Influence of Socioeconomic Characteristics on Purposes for which Mobile Phone was used by Small Scale Farmers in the Gezira State, Sudan

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The objective of this study was to assess the influence of some socioeconomic characteristics on purposes for which mobile phone was used by small scale farmers in the Gezira State, Sudan. The total number of small- scale farmers in the State for 2013-2014 growing season was estimated to be 5000. Ten percent of the population was used using the simple random sampling technique. The collected data were statistically analyzed and interpreted using percentage, frequency distribution and chi-square test. The results showed significant association between the age, education level and farm size of small scale farmers and their purposes for which mobile phone was used. It can be concluded that the relatively high cost of buying and use of mobile phones can negatively influence the frequency of contacts of small scale farmers particularly their use of mobile phones for agriculture services needed. In addition, the results of this study can help in improving the mobile telephone services which in turn may increase the success of agricultural development programmes in the State and the rest of the country. Thus, more efforts should be paid by mobile telephone service companies of Sudan to expand their services to provide services for all aspects of agricultural activities in the State and use more advanced technology in operating mobile telephone networks in order to reduce cost of buying and using mobile phones particularly for small scale farmers in the Gezira State and the rest of the country.
Key words: Mobile phones, Purpose of use, small scale farmers, Gezira State, Sudan.

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1. Introduction

The rapid growth of information and communication technologies (ICTs) in developing countries offers a unique opportunity to share information, knowledge, problem-solving practices and market's situations and changing prices of agricultural inputs and produces. During the last few years, the use of mobile phone has spread rapidly in Africa, particularly in sub-Saharan Africa. Mobile phones can reduce significantly communication and information costs for the rural people. Dunombe (2012) mentioned that reviews from South Asia and Sub-Saharan Africa referred to mobile phone as a key innovative technology in supporting livelihoods in addition to evidence of using it by agricultural extension organizations in their information and marketing services. Mobile phones are used for many purposes in Sub-Saharan Africa including contacts with family members and friends, information on prices and organize supply chains (Aker and Marcel, 2011).

Mobile phones are increasingly enabling farmers to focus and extract useful and update information from social and business networks. They become important to agro-based entrepreneurs as infrastructural device for improving efficiency of agricultural markets, promoting investment and contributing to empowerment (Tettey, 2013). According to report of Vodafone (2011) mobile phone can help farmers to improve their agricultural productivity by providing them with access to basic financial services, improved agricultural practices and new markets which in turn will help them to obtain better prices for their crops, a better return on investments and they can invest in better agricultural inputs.

The relationship between ICTs such as mobile phones, livelihoods and poverty stems from the point that information plays a central role for any development processes. Mobile phones have the potential to increase the speed and ease, and to introduce new modes with which information is communicated (Sife et a.l, 2010). Mobile phones can enable interactive communication flow unhindered by space, volume, medium or time, thereby influencing the existing communicative ecologies (Tacchi et al., 2003).

Agricultural extension organizations play important role in helping rural people access and use mobile phones as tools to improve their income and standards of living. Agricultural extension systems can help rural people to adopt and effectively use these tools in obtaining their needed services once they are available, in ways that will have positive

impact on their production, and income(Abdel Rahman and Elhado, 2007)..

The last few years have seen rapid increase in telephone ownership in Sudan particularly mobile phones as a result of establishment and spread of many telephone networks by new phone companies and services, in addition to Sudani and Zain such as Canar, MTN and Thabit (Abdel Rahman and Elhado, 2007). The main objective of this study was to assess the influence of some socioeconomic characteristics on purposes for which mobile phone was used by small scale farmers in the Gezira State, Sudan.

2. Materials and Methods

This study was conducted in the Gezira State. The total number of small- scale farmers in the State for 2013-2014 growing season was estimated to be 5000. Ten percent of the population was used using the simple random sampling technique. The population was used to determine the influence of some socioeconomic characteristics on purposes for which mobile phone was used by small scale farmers in the Gezira State, Sudan. A questionnaire consisting of four questions was constructed and the personal interview technique was used to administer the questionnaire. The collected data were statistically analyzed, discussed, interpreted using percentages, frequency distribution and chi-square test.

3. Results and Discussion

Socioeconomic profile of farmers:

Age:

The age plays an important role on farmer's adoption of new technologies as known in the literature. The results showed that the majority of farmers (99%) were between 20 -50 years old which can be seen as the protective age categories (Table 1).

Table 1. Distribution of farmers according to their age group

Age group	Frequency	%
20 –30	080	16
31 – 40	330	66
41 - 50	85	17
51 -60	04	0.8
61 and above	01	0.2
Total	500	100

Education level:

The education plays an important role on farmer's adoption of new technologies as known in the literature. The results showed that the majority of farmers (77%) were literate (Table 2).

Table 2. Distribution of farmers according to education level

Education level	Frequency	%
Illiterate	115	23
Primary school	140	28
Intermediate school	120	24
Secondary school and above	125	25
Total	500	100

Farm size

The farm size plays an important role on farmer's adoption of new technologies. The results showed that the majority of farmers (55%) have farm size between 3 to 4 hectares (Table 3).

Table 3. Distribution of farmers according to their farm size

Farm Size/ha	Frequency	%
1 -2	28	28
3- 4	55	55
5 and above	17	17
Total	100	100

Farmer`s use of mobile telephone in their contacts with agricultural extensionists:

The increasing use of mobile phone by small scale farmers in Gezira State has led to improvement in extension services given to farmers in all aspects of their agricultural activities in the State. The results indicate that the majority of farmers (97%) were used mobile telephone compared to only (15%) did not use it (Table4).

Table 4.Distribution of farmers according to their use of mobile telephone in their contacts with agricultural extensionists

Use of mobile phones	Frequency	%
Used	485	97
Not used	15	3
Total	500	100

Purposes for which mobile telephones was used:

The telephone services allow two-way communication between the users. Therefore, they can be used for many purposes especially in social relation with family members, colleagues and friends. Telephone can reduce distance and save time particularly in crimes, accidents and fires in addition to other critical situations, which may need immediate response or feedback.

Agricultural services:

Telephone services can have economic impact to the users because they can save time and money especially for those who do not prefer leaving their work sites and travel into near towns and cities to make their own purchases of agricultural inputs

and other needs. The results revealed that all of farmers (100%) used telephone calls to obtain information on crop production such as vegetables, cotton and wheat, (96 %) of them used telephone calls to seek assistance for solving agricultural problems facing them in their fields, (40 %) of them used telephone calls to obtain market information on latest prices of their products and agricultural inputs , (44 %) of them used telephone calls to obtain information on upcoming extension activities and(51 %) of them used telephone calls to obtain SMS sent from agricultural extension services (Table5). This result agrees with the result reported by Bryan *et al.* (1996) who found that telephones allowed farmers to be better informed about prices of their products and agricultural inputs in addition to obtaining technical agricultural information. Also this result agrees with that reported by Vanessa (2006) who mentioned that in Uganda farmers used mobile phone to find out the latest crop prices and in Tanzania mobile phone helped farmers save travel time and cost.

Social relations:

The results showed that all respondents (100%) used the telephone calls for their social relations with friends, colleagues and family members working outside their villages or scattered abroad and keep them in touch (Table 5). This result agrees with the results reported by Bryan et al. (1996) who found that most telephone calls are to family and friends in addition to emergencies.

Generally the results of use mobile phone by small scale farmers of this study were in accord with the results reported by Mittal and Mamta (2012) who found that most farmers used mobile mainly for social communication but later they have increasingly started using it to get connected with people like traders and other farmers who have agricultural activities related information. Also the results of this study is in line with the results cited by Abdel Rahman and Elhado (2007) who mentioned that the majority of farmers in the Gezira State, Sudan reported that they used mobile telephone calls in their various agricultural activities which allowed them to complete their work without wasting time and money.

Table 5. Purposes for which mobile telephones was used.

Purpose of use	Frequency	%
Information on crop production	485	100
Problem solving practices	480	96
Market information	200	40
Information on upcoming extension activities	220	44
Social relations	500	100
SMS	125	51

Chi-square test was used to test the association between selected socioeconomic characteristics (age, education level and farm size) of small scale farmers and their purposes for which mobile phone was used by. The result showed that there were significant associations between the age, education level and farm size of small scale farmers and their purposes for which mobile phone was used (Table 6).

4. Conclusions and Recommendations

The following conclusions are drawn from the findings of this study:

1- The use of mobile phones by small scale farmers to obtain various agricultural extension services can be improved by increasing and updating the needed information, knowledge, skills and solving agricultural problems practices.

2-- Improving mobile telephone agricultural extension services will contribute significantly in increasing production efficiency, income from agricultural activities and improving other aspects of rural life that lead to better standard of living in the State and the rest of the country.

The authors recommend that more efforts should be paid by mobile telephone service companies of Sudan to expand their services to provide services for all aspects of agricultural activities in the State and use more advanced technology in operating mobile telephone networks in order to reduce cost of buying and using mobile phones particularly for small scale farmers in the Gezira State and the rest of the country.

Table 6. Chi-square test for purposes for which mobile telephones was used.

Purpose of use	Frequency	Education level	Age group	Farm Size/ha	Significance
Information on crop production	485	115	080	28	.000
Problem solving practices	480	140	330		.000
Market information	200	120	85	5	.000
Information on upcoming extension activities	220	125	4		.000
Social relations	500		1	17	.004
SMS	125		500		.000

Significance level 0.01 or less

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