Use of Mobile Phones in Improving Livelihoods among Horticultural Farmers in Parts of Kaduna Northern Guinea Savannah Eco-zone: Empirical Study of Igabi Local Government Area of Kaduna State

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Author’s contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

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ABSTRACT

The study examined the use of mobile phones in improving the livelihoods of rural horticultural crop farmers in Igabi Local Government Area of Kaduna State. Eighty (80) questionnaires were sampled among horticultural crop farmers who own and use mobile phones and seventy-six (76) questionnaires were retrieved. A multistage sampling technique was used in sampling the respondents. The data collected is analyzed using descriptive statistics and regression analysis. The results showed that 46.05% are males and 53.95% are females, 26.32% were between 31-40 years, 55.26% were married and 52.63% had at least secondary education. Data further revealed that 52.63% have owned handsets for at least 4-6 years and 56.58% obtained the sets from personal savings. Mobile phone usage improved the livelihood in reducing transport cost which was highlighted by 96.05% of the sampled farmers, reduced exploitation/low pricing by middlemen and improved income of producers (84.21%). It also enhanced interaction among rural horticultural crop farmers at different locations (92.11%). Poor network coverage (39.47%), poor power supply (19.74%) and theft/loss of handsets (10.53%) are the major constraints associated with mobile phones.
Mobile phones, which is an integral part of ICT, has become an information communication of our time and their increased number of growth rates have been attributed to many factors including the liberation of communication processes. Government of many developing countries and development agencies are focusing on extending ICT information structure into rural areas as they seek to encourage growth, alleviate poverty and become the perceived digital divide[5]. These plans would also accelerate food production since the majority of what is consumed is imported thus this becomes a strategy for import substitution.

About 75% of horticultural farmers live in rural areas where they are struggling for their basic needs[9]. Their living standards are very low which limits them to the use of ICTs in which mobile phone is an integral part; to increase and improve their livelihood and horticultural farming activities in disseminating vital information on new ideals of modern method of producing various horticultural crops; combating outbreak of pest and diseases; seed improvement and use of genetically modified seeds which can give them quick returns, fertilizer application and various ways of improving soil fertility. The advent of ICTs to our horticultural farmers (mobile phones) will not only guarantee the poor rural communities an opportunity to create and share vital knowledge on various horticultural systems that could lift them out of poverty level but in all areas of life that will improve their standard of living and sustainability. Mobile phone services.
should be in use to access horticultural market information and knowledge, increase the agriculture business by improving the productivity, especially for developing countries. Mobile phones which are normally in use to communicate with family and friends could be used for horticulture business stakeholders. Mobile phones could be good device to make strong relationship with all horticulture business stakeholders by communication, SMS and email thus benefiting farmers by providing timely market information to increase the income and reduce levels of poverty. Although mobile communication has quickly become an important part of rural populations, its applications are not always the most appropriate for farmers because most of these applications are not related to livelihoods and the environment of rural area farmers. These mobile phone applications generally do not follow any generic blueprint and design for specific target markets and lack localized contents [10]. Most mobile applications are not user-friendly and inconsiderate of the illiteracy of rural farmers. The information such as on horticultural agronomic practices, marketing, weather, advices should be local based and in local language. There are also educational and social barriers which need to be broken by academic institutions and proper interest of religious, government, NGOs, Mobile phone companies and development participants [11]. Infrastructure and cost are also big issues to consider in mobile phone technology. The objective of the study is to examine the perception of rural horticultural crop production on the usage of mobile phones in improving livelihoods among horticultural farmers in parts of Kaduna Northern Guinea Savanna Eco-zone.

1.1 Hypothesis

H0: There is no relationship between selected socio-economic characteristics of the rural horticultural farmers and their perception of contribution of mobile phone to improvement of rural livelihoods.

H1: There is relationship between selected socio-economic characteristics of the rural horticultural farmers and their perception of contribution of mobile phone to improvement of rural livelihoods.

