The Use of Mobile Phones by Small Scale Farmers in Northern Ghana: Benefits and Challenges

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Abstract

The advent of mobile technology has found to be beneficial to farmers and as such studies have been conducted on this. The few studies in Ghana have concentrated on the Ashanti, Brong-Ahafo, Central, Eastern and Western regions with little also known about the associated challenges. Consequently, this study examined the use of mobile phones among small scale farmers in Kavilli community of the Northern region of Ghana. A total of 111 small scale farmers were purposively selected and we observed that, the mobile phones were predominantly used for communicating with family/friends and arranging for the procurement of farm inputs leading to improved communication with farm input sellers and efficient use of time. Farmers were however faced with challenges like no reception, calls ending unexpectedly and poor sound/breaking up of sound. It is recommended that, the use of mobile phones in farming activities should be encouraged.

Keywords: Small scale farmers, Mobile phones, Ghana, telecommunication, agriculture

1. Introduction

Agriculture plays a crucial role in the economy of developing countries, and provides the main source of food, income and employment to their rural and poor urban populations. Theoretical thoughts and empirical studies exist to show that agriculture is needed in the development process of every economy. One of such theories is the work of Arthur Lewis. Lewis (1954) in his "Dual Sector Model" argues that surplus labor from the traditional agricultural sector characterized by low wages, an abundance of labour, and low productivity is transferred to the modern industrial sector which helps to promote industrialization and stimulate sustained development (Stringer and Pingali, 2004; Kamajou, 2008). Anríquez and Stamoulis (2007) and Mellor (1999) have all argued that agriculture is needed for poverty reduction. Research by Poonyth et al (2001), Tsigas and Ehui (2006), Gollins et al (2002), Thirtle et al (2003) etc. proof the usefulness of agriculture to the growth and development of countries. According to Ankrah (2010) agriculture's contribution to Ghana's gross domestic product (GDP), averages about 40% since the mid-1990s and still offers job to 60% of the economically active population.

With the advent of modern technology, farmers in developing countries have taken advantage of this and incorporated it in to their activities. One of such technology is the mobile phone and its associated benefits to farmers are numerous in the literature. For instance, a study by Karamagi and Nalumansi (2009) found that many dairy farmers in the Bugerere District, Uganda could travel for Kampala in search of buyers but to no avail until farmers adopted mobile phones and connected to FoodNet which enabled them easily get information on price and interested buyers via SMS (Martih and Abott 2011). In Nigeria, majority of farmers interviewed said that they had made a profit by using mobile telephony (Pyramid Research, 2010). In their study in India, Mittal and Tripathi (2009) concluded that mobile phone can increase farm productivity should there be a reduction in the constraints that limits the use of information available to farmers through their phones. Also, Furuho and Matutay (2011) found that mobile phones are useful to farmers during their farming preparation, farming, harvesting and marketing in rural Tanzania.

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The comparatively scanty research in Ghana by Boadi et al (2007), Ofosu-Asare (2011) and Salia et al. (2011) show that farmers and fishermen benefit from mobile phone usage. Boadi et al (2007) revealed that farmers in rural Eastern and Central regions of Ghana among other things get better information flow, enhanced marketing activities, operational efficiencies and cost savings for using mobile phone. Ofosu-Asare's (2011) study focused on cocoa farmers in the four leading cocoa producing regions in Ghana-Western, Ashanti, Brong Ahafo and Eastern and found that the 61%, of cocoa farmers who owned mobile phones by using it for activities like arranging for inputs and contacting purchasing clerks, have seen a reduction in their transportation cost. In their study of mobile phone usage among fishermen, Salia et al. (2011) found that fishermen have expanded their markets and are able to make informed decisions through the use of mobile phones. However there is no known study in the literature on the use of mobile phones by small scale farmers in the Northern region of Ghana, the largest region of the country but among the poorest regions in Ghana and a major contributor to staple foods in the country. Again little is known about the associated challenges for using mobile phones in their farming activities. This necessitates the study on the use of mobile phone by small scale farmers in the Kavilli community of the Northern region of Ghana.

