

Full Length Research Paper

A Feasibility Study of the Use of Cyber Extension Service in Ofu Local Government Area, Kogi State, Nigeria.

Torjape Samuel Demenongu; Igbele Patience Omale and Ruth Jiriko

Department of Agricultural Extension and Communication, University of Agriculture Maakurdi.

Corresponding Author's E-mail: storjape@gmail.com

Accepted 21st May, 2019

The study was carried out on the feasibility of the use of cyber extension service in Ofu LGA of Kogi State. Rural farmers and change agents formed the population of the study. Primary data were used for this study with the aid of well structured questionnaires. Thirty respondents were selected. Findings indicated that majority of the farmers (75.4 %) indicated that radio and telephone were the available ICT facilities in the study area, 81.8% indicated that radio and telephone were the most used while 69.3% of the extension agents indicated availability of radio, telephone and computer in their locality. The result of logit regression showed significant effect on internet use at 5%. Based on these findings it was recommended that cyber-cafes should be established at different areas in the LGA in order to improve access of farmers and extension agents to ICT facilities.

Keywords: Cyber Extension Service, Ofu Local Government Area, Kogi State, Nigeria.

1.0 INTRODUCTION

721.1. Background of Study

One important objective of agricultural extension is to improve the productivity level of rural farmers so as to promote food-self-sufficiency and food security among the rural farmers (Ogunbameru, Udiandeye, and Ani, 2008). Information Communication Technology (ICT) is commonly used to embrace a multitude of media including telephone, television, video, telex, voice information systems and fax as well as those requiring the use of personal computers fitted with a modem or supply technologies that facilitate communication processing and transmission of information by electronic means ranging from radio, television, telephone (fixed or mobile) and internet (Warren, 2001; CTA, 2003; Omotayo, 2005). Adejo and Haruna (2010) classified

ICT into conventional ICT (radio, television) and contemporary ICT (telephones, computer/internet). One mechanism in the development of communication networks to disseminate new innovations in agriculture which is effectively programmed is cyber extension which is a key element in this paper.

Cyber Extension is an ICT initiative. It can be defined as the Extension over Cyber Space. In the applied context of Agriculture, Cyber Extension means, using the power of online networks, computer communications and digital interactive multimedia to facilitate dissemination of agricultural technology. Cyber Extension includes effective use of Information and Communication technology, national and international

information Networks, Internet, Expert Systems, Multimedia Learning Systems and Computer based training systems to improve information access to the Farmers, Extension Workers, Research Scientists and Extension Managers. Important tools of cyber extension include; E-mail, Telnet, FTP, Usenet Newsgroups, World Wide Web etc. According to Henri-Ukoh, Chikezie, Osuji, and Ukoha (2012), Cyber extension is an agricultural information exchange mechanism over cyber space, the imaginary space behind the interconnected computer networks through telecommunication means. It utilizes the power of networks, computer communications and interactive multimedia to facilitate information sharing mechanism. In order to improve the productivity level of rural farmers, there is need for exchange and sharing of information, knowledge and skills through the process of extension (Arokoyo, 2005).

Although a lot of research work had been conducted on the use of ICTs for dissemination of agricultural innovations to rural farmers (Aboh, 2008; Ezeh, 2013; Gopi, 2012 and Muh, Sugiyanto, Keppi and Ismadi, 2013), there is still dearth of information on the feasibility of ICT technologies in cyber extension in most rural communities including Ofu Local Government Area of Kogi State. It is against this backdrop that this study was carried out.

The study therefore sought to study the feasibility of the use of cyber extension service in Ofu local government area of Kogi state, Nigeria. The specific objectives were to

- i. describe the socio- economic characteristics of rural farmers and change agents in the study area;
- ii. identify the available and used Information and Communication technologies in the study area

Based on the specific objectives of this study, the following null hypothesis was empirically stated and tested:

The socio-economic characteristics of the farmers do not have any effect on their level of accessibility to internet

2.0 METHODOLOGY

2.1. Study Area

The study was carried out in Kogi state of Nigeria. The state has a total population of 3,314,043 (National Population Census, 2006). The state is structured into 21 local government areas Agriculture remains the main occupation of the people (over 70%), cultivating cash and food crops extensively (yam, rice, maize, guinea corn & beni-seed), while the tree crops

include; palm oil, cashew, cocoa and coffee. expectedly fishing is also a very significant occupation in the state.