2. MATERIALS AND METHODS

2.1 Study Area

The study was carried out in Igabi Local Government Area (LGA) of Kaduna State. Igabi is located in Northern Guinea Savanna region of Nigeria on latitude 10° E 37° N and 10° 41° N and longitude 7° 47° E [12]. Igabi Local Government Area shares boundary with Kaduna South, Kaduna North, Giwa Local Government and Zaria Local Government Areas of Kaduna State. It has an annual rainfall of about 1000mm-1500mm per annum. Major crops grown in the area include maize, cassava, millet, sorghum, guinea-corn and water-melon. The area consists of different tribes and ethnic groups such as Yoruba’s, Hausa, Igbos, Fulani’s, Gbagyi’s, Ebira’s living together in peace and harmony but predominant tribal majorities are Gbagyi’s and Hausa’s. The area has an estimated population of about 570,000 people and covers an area of about 4556.95 square kilometers [13].

2.2 Method of Data Collection

Primary data and secondary data were used for this study. The primary data was collected through structured questionnaires while secondary data was sourced from past survey data, the Internet, text books and journals. The questionnaires were designed to collect the following types of information:

- Socio-economic characteristics of the respondents in the study area.
- Horticultural crop farmer’s perceptions on how mobile phone have improved in the study area.
- Data related to the relationship between the selected socio-economic variables and the use of mobile phoned.

2.3 Sampling Techniques

Multistage sampling was used. In selection of respondents Igabi Local Government has a total of 65 districts, out of which four [4] districts were purposively selected because of the prevalence of mobile phone usage by the respondents and access to the three [3] main mobile service providers namely; MTN, Glo and Airtel. Through simple random sampling technique four [4] communities each were selected from the districts while five [5] respondents were also picked from each community using the same sampling technique to give a total of eighty [80]
respondents. The questionnaire was designed in English language and administered by group of interviewers who can speak and write in local dialects. Face-to-face method of interviews was adopted [14].

2.4 Analytical Tools

The following tools of analysis were used to achieve the stated objective.

i. Descriptive statistics

ii. Regression analysis

2.4.1 Simple descriptive statistics

Descriptive statistics such as frequency counts and percentages, and pie charts were used.

2.4.2 Regression analysis

This was used to determine whether or not there was any relationship between selected socio-economic variables and the use of mobile phones. The deficiency was considered significant at P<0.05 to interpret the hypothesis formulated.

3. RESULTS AND DISCUSSION

3.1 Socio-economic Characteristics of Sampled Respondents

Some socio-economic characteristics are known to influence the use of mobile phones in improving livelihood among horticultural farmers in different parts of Kaduna Northern Guinea Savanna Eco-region. The variance employed in the study include; age, sex, marital status, household size, education, years of ownership of phones, etc.

Table 1 showed that the majority (26.32%) of the respondents were middle-aged (between 31-40 years). This category of people falls into the energetic force in the horticultural sector. There were more females (53.95%) than male (46.05%) in the sample indicating that horticultural sector is dominated by female farmers. The majority (55.26%) of the respondents were married, 15.79% widowed/widower, 9.21% separated or divorced and 19.74% were single. Data showed that 52.63% had secondary education, 13.16% graduated from tertiary institutions and 26.31% had primary education. Only 7.89% did not attend formal educational schools. This result indicates that most horticultural crop farmers had formal education good enough to efficiently operate handsets with minimum difficulty and to respond positively to information from mobile phones. [15], observed that formal education has positive influence on farmers and the general society at large.

The result also showed that 52.63% have owned mobile phones for 4-6years, 26.31% for 1-3years, 13.16% for 7-9 years and 7.89% owned mobile phones for 10years and above. This implies that the technology is gradually gaining acceptance among the rural horticultural farmers. A majority (56.58%) of the respondents purchased their handsets through personal savings and only 26.31% got theirs through gifts from friends and relatives. This implies that most rural people are no longer seeing mobile phones as luxury but as a necessity/asset because of its strategic importance to their lives. The result also suggests that horticultural crop farmers acknowledge the usefulness of mobile phones in their livelihood pattern and the number of years' farmers have owned mobile phones may be related to the relatively higher level of education in the study area. There were variations in the household size of the families, 39.47% had between 6-10 members, 26.32% had between 1-5 members, 13.16% had 11-15 members, 9.21% had 21 and above while 11.84% had 16-20 members. This is typical of most rural Nigeria communities where polygamy and having large households is a sign of wealth and opportunity for adequate farm labour. The above results of socio economic characteristics agree with the findings [16] that socio-economic characteristic influence mobile phone usage within the smallholder horticultural sector in rural areas of Nigeria.