2. Materials and Method

2.1. Study Area

The Kavilli community is located in Tamale Metropolitan Assembly which is the centre of the Northern Region. It shares common boundaries with Savelugu/Nanton District to the north, Tolon / Kumbungu District to the west, Central Gonja District to the south-west, East Gonja District to the south and Yendi District to the east. The Tamale Metro occupies approximately 750 Sq. Km.This is 13% of the total area of the Northern Region.

Tamale metropolis has one rainy season which start from April/May to September/October. The rainfall is at its peak in the month of July or August with a mean annual rainfall of 1100mm. Farming activities are highly affected by the short rainfall duration because farming is mainly rain fed. Agriculture, hunting, and forestry are the main economic activities in the region. Together, they account for the employment of 71.2 percent of the economically active population, aged 15 years and older. Less than a tenth (7.0%) of the economically active people in the region are unemployed. The northern region is one of the poorest regions in the country and most residents do not have access to the basic urban services.

2.2 Study Population and Sampling Technique

Purposive sampling was used in selecting the Kavilli community located in the Tamale North sub- metro. Kavilli was selected because it is a farming community and it is much better endowed with mobile phone facilities. With no data on the farmers' population, a total of 111 small scale farmers were selected for the study.

2.3 Data Collected

Structured questionnaire was prepared and administered to the sampled respondents, by face to face interviews. Two research assistants collected the data from May, 2012 to June, 2012. Data was presented in the form of frequency and tables and statistical software SPSS version 16.0 was used in analyzing the data.

3. Results and Discussion

This section discusses the main findings of the study. The findings are grouped under demographic indicators, the number of mobile phones one has, the number of network one has registered, the uses of mobile phone, the benefits of mobile phones to the farmer and the challenges farmers face for using mobile phone.

3.1 Demographic Indicators

Out of a total of 111 respondents interviewed, 84.7 percent and 15.3 percent were males and females respectively. This shows that majority of the respondents who were farmers were males. With respect to the age distribution, majority of the respondents (45.9%) fall within the 26-35 age group, followed by those within 36-45 age groups (24.3%). Those within 46-55 age group followed with 17.1%, followed by those within 16-25 age group (8.1%) and 55 years plus formed 4.5% of the respondents. This suggests a young adult population who are the major source of human capital and key agents for socio-cultural, economic and technological innovation worldwide. On the educational attainment of the respondents, it was

found that majority of the respondents (98.2%) had no formal education, followed by those with basic education (1.8%). The greatest percentage of the respondents having no formal education indicates that greater efforts are required from stakeholders in creating awareness and educating the small scale farmer populace on the usage of mobile for it to be used to its fullest potential.

The minimum, maximum and mean years that the farmers have been engaged in farming were 4 years, 50 years and 17.8 years respectively. In the study area, the commonest crop grown were rice and maize (41.4%), followed by maize, rice and yam(33.3%), maize, rice and groundnut(12.6%), millet, maize and yam(8.1%) and soya beans and groundnut(4.5%). The minimum number of workers employed by the farmer was one, 30 as the maximum number of employees and the mean was 7.3 workers. Concerning the number of years that a farmer had been using his /her mobile phone it was found that, majority of the respondents (62.0%) belong to those who have been using mobile phones between 4-7years, followed by those who have been using mobile phones for 8years and above (34.5%) and 3.5 percent have used mobile phones between 1-3years.