2.2. Population and Sample Size Selection

The population of this study consists of all rural farmers in Kogi State and all extension staff of Kogi State Agricultural and Rural Development Authority (KARDA). Multistage sampling procedure involving simple random sampling techniques were employed. A total of thirty respondents were selected using. In the first stage, five districts were selected at random from Ofu LGA of Kogi State namely Ugwolawo, Ejule, Ofoke, Omache and Igalogba. Four (4) farmers and two (2) extension agents were selected at random from each of the districts.

2.4 Method of Data Collection

Data for this study were collected from primary sources with the use of the use of a well-structured questionnaire and interview techniques.

2.5 Method of Data Analysis

Data for this study were analyzed using both descriptive and inferential statistics. Descriptive statistics such as frequency distributions, percentages, likert-type scales were used. The hypothesis was tested using logit regression model.

2.6 Model specification

The logit regression model that was used to test the hypothesis is stated below

$$Z = \ln Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + \dots + b_nX_n$$

Where Z = Probability level of access to internet (1 = high access, 0= low access)

b_n = coefficient of explanatory changes in Z caused by changes in the independent variables.

X_1 = Age

X_2 = Sex

X_3 = Education

X_4 = Marital status

X_5 = Farm size

X_6 = Income

3.0 RESULTS AND DISCUSSION

3.1 Socio-economic Characteristics of Respondents

Table 1 and 2 show the socio-economic characteristics of the farmers and extension agents respectively.

Table 1: Socio-Economic Characteristics of the Farmers

Socio-Economic characteristics	Frequency	Percentage (%)	Mean
Age years			
≤ 20	0	0.0	
21-30	1	5.0	
31-40	7	35.0	
41-50	4	20.0	47
51-60	4	20.0	
>60	4	20.0	
Total	20	100.0	
Sex			
Male	17	85.0	
Female	3	15.0	
Total	20	100.0	
Marital status			
Single	1	5.0	
Married	19	95.0	
Total	20	100.0	
Level of education			
Primary Education	4	20.0	
Secondary Education	4	20.0	
Tertiary Education	5	25.0	
No formal education	7	35.0	
Total	20	100.0	
Major occupation			
Farming	20	100.0	
Trading	0	0.00	
Public service	0	0.00	
Private sector	0	0.00	
Extension agent	0	0.00	
Total	20	100.0	
Farm size (Ha)			
< 2	5	25.0	
2.0-3.9	10	50.0	
4.0-5.9	3	15.0	3.0
6.0-7.9	0	0.00	
≥ 8	2	10.0	
Total	20	100.0	
Annual income (N)			
≤ 50,000	3	15.0	
51,000-100,000	7	35.0	
101,000-150,000	0	0.0	
151,000-200,000	7	35.0	148,350.00
201,000-250,000	0	0.0	
251,000-300,000	2	10.0	
>300,000	1	5.0	
Total	20	100.0	

Source: Field survey, 2015

Table 2: Socio-Economic Characteristics of Extension Agents

Socio-Economic characteristics	Frequency	Percentage (%)	Mean
Age (years)			
≤ 20	0	0.0	
21-30	0	0.0	
31-40	1	10.0	
41-50	3	30.0	48
51-60	6	60.0	
>60	0	0.0	
Total	10	100.0	
Sex			
Male	8	80.0	
Female	2	20.0	
Total	10	100.0	
Marital status			
Single	0	0.0	
Married	10	100.0	
Total	10	100.0	
Level of Education			
Primary Education	0	0.0	
Secondary Education	0	0.0	
Tertiary Education	10	100.0	
No formal education	0	0.0	
Total	10	100.0	
Major occupation			
Farming	10	100.0	
Trading	0	0.0	
Public service	0	0.0	
Private sector	0	0.0	
Extension agent	0	0.0	
Total	10	100.0	
Average annual income (N)			
≤ 500,000	0	0.0	
500001-1000,000	0	0.0	
1000,001-1500,000	8	80.0	1,540,000.00
>1500,000	2	20.0	
Total	10	100.0	

Source: Field survey, 2015

The result in Table 1 shows that 35.0 percent of the farmers were between the ages of 31-40 years, 20.0 percent were between the ages of 41-50 years, 20.0 percent between the ages of 51-60 years while 20.0 percent were above 60 years. The mean age of the farmers is 47 years. Table 2 shows the socio-economic characteristics of the extension agents. The result shows that 60.0 percent of the extension agents were between the ages of 51-60 years while 40.0 percent were between the ages of 31-50 years. The mean age of the extension agents is 48 years. The mean age of the

farmers and that of the extension agents imply that both category of respondents were in their active stage and could still be trained on the use of cyber extension without much difficulties in understanding as intelligence diminishes with age.