3.2 Perception of Horticultural Crop Farmers on How Mobile Phones Have Improved Their Livelihoods

Perceptivity of horticultural farmers on how mobile phones have connected to different aspects of livelihoods to indicate their level of agreement on contribution of mobile phones to items expressed. The livelihood aspects as presented in Table 2 were drawn from various components of the sustainable livelihood framework.

Table 2 revealed that most of the horticultural crop farmers agree that mobile phones facilitate fast response to emergency calls (98.68%), cost of transportation reduced (96.05%), quick information on availability and market price of farm inputs (93.42%), level of interaction improved (92.11%), sales prices of horticultural
crops (85.53%) were readily obtained. Lastly, exploitation by middle men were reduced (85.21%) because producers could access sales prices from other markets that helped them to bargain. This in turn facilitates a significant improvement in farmers’ incomes. The results agreed with that of [9] who reported that mobile phones increase livelihood of horticultural farmers in rural areas.

### 3.3 Horticultural Farmers Constraints in the Use of Mobile Phones

The farmers faced with the enormous constraints in the use of mobile phones in the study area. Some of the constraints observed are shown in Table 3. Table 3 showed that the major problem faced by most of the horticultural crop farmers in the use of mobile phones in the rural areas is poor network (39.47%) and it was also, observed that sometimes, rural horticultural farmers have to climb trees, hills and so on to set network received networks. Perhaps this might be due to service provider focus on towns and cities with high population and patronage. However, if this assumption is true, it means that low population density of rural areas discourages service provider from setting up their mass.

| S/NR | Variance | Frequency | Percentage % |
|------|----------|-----------|--------------|
| 1    | Age (Years) |           |              |
|      | 10-20    | 12        | 15.79        |
|      | 21-30    | 19        | 25.0         |
|      | 31-40    | 20        | 26.32        |
|      | 41-50    | 15        | 19.74        |
|      | 51-60    | 10        | 13.16        |
| 2    | Marital Status |       |              |
|      | Married   | 42        | 55.26        |
|      | Single    | 15        | 19.74        |
|      | Divorcee  | 07        | 9.21         |
|      | Widow/Widower | 12   | 15.79        |
| 3    | Gender    |           |              |
|      | Male      | 35        | 46.05        |
|      | Female    | 41        | 53.95        |
| 4    | Household size |     |              |
|      | 1-5       | 20        | 26.32        |
|      | 6-10      | 30        | 39.47        |
|      | 11-15     | 10        | 13.16        |
|      | 16-20     | 09        | 11.84        |
|      | 21 and above | 07   | 9.21         |
| 5    | Education |           |              |
|      | Primary   | 20        | 26.31        |
|      | Secondary | 40        | 52.63        |
|      | Tertiary  | 10        | 13.16        |
|      | Non formal | 06   | 7.89         |
| 6    | Years of Ownership of Phones | | |
|      | 1-3       | 20        | 26.31        |
|      | 4-6       | 40        | 52.63        |
|      | 7-9       | 10        | 13.16        |
|      | 10 and above | 06   | 7.89         |
| 7    | Source of Fund for Mobile Phone | | |
|      | Personal Savings | 43 | 56.58 |
|      | Gift      | 20        | 26.31        |
|      | Bank Loan | 13        | 17.11        |
|      | Total     | 76        | 100          |
Lack of electricity to charge phones (19.74%), high cost of recharge cards (13.16%) Which agree with [17] that high cost of recharge cards limiting the Use of mobile phones in the rural community. Theft/loss of handsets (10.53%), limited coverage (5.26%) and fraud (3.95%) were some of the challenges faced by the horticultural crop phone users. However, farmers noted that dependence on power from generators was expensive, those who use generators to recharge phone batteries see it as a good business.