Table 1 Number of Mobile Phone and Sim cards usage

Sim card/Network		
Number of Sim cards	Frequency	Percentage
1	70	63.1
2	32	28.8
3	4	3.6
4	5	4.5
Mobile phones		
Number of Mobile phones	Frequency	Percentage
1	102	91.9
2	9	8.1

3.2 Number of Mobile Phones and Sim Cards

This section seeks to determine the number of phones as well as the number of network that the farmers had subscribed to. It goes further to identify their reasons for using more than one or subscribing to more than one network. From Table 1 above, nearly all respondents (91.9%) used one phone and only 8.1 percent of the respondents used two mobile phones. Again, with the number of sim cards used or network subscribed by respondents, a higher percentage of the respondents (63.1%) had subscribed to one network, followed by 28.8 percent who had subscribed to two network, 4.5 percent and 3.6 percent had subscribed to four and three networks respectively.

In order, to identify the reasons for using or subscribing to more than one phone or networks, the respondents were asked to give reason(s) and the commonest reason was poor services and conditions of services received from network. Most respondents subscribed to more than one network operator to take advantage of service promotions and network coverage. The second was affordability; this is so because the farmers perceived that it is cheaper to call a number on the same network than someone on different network. The last point cited was for prestige and recognition. The farmers perceived that if you have more than one phone in the community then you are perceived to be wealthy.

3.3 Factors Considered in The Selection of A Network

In probing further from respondents who gave their reasons for subscribing to more than one network, they were asked to state the criteria they used in selecting a network. The findings presented in table II, shows that, the cost of using phone was the first important factor considered. That had 49.6percent of the respondents. The second and third factors were coverage (30.6%) and reception (19.8%). Reception and coverage are very necessary for farmers as they would be communicating with their colleague and family members.

Table 2 Factors considered in the choice of a network

Factors	*Percentage*
Coverage	30.6
Reception	19.8
Cost of using phone	49.5

3.4 Mobile Phone Usage

As regards to the usage of phones by farmers, table III below, revealed that more than half of the respondents (67.6%) used their mobile phones to communicate with family/friends. This goes to buttress the point made by

Goodman (2005) who found that in South Africa and Tanzania, mobile phones are used mostly among both strong links and weak links. As one chats and keep in touch with family members and friends it strengthens social capital (Scott et al. 2004).

Table 3 Mobile Phone Usage relating to business activities

Usage	*Percentage*
Coordinating access to agricultural input	32.4
Communicate with family/friends	67.6

Appreciable percentage of the respondents (32.4%) used their mobiles to communicate and arrange with agricultural input sellers when they want to purchase seeds and pesticides from local dealers, governmental and nongovernmental agriculture extension agents. Because some of the respondents use the Mobile phone to communicate with agricultural inputs sellers, it shows that the farmers are making productive used of their mobile phones which will enhance their livelihood.

3.5 Frequency of Service Usage

The rate of usage of voice calls, sending text message, accessing internet, accessing emails and video calls was one of the findings this study sought to find. From the study, the most frequently service used by respondents was voice calls in which all the respondents (100%) used for communicating. The reason may be attributed to the simplicity of the procedure to make a call as hinted by (Kwakwa, 2012).

All the respondents (100%) have never used their mobile phone for sending text message, video calling, accessing the internet and emails. The main reason for this may be the lack of education; to make use of SMS one has to be literate. Also, there may be little knowledge on how to use the mobile phone for this purpose.

3.6 Benefit for using Mobile phone

An important objective that the study seeks to achieve is to determine the benefits that these small scale farmers had received from using mobile phone. Two benefits were identified and these were improved communication with farm input sellers and efficient use of time. From table V below, more than half of the respondents (65.8%) said that the use of mobile phone has helped improved communication with farm input sellers and 34.2% said it has helped them to make efficient use of time. The mobile phones are used to call local dealers in seeds and fertilizers

Table 4 Frequency of services usage

Service	*Frequently (%)*	*Occasionally (%)*	*Never (%)*
Voice calls	100	0	0
Send text message	0	0	100
Access the internet	0	0	100
Access email	0	0	100
Video calls	0	0	100

Table 5 Benefit from using mobile phones

Benefits	*Percentage*
Improve communication	65.8
efficient use of time	34.2

Table 6 Challenges in using mobile phone

Challenges	*Overall percentage*	*Frequent percentage*	*Occasionally percentage*
No reception	67.6	72.1	27.9
Calls ending unexpectedly	27.9	51.4	48.6
Poor sound quality/breaking up of sound	4.5	40.5	59.5

to know about new products and availability in local area which saves them time and money. This supports earlier studies like Boadi et al (2007), Ofosu-Asare (2011) and Salia et al. (2011).