Majority (85 percent) of the farmers were males while 80.0 percent of the extension agents were males while 20 percent were females. This implies that they were more male farmers and extension agents than the females. This is consistent with the findings of Bidoli, Amuta, Abiyong and Kezi (2010) that there were more

male (233) change agents than females (56) in Kaduna State, Nigeria. Also, Okwu, Ejembi and Oguntolu (2011), in their study of folk media usage in extension service delivery in Kaduna state, reported that 73.30 percent of the extension agents were males, while 26.70 percent were females. The composition of the population under study could have accounted for the wide margin between the male and female respondents the result in Table 1 shows that 95.0 percent of the farmers were married while 5.0 percent were single. The result in Table 2 reveals that all (100.0 %) of the extension agents were married. This implies a population that is reasonably stable, and to a large extent guarantees sustainable labour. The result is consistent with the findings of Obinne *et al.* (2009) that, change agents and rural farmers in Nigeria were mostly married. Ofuoku (2009) in a study on the effects of extension training on adoption of improved farm practices also reported that majority (80.0%) of rural farmers in the study area were married which is in agreement with the findings of this study. In terms of education, the study reveals that 20.0 percent of the farmers had primary education, 20.0 percent had secondary education, 25.0 percent had tertiary education while 35.0 percent had no formal education. This means that most of the farmers (65.5 %) had formal education. Results in Table 2 reveal that all (100 %) the extension agents had tertiary education which is a type of formal education. This suggests that both the farmers and the change agents are enlightened people that could easily learn how to use the internet to communicate. There is a positive correlation between education and the acceptance of ideas or innovation (Ajala, 1992).

Results revealed that 75 percent of the farmers had farm size of between < 2-3.9 ha, 15 percent had farm size of between 4.0-5.9ha while 10 percent had farm size ≥8ha. The mean farm size is 3.0ha. This implies that most of the farmers were small scale farmers. This finding is in agreement with the findings of Ezeh (2013) in her study of access and application of information and communication technology (ICT) among farming households of south east Nigeria. She found that majority of the farmers were small scale farmers. With respect to average annual income, 70 percent of the farmers earned between ₦ 51,000- 200,000. The mean annual income of the farmers is ₦ 148, 350. This implies that majority of the farmers had low annual income and may not be able may not possess the financial muscle required to purchase and utilise ICT facilities. This finding is consistent with that of Ezeh (2013) which revealed that majority of farmers in her study were low annual income earners. About 80 percent of the extension agents earned between

₦1000001-1500, 000 annually, while 20 percent earned above ₦ 1,500,000 annually. The mean annual income of the extension agents is ₦1540,000. This implies that most of the extension agents to a large extent have what it takes to purchase and utilize ICT facilities than the farmers.

3.2 Distribution of Respondents According to ICT Facilities Available in the Study Area

Table 3 shows the distribution of the respondents according to the ICTs facilities available in the study area. Majority of the farmers (75.4 %) indicated that radio and telephone were the available ICT facilities in their localities, about 13.9 percent of the farmers indicated that there were television sets in their localities, 5.7 percent indicated computer while 5.7 percent indicated internet as the available ICT in the locality. About 69.3 percent of the extension agents indicated that there were radio, telephone and computer in their localities, 17.9 percent indicated the availability of television set as an ICT facility in the locality while 12.8 percent indicated the availability of internet in the locality. These findings are consistent with the findings of Gyata (2014) in his study on adaptation of agro-based website system for improved productivity among rural farmers and change agents in selected local government areas of Benue state. He reported that 100.00% of the farmers interviewed indicated that there were radios in their localities. Also all (100.00%) the change agents interviewed indicated that there were radios in their localities, 97.50% of the farmers agreed that there was GSM in their localities, and a closer percentage of 91.20% of the change agents indicated that there was GSM in their localities. Also, from his findings, Computers (34.00% of rural farmers and 55.90% of change agents) and the internet had the least percentage of respondent's with 28.90% of rural farmers and 53.90% of change agents which is consistent with the findings of this study.

The findings of this study is also in agreement with that of Ezeh (2013) in her study of the access and application of ICT facilities among farming households of south east Nigeria that Majority (96%) of the respondents testified to the existence of radio, followed by phone with 86% and television with 62% response.

Table 3: Distribution of Respondents Based on ICT Facility Available

ICT Facilities Available	Farmers (n=20)		Change agents (n=10)	
	*Frequency	Percentage	*Frequency	Percentage
Radio	20	37.7	9	23.1
Television	7	13.2	7	17.9
Telephone	20	37.7	9	23.1
Computer	3	5.7	9	23.1
Internet	3	5.7	5	12.8
TOTAL	53	100	39	100

Source: Field Survey, (2015)

*Multiple responses

3.3 Distribution of Respondents Based on ICT Facilities Used in the Study Area

Results in Table 4 reveals that 38.6 percent of the farmers used radio, 43.2 percent used telephone, 9.1 percent used television, 6.8 percent used computer while 2.3 percent used internet.

Table 4: Distribution of Respondents Based on ICT Facilities Used

ICT Facilities used	Farmers (n=20)		Change agents (n=10)	
	*Frequency	Percentage	*Frequency	Percentage
Radio	17	38.6	10	33.3
Telephone	19	43.2	10	33.3
Television	4	9.1	1	3.3
Computer	3	6.8	7	23.3
Internet	1	2.3	2	6.7
TOTAL	44	100	30	100

Field survey: 2015

*Multiple responses

For the extension agents, 33.3 percent used radio, 33.3 percent used telephone, 3.3 percent used television, 23.3 percent used computer while 6.7 percent used internet. It can thus be said that the use of radio and television was high among the farmers in the study area. The extension agents used more of radio, television and computer. These findings are in agreement with that of Gyata (2014) that 72.00% of the respondents (both farmers and extension agents) made use of radio, 84.50% of the respondents made use of GSM (handsets), and only a few of the respondents used the internet (28.90% rural farmers and 35.30% change agents) and computer (11.90% of rural farmers and 14.70% of change agents). The findings of this study also agrees with that of Ezech (2013) that farming

households in southeast Nigeria use conventional ICTs such as radio and telephone for obtaining agricultural technological information. The findings of Henri-Ukoha et al., (2012), who reported that farmers in Ukwa West L.G.A of Abia state recorded high level of usage for conventional ICTs also agrees with the findings of this study.

It could therefore be said that the use of conventional ICTs (Radio, Telephone and Television) was generally high among the farmers and the extension agents. From the result, it could also be said that the use of computer and internet was higher among the extension agents than the farmers.

3.8 Effect of Socio-economic Characteristics of farmers on their Level of Access to Internet

Logit regression analysis was used to test the effect of the socio-economic characteristics of respondents on their level of access to internet. The result is presented in Table 5. From the research findings, the socio-economic characteristics of the farmers (age, sex, marital status, farm size and income) individually do not have significant effect on their level of access to internet. The Chi-square (11.43) is however Significant (0.043) at 5% level of probability. This means that the overall regression equation was however significant at 5% level of probability, implying that the socio-economic characteristic has significant effect on their level of access to internet. Therefore we reject the null hypothesis and accept the alternative hypothesis.

Table 5: Logit Regression for the Effect of the Socio- Economic Characteristics of the Farmers on their Level of Accessibility to Internet.

VARIABLES	B	S.E.	Wald	sig	Exp (B)
Age	0.33	.111	.086	.769	1.033
Sex	4.507	2.317 E4	.000	1.000	.000
Marital status	14.830	4.019E4	.000	1.000	2.758E6
Farm size	1.079	.979	1.215	.270	2.943
Income	.000	.000	.189	.664	1.000
Constant	24.984	4.019E4	.000	1.000	.000

Log likelihood ratio =5.475.

Nagelkerke R Square =0.763

Chi- square statistic = 11.43, Sig=0.043

From the result, Nagelkerke R^2 is 0.763, implying that the factors in the model accounted for 76.3% of the variation in level of access to internet.

4.0 CONCLUSION AND RECOMMENDATION

From the findings of this study it could be concluded that majority of the farmers in Ofu LGA of Kogi state had no formal education, used more of other ICT facilities like radio, television, telephone than internet. In addition, majority do not possess personal computers, do not possess functional e-mail address, they possess low skill and knowledge on the use of internet and consequently cannot access the internet themselves. This is compounded by the problem of inadequate internet facilities, high cost of computer/modem, high cost of air-time, poor and unstable network and inadequate power supply.

Majority of the extension agents acquired tertiary education, used more of the radio and telephone than

the internet, possess personal computers, functional e-mail address and could access the internet themselves. High cost of computer/modem, poor and unstable network and inadequate power supply were their major problems. It was therefore recommended that Cybercafes should be established at different areas of the local government to improve farmers/ extension agents' access to ICT facilities at all times.

REFERENCES

- Aboh, C .L (2008).Assessment of the Frequency of Ict Tools Usage by Agricultural Extension Agents in Imo State, Nigeria. *Journal Of Agriculture And Social Research*. 8(2); 1-5
- Adejo, P.E and U. Haruna, (2010). Access of farmers to ICTs for agricultural development in Bauchi local government area, Bauchi state. Proceedings of the 43rd annual conference of the Agricultural Society of Nigeria held in Abuja, 2010.
- Agricultural Extension Agents in Imo State, Nigeria.

934. J. Agric. Econs, Extens. Rural Develop

- Journal Of Agriculture And Social Research*. 8(2); 1-5
- Ajala, A. A. (1992). Factors Associated with Adoption of Improved Practices by Goat Producers in Southern Nigeria. *A Mimeograph*; Dept. Of Agric. Extension, University of Nigeria, Nsukka.
- Bidoli, T. D., Amuta, S. J., Abiyong, P. A and Kezi, D. M. (2010). Analysis of Gender imbalance in Agricultural Education in Kaduna State: Challenge for Extension Education and Training in: Madukwe, M. C (Ed). Challenges to Agricultural Extension Development and Practice in Nigeria. Proceedings of National Conference of AESON held on 10th -14th May. Pp105
- CTA (2003). ICTs Transforming Agricultural Extension, an e-discussion. CYA Wageningen August 20-September 29.
- Ezeh, A. N. (2013). Access and application of information and communication technology (ICT) among farming households of south east Nigeria. *Agricultural and Biology Journal of North America*. ISSN print: 2151-7517, ISSN online: 2151-7525
- Gopi (2012). ICT Tools used in Extension, Koonandiyur, Mecheri, Salem Tamilnadu, India.
- Gyata, B.A. (2014) Adaptation of Agro-based Website System for Rural Farmers and Extension Workers in Selected LGA of Benue State. Unpublished M.Sc Thesis in the Department of Agricultural Extension and Communication, University of Agriculture, Makurdi.
- Henri-Ukoha, A.C., Chikezie, A., Osuji, M.N and Ukoha, I. I. (2012). Rate of Information Communication Technology (ICT) Use: Its Determinants among Livestock Farmers in Ukwa West LGA, Abia State of Nigeria. *International Journal of Agricultural and Food Science*, 2(2): 51-54.
- Muh Amin, Sugiyanto, Keppi Sukesu and Ismadi (2013) The Effectiveness of Cyber-Extension-Based Information Technology to Support Agricultural Activities in *Kabupaten Donggala*, Central Sulawesi Province, Indonesia. *International Journal of Asian Social Science* 3(4); 882-889
- Obinne, C.P.O, Okoye, C. E. and Saror, S. (2009). Comparative study of Pictorial and Verbal Communication in Extension Work: A case study of Anambra State Farmers. In: Akoh, A. D (Ed). *Nigeria Journal of Indigenous Knowledge and Development* (NSIKAD). Vol. 1, Pp115.
- Ofuokwu, A. U. (2009). Effects of Extension Training on Adoption of Improved Farm Practice by Farmers in Delta State, Nigeria. *Journal of Applied Agricultural Research*. 1: 13-19.
- Ogunbameru, B.O. (2001). Practical Agricultural Communication, Daily Graphics (Nigeria) Limited, Ibadan.
- Ogunbameru, B.O., Udiandeye, U.C. and Ani, A.O. (2008). Definitions, Philosophy and Principles of Agricultural Extension