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Original Research Paper

Availability, level of use, importance and constraints to utilization of information communication technologies by farmers in Enugu state, Nigeria

O. I Ogbonna and A. E Agwu

Department of Agricultural Extension, University of Nigeria, Nsukka, Enugu State, Nigeria.

ABSTRACT

The concept of information in general and of agricultural information in particular, as a resource for development is very important in the contemporary world and cannot be overemphasized. Communication devices enable people around the world to contact one another, to access information instantly, and to communicate from remote areas. There are lots of difficulties facing rural farmers which can be solved by providing them with adequate access to quality information which many researchers have generated. ICTs play important roles in addressing these challenges and enhancing the standard of living of rural farmers. The ability to easily access and share information and stimulate the creation of new ideas is viewed as essential to maintaining a nation's economy and enhancing the quality of life of rural farmers. This study examined availability, importance and level of use of information communication technologies by farmers in Enugu state, Nigeria. Structured interview schedule was used to collect data from 90 farmers randomly selected for the study. The data were analyzed using percentages, frequency counts, mean scores and standard deviation. Results indicated that radio (98.9%), television (95.5%) and mobile phones (96.7%) were the most available ICTs in the area. While radio, mobile phones and television were mostly used. The importance of ICTs as perceived by the farmers included that ICTs facilitate: effective storage and retrieval of information in agriculture (M=3.73); easy access to information (M=3.83); cost and time reduction in agricultural production and marketing (M=3.11) among others. However, constraints in the use of ICTs by farmers included: high cost of ICT infrastructure (M=2.77); low income (M=2.64); frequent power failure (M=2.77), lack of necessary skills and poor ICT training (M=2.57). The study concluded that farmers have limited agricultural information and recommends the need for providing necessary ICT facilities, training and infrastructure needed for effective communication in the rural areas.

Key words: Importance, availability, use, constraints, Utilization, Information Communication Technologies and Farmers

*Corresponding Author E-mail: onyinyechi.ogbonna@unn.edu.ng;ekwe.agwu@unn.edu.ng

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INTRODUCTION

The traditional media has been very successful in developing countries and rural radio in particular has played a major role in delivering agricultural messages. Rural farmers can tune in to radio stations even when they are working at their farms. Telephones, video, television, films, news papers and pictures have also been used to speed up the flow of information to rural people. But ICTs comprise much more than just the traditional media. ICTs are set of technologies that facilitate information processing, storage, retrieval and transmission. According to Torero and Von Braun (2005) ICTs are veritable tools with which a network of interactions can be stimulated among individuals such that they overcome the physical barrier of distance and social standings to become integrated in the global knowledge system. These ICTs include both internet facilities and services like email, social networks, linkedIn, search engines and agricultural oriented websites. ICTs when available to farmers will improve the and quality of information either indirectly through

producers, associations, extension workers and the like or directly through broadcast radio information and mobile phone messaging. ICTs facilitate the ease of communication, which has many profound effects. In marketing of agricultural products deals can be made through emails and mobile phone technology. Cheap and high-quality internet access can unlock more of the potentials of rural areas and make them more viable places for people to live. ICTs can help existing rural business to perform tasks more effectively and efficiently and respond to their demand for rapid access to diverse kinds of information. ICTs can enhance the integration and efficiency of agricultural systems by operating new communication pathways and reducing transaction cost by enhancing accessibility of information on price, transportation and production technologies (CTA, 2003).

Problem statement

In spite of the international spread of ICTs, the availability, importance and use impacts have been geographically uneven. In developing countries there are various problems, which create barriers to people owning and using ICTs. According to Obijiofor, Inayatuallah and Stevenson (2009) preliminary research on ICT adoption in Africa and the Asia-Pacific suggests that there are obvious barriers to their use in educational and socio-economic development. Prakash (2000) posited that it is often said that modern technology tends to bypass local communities found in remote regions. Enugu State seem to have a poorly developed ICT infrastructure that influences its agricultural research. Although some extension agents and farmers now have computers for information and data management, most of the computers have limited or no internet access.

It was pertinent to find out the types of ICTs available to farmers in Enugu State, their level of use, the importance and the factors that affect their usage. The major objective of study was to ascertain the availability, level of use, importance and constraints to utilization of information communication technologies by farmers in Enugu state, Nigeria. Specifically the study sought to:

1.ascertain the ICTs available for farmers in the study area;
2.ascertain the level of use of the available ICTs by the farmers;
3.ascertain the importance of ICTs to farmers in the area and
4.examine the constraints to the use of available ICTs by farmers in the study area.

MATERIALS AND METHODS

The study was carried out in Enugu state. The state is located in eastern part of Nigeria. The state shares borders with Abia State and Imo State to the south, Ebonyi State to the east, Benue State to the northeast, Kogi State to the northwest and Anambra State to the west. All farmers in the State constituted the population for the study. Three local government areas (Nsukka, Udenu and Igbo-Eze South) were purposively selected for the study because of their locations. A community (Edem-ani, Orba and Ovoko) was selected from each local government. Thirty farmers were selected from each community giving a total of 90 farmers for the study. Data were collected through the use of interview schedule.

Measurement of variables

To determine the ICT tools available in the study area a list of audio visual/broadcast technologies, print technologies and computer/telecommunication technologies were provided for the respondents to check each item's availability or unavailability. To determine the level of use of the ICT tools available in the study area the respondents were asked to check their level of use of the ICTs. A four point Likert type scale of "very often = 3", "often = 2"; sometimes = 1"; and "never used = 0" was used to measure their responses. A cut off mark of 1.5 was used to select the ICT tools used in the area.

To measure their perceived benefits of the use of ICTs, a list of the benefits/roles of ICT in agricultural development were provided for the respondents to rate the level of seriousness on a 4-point Likert type scale of "strongly agree = 4"; "agree = 3"; "disagree = 2"; "strongly disagree = 1". A cut off point of 2.5 was used to determine the major benefits.

To determine the respondents' perceived constraints to the use of ICTs, a list of possible constraints to the use of ICTs in agricultural development were provided for the respondents to rate the level of seriousness of the constraints. A four-point Likert type scale of very serious (3), serious (2), not serious (1) and not a constraint at all (0) was used to measure their responses. A cut-off point of 1.5 was used to determine the major constraints to the use of ICTs by the farmers.

RESULTS AND DISCUSSION

ICTs available in the study area

Table 1 shows that radio (98.9%), television (95.5%) and mobile phone (96.7%) were the most available ICT in the area. This is in line with the findings of Arokoyo (2003) who reported that the major ICTs used in agricultural extension delivery in Nigeria have been radio and television. On the other hand, the ICT tools that were not available to many respondents included: compact disk (46.7%), photocopy machine (40.0%), diskette (36.7%), printers (34.4%), newsletters (11.1%) and scanners (11.1%).

Table 1. Percentage distribution of respondents by ICT facilities available in the area

ICT Facilities	Percentage %
Radio set	98.9*
Video player	93.3*
Television	95.6*
Mobile phone	96.7*
Computers	77.8*
CDROM	51.1*
Twitter	9.0
Scanner	11.1
Landline telephone	12.2
E-mail	20.0
Digital camera	20.0
Flash drive	22.2
Internet	23.3
Video recorder	26.7
Printer	34.4
DVD	36.7
Diskette	36.7
Photocopy machine	40.0
Facebook	12.0
Compact disk	46.7

* signifies most available ICTs

Table 2. Mean scores and standard deviation of respondents' level of use of ICT facilities.

ICT facilities	Mean	Standard deviation
Radio Set	2.64*	0.83
Video Player	1.86*	1.29
Television	2.02*	1.28
Mobile Phone	2.71*	1.07
Scanner	0.32	0.89
E-mail	0.33	0.79
Printers	0.41	0.89
Internet	0.42	0.98
Flash drive	0.43	1.01
Video recorder	0.44	0.97
Digital camera	0.46	0.96
Diskette	0.49	1.03
Photocopy machine	0.52	0.99
Facebook	0.10	0.55
Twitter	0.09	0.45
CDROM	0.54	1.04
Compact disk	0.72	1.07
Computers	0.79	1.12
Landline	0.67	1.09
DVD	1.23	1.35

*ICT tools used

Majority of the farmers rely on radio messages more than other ICT tools because it is always available. A great proportion of the respondents also indicated that mobile phones were available in the study area. This may be because of the ease of use of mobile phones and the positive impact it has on the lives of the farmers.

Level of use of the available ICTs by the Farmers

Data in Table 2 show level of use of ICTs by the farmers in the area. The data show that Mobile phones (M=2.71), radio set (M=2.64), television (M=2.02) and video player (M=1.85) were mostly used by the respondent. This implies

Table 3. Importance attributed to the use of ICT in agriculture.

Importance of ICTs	Mean	Standard deviation
Facilitate information exchange among farmers	3.90	0.30
Provide large amount of information to large group of audience at the same time	3.86	0.44
Make information easily accessible	3.83	0.43
Facilitate rural development	3.80	0.43
Help farmers to learn about new Technologies faster	3.77	0.45
Enhance effective storage and retrieval of information in agriculture	3.73	0.49
Provide employment opportunities	3.73	0.49
Facilitate interaction between researchers extension workers and farmers	3.71	0.48
Can help to empower rural people	3.70	0.51
Can help researchers solve farmer's felt	3.68	0.49
Improve efficiency and effectiveness of farming activity	3.63	0.55
Enable extension workers and researchers To obtain immediate feedback from farmers	3.56	0.58
Enhance income earning	3.54	0.60
Facilitate problem solving	3.32	0.82
Help to save cost and time of Agricultural production and marketing	3.11	0.81
Facilitate decision making	3.06	0.88
Enhance agricultural production and marketing	3.05	0.87
Can help to check climate charge	2.74	0.88
Enhance food security	2.69	0.83

that there was very low level of utilization of ICT facilities by the farmers.On the other hand the ICTs that were not mostly used in the area included: landline (M=0.36), computer (M=0.78), E- mail (M=0.33), Internet (M=0.42), Compact Disk (M=0.72), Printers (M=0.41), CD ROM (M=0.54), Scanner (M=0.32), video recorder (M=0.44), DVD (M=1.23), diskette (M=0.49), flash drive (M=0.43), digital camera (M=0.46), and photocopy machine (M=0.52).Most of the standard deviations were more than 1.0 except for some ICT tools like radio set (SD= 0.83), Email (SD= 0.79), internet (SD= 0.98), printer (SD= 0.89), scanner (0.89), video recorder (SD= 0.97), digital camera (SD= 0.96) and photocopy machine (SD= 0.99). This is an indication that almost all the respondents' individual scores with regard to their opinion on the level of use of the ICT tools differ much from the mean scores. Mobile phone, radio set, television and video player were mostly used by the respondent. According to Adejo and Haruna, (2009) these classes of

ICTs tools are ideal for rural areas, cheap to set up, easy to use and fill vital needs.

Importance of ICTs to farmers in the area

Data in Table 3 show the importance attributed to the use of ICTs by the farmers in the study area. The major importance include: ICT facilitate information exchange among farmers (M=3.90), ICT facilitate interaction between researchers, extension workers and farmers (M=3.73) and ICTs enhance effective storage and retrieval of information in agriculture (M=3.73).Other importance of ICT in the study area include: ICT enhance food security (M=2.69) and ICTs can help to check climate change (M=2.74). This implies that the farmers know the benefits of ICTs in agriculture but the major point here is to teach them how to use them and where to use them to harness these benefits.

All the standard deviations are less than 1.0 which is an indication that almost all the respondents' individual scores with regard to their opinion on the benefits did not differ much from the mean scores. A lot has to be done in order to incorporate ICT into agriculture in the study area. Accascina (2000) identifies how ICTs directly and indirectly affect poverty alleviation, notably in relation to rural development and food security. Examples include the delivery of market or employment information, or the creation of well-paid jobs that eventually "trickle down" to poor communities.

Constraints to the use of available ICT facilities by farmers

Data in Table 4 show the major constraints to the use of ICT by the farmers include: frequent power failure (M=2.77), high cost of ICT infrastructure (M=2.77), low income earning (M=2.64), lack of necessary skill (M=2.57) among others. Other serious constraints include: household commitment and hindrances (M=2.20),

Table 4. Perceived constraints to the use of ICT in agriculture in the study area.

ICT facilities	Mean	Standard deviation
Frequent power failure	2.77	0.62
High cost ICT Infrastructure	2.77	0.52
Lack of ICT policies to enhance ICT Development tin rural areas	2.67	0.56
Lack of internet access in rural areas	2.56	0.82
Concentration of modern ICT infrastructure in urban areas	2.54	0.64
Poor access to ICT infrastructure	2.53	0.80
Illiteracy of farmers	2.53	0.80
Lack of ICT software and hardware	2.51	0.78
High cost of maintenance	2.37	0.87
Unavailability of ICT hardware	2.28	0.99
Lack of telephone facilities and Network in rural areas	2.23	1.01
Household commitment and hindrances	2.20	0.89
Fear that things will go wrong in the use of ICT	2.01	1.16
Poor maintenance of ICT hardware	1.76	1.07
Lack of extension service	1.70	1.12
Lack of confidence in operating ICT infrastructure	1.63	1.06

unavailability of ICT hardware (M=2.17) and fear that things will go wrong in the use of ICT (M=2.01). These constraints may result from the high level of illiteracy and lack of awareness of the importance of ICT by farmers and the fact that most of the farmers do not have frequent contact with extension personnel. All the standard deviations are less than 1.5 which is an indication that almost all the respondents' individual scores with regard to their opinion on the constraints did not differ much from the mean scores. A lot has to be done in order to incorporate ICT into agriculture in the study area. Bertolini (2004) had earlier observed that several obstacles hinder ICTs usage in developing countries, especially in areas of access to telephone and electricity networks.

Conclusion

This study has revealed that the most available, accessed and used ICT facilities in the area include: radio, mobile phones, video players and television. The access and use of ICTs in the study area is low and the respondents have very low knowledge of useful information necessary to improve agricultural production. This was caused by the major constraints which include: high cost of ICT infrastructure, low income earning, frequent power failure, lack of ICT policies to enhance ICT development in rural areas and lack of necessary skill. Based on the findings, it is necessary to make relevant policies to ensure that farmers have adequate access to ICT facilities. Government should help to provide the necessary ICT infrastructures needed for effective use of ICTs in the rural area. Extension personnel should help to improve farmers' knowledge and skill to enhance the use of ICTs in rural areas. Farmers should form cooperatives and pull their resources together to harness the opportunities provided by modern ICTs.

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