3.7 Challenges from Network Providers

The farmers interviewed said the challenges they faced for using mobile phones were no reception, poor sound or breaking up of sound and calls ending unexpectedly. Table VI below shows the frequency of occurrence for such challenges.

The findings from the study revealed that, "no reception" is a challenge to majority of the respondents (67.6%) followed by calls ending unexpectedly (27.9%) and poor sound quality/breaking up of sound (4.5%). The rate of occurrence of these challenges from the result in table VI showed that most of the respondents (72.1%) experienced "no reception" on regular basis, followed by calls ending unexpectedly (51.4%) and poor sound quality/breaking up of sound with 40.5 percent.

3.8 Efforts to Deal with the Challenge

The majority of the respondents (67%) said no, when asked whether they had made any attempt to deal with the challenges they faced as against 33percent who said yes. Some of the steps they took in dealing with the challenges they faced were contacting network provider through phone call and switching to other network they belief could give them a better quality service.

Table 7 Respondents that have made efforts to deal with challenges

Response	*Percentage*
No	60.4
Yes	39.6

Source: *Field survey 2012*

4. CONCLUSION AND RECOMMENDATION

This study was conducted to examine the use of mobile phones by small scale farmers in Kavilli community of Northern Ghana. The empirical data shows that almost all the respondents use one mobile phone and a majority of the respondents had subscribed to one network out of the of six mobile telecommunication operators in the country. Those who had more than one mobile phone or had subscribed to more than one network had done so because of poor services and conditions of services received from network. Most respondents subscribed to more than one network operator to take advantage of service promotions and network coverage. The second reason was affordability; this is so because the farmers perceived that it is cheaper to call a number on the same network than someone on different network. The last point cited was for prestige and recognition. The cost of using mobile phone, coverage and reception were the major factors considered by the respondents when selecting a network.

Majority of respondents indicated that, they use the mobile phone to communicate with family/friends. An appreciable percentage of the respondents also indicated that, they use the mobile phone for coordinating access to agricultural inputs. Again the most frequently service used by all the respondents was voice calls and none of them had never used their mobile phone for sending of text message, video calling ,accessing the internet and emails.

In agricultural setting, farmers have found mobile phones to be very useful communication devices in the study area. From our study, two benefits were identified and these were improved communication with farm input sellers and efficient use of time. Mobile phones help farmers to contact anyone or anybody within their line of business or social circle. The three major challenges associated with mobile phone usage cited by the respondents were no reception, calls end unexpectedly and poor sound quality/ breaking up of sound. According to the respondents "No reception" was experience on regular basis whiles calls end unexpectedly and poor sound quality/breaking up of sound occur occasionally. Despite the challenges they face in the process of communicating only a few of the respondents made an effort to deal with these challenges. Some of the steps they took in dealing with the challenges they faced were contacting network provider through phone call and switching to other network they belief could give them a better quality service.

The findings from the study laid the ground work for giving some recommendations on how mobile phone use can best continue to improve farmers' lives. The use of

mobile phones in farming activities should be encouraged. Since majority of the small scale farmers are illiterate and find it difficult to use other services like sending of text message, video calling, mobile network operators and other stakeholders should facilitate educational campaigns targeted at educating farmers on basic mobile functions and services beyond voice call.

Lastly, mobile phones companies should therefore be provided with the needed assistance by all stakeholders to improve upon the poor reception experienced by these farmers.

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