3.4 Test of Hypothesis

$H^0_0$: There is no significant relationship between selected socio-economic characteristics of rural horticultural farmers and their perception on the contribution of mobile phone to improvement of rural livelihood.

Table 4 shows that the age, household size, education status are the most important variables. explaining horticultural crop farmers' preferences of mobile phones.

Table 2. Perception of horticultural crops farmers on how mobile phones have improved their livelihoods

| S/N | Use of Mobile Phones                                                                 | Agree | Percentage (%) | Disagree | Percentage (%) |
|-----|--------------------------------------------------------------------------------------|-------|----------------|----------|----------------|
| 1.  | Improve social interaction amongst horticultural crop farmers                        | 70    | 92.11          | 6        | 7.89           |
| 2.  | Reduce cost of crop of transportation from one market to another in search for good sale | 73    | 96.05          | 3        | 3.95           |
| 3.  | Facilitate fast respond through emergency call                                        | 75    | 98.68          | 1        | 1.32           |
| 4.  | Provide quick information availability and market price of farm inputs                | 71    | 93.42          | 5        | 6.58           |
| 5.  | Obtain current sales prices of horticultural crop from bigger market to facilitate bargaining | 65    | 85.53          | 11       | 14.47          |
| 6.  | Reduce exploitation/low pricing of middle men and improved income of producers        | 64    | 84.21          | 12       | 15.79          |

Table 3. Horticultural farmers constraints in the use of mobile phones

| S/N | Constraints                                      | Frequency | Percentages (%) |
|-----|--------------------------------------------------|-----------|-----------------|
| 1.  | High cost of recharge cards                      | 10        | 13.16           |
| 2.  | Network/signal problems                          | 30        | 39.47           |
| 3.  | Loss/theft of mobile phones                      | 08        | 10.53           |
| 4.  | Lack of electricity to charge mobile phones       | 15        | 19.74           |
| 5.  | Technical problem                                | 06        | 7.89            |
| 6.  | Limited coverage                                 | 03        | 3.95            |
|     | Total                                            | 76        | 100             |

Table 4. Regression analysis on selected socio-economic characteristics and horticultural crops farmers’ perception of the use of mobile phones for livelihood improvement

| Variable          | Regression coefficient | Table values | Decision   |
|-------------------|------------------------|--------------|------------|
| Constant          | 0.20902                | 18.39        |            |
| Age               | 0.2965                 | 1.422**      | Significant|
| Household Size    | 0.1805                 | 0.78*        | Significant|
| Educational Status| 0.297                  | 0.16**       | Significant|
| Years of Possession| -0.4393             | 0.51         | Not Significant|
| S=24.33           | R.Sq=52.2%             | R.Sq(adj) 50.0%|
perception of the contribution of mobile phone to improvement of rural livelihoods and they were all significant (P<0.05). This also emphasized the importance of education, family size and age in the use of mobile phone to the improvement of rural livelihood.

4. CONCLUSION AND RECOMMENDATION

4.1 Conclusion

The study shows that mobile phones have contributed immensely to the improvement of rural horticultural crop farmer’s livelihood through better social contacts, reduced transport cost, obtaining help in emergency situations, obtaining market prices of farm inputs when necessary. However, poor network, lack of electricity to charge handsets and high cost of recharge cards are hampering the effective utilization of mobile phones for maximum benefits in rural areas.

4.2 Recommendation

Based on the above findings, it is recommended that Federal Government should improve electricity supply to rural farm communities and provides economic incentives, such as tax deductions for imported equipment, for mobile service providers to expand their mobile service coverage in rural/horticultural production areas. Furthermore, the state and local government should improve rural electricity supply to enable rural horticultural crops farmers utilize the full potentials of mobile phones.

CONSENT

As per international standard or university standard, respondents’ written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Author has declared that no competing interests exist.

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