communication means, as it is convenient to handle, provides economic advantages and enhances the social status of users. The application of mobile phone sits within the core value of communities communicating within and between groups for social economic interactions. It enhances past experiences of communication by removing the cumbersome associated with other communication methods. This perceived relative advantage of mobile phone arguably increases the rate & possibly the growth in mobile phone ownership amongst community members and farmers in particular.

Benefits of Mobile Phone Application for Agricultural Communication and Innovation: The mobile phone has been found to help improve the productivity of individuals and organizations within resource-constrained environments due to increased efficiency, effectiveness and reach. The rapid uptake and popularity of mobile phone applications by rural farmers have led to the development of unique and innovative approaches to using these applications in solving some salient issues faced by farmers. In some parts of rural Ethiopia, farmers practice mobile phones to coordinate access to agricultural inputs accessing market information seriously.

Factors Affecting the Application of Mobile Phone in Ethiopia: According to Tegegn and A. Dafisa [7] Factors that impact the application of the mobile phone has, high cost of available technologies, inadequate infrastructure and low ICT skills, poor and expensive connectivity, inappropriate ICT policies, language barriers, low bandwidth, inadequate or inappropriate credit facilities and systems. In effect, the combination of these constraints would result in a digital divide between the urban and rural areas. On socioeconomic factors affecting

the participation of mobile phones by development agents, workers revealed that education, income, training, awareness, access, age and membership of agricultural organizations were significant factors to mobile phone adoption. The growth of mobile phone applications for disseminating information towards the farmers for the development of agriculture is an obstacle over the years for so many factors.

Inadequate Education of Rural Farmers: Education, which is the backbone of a nation, is unfortunately seen as a corrupted sector in a developing country. Although the percentage of literacy is been increasing day by day in written the matter-of-fact is that their education is limited only to put the signature. But to get the maximum benefit from the technological aspect the real education is been required and there is a huge lacking of it. The basic skills of literacy and numeracy can make a difference to productivity in the home, farm, or household enterprise has long informed research around skills development and agriculture [14]. For instance, UNESCO [15], cites evidence that educated farmers were more likely to make better use of technologies (irrigation technology in China, increased fertilizer use in Ethiopia) and move into higher-value crops. Education may facilitate the rural people to be simply adopting the technology which helps them increase their awareness towards using mobile phone for market information gaining.

Language Difficulties: The language barrier is also another factor that they were affecting and make them not apply mobile phone in Ethiopia. Language plays an important role in influencing internet usage as well as mobile usage. Since the Internet is dominated by English language content, English speaking countries have a strategic advantage in the popularization of Internet use. On the other hand, non-English speaking countries like Ethiopia; face enormous difficulties in tapping into the potential of the internet as an information source [16]. Lacks public awareness and knowledge of ICT; the public ICT literacy is still very low and almost nothing for the farmers. What concerned us the most is that ICT literacy among students and educators also low, especially those that live in the perimeters or remote areas. Here public awareness campaign through various media is absent. The problem is that many computer literacy and information technology programs are still in the infant stage [15].

Less Support for Rural Farmers: Modern facilities are available in city places are not been available in remote areas. The farmers who are living in remote areas are still in the dark. They are deprived of all facilities that they should get. And because of that, they are not been able to implement the latest technological aspect in their farming process [7].

Lack of Financial Resource Means: The farmers are not financially solvent enough. Most of them lead their lives from hand to mouth. So they are not been in a position to use the latest technology as a mobile phone to get the latest information for their betterment. Mobile phones can facilitate a greater export orientation in agricultural practices and marketing, potentially bringing higher incomes for farmers. Farmers felt that mobile phones had helped to raise incomes by improving their ability to deal with risks and take advantage of income opportunities [17].

Inadequate Infrastructure in the Whole Region of Rural Ethiopia: The access to ICT infrastructure in Ethiopia is still very low despite some noticeable improvements registered in recent years. According to 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 promoting information communication technology-based agricultural knowledge management in 2012. The ICT infrastructure in rural areas is very limited. According to Zewge *et al.* [1]. The findings from this study that, In Ethiopia 62%of the rural people lived without electricity, which also implies the lack of landline telephony.

CONCLUSION AND RECOMMENDATION

Information Communication Technology (ICT) is helping modern due to its unlimited potentials to help, as well as to improve the livelihoods of the rural communities in Ethiopia. And also increase the income and in the long run help in the fights against poverty. However it has such applications of mobile phone for agricultural the communication and innovation; the applications of mobile phone by rural farmers were affected by lack of education, less awareness about the use of the mobile application and lack of financial resources. But also the application or use of mobile was affected by the lack of mobile network and poor internet connection in rural parts of whole

Ethiopia. The concerned communication for agricultural innovation planner should consider transferring agricultural development sustainably in Ethiopia.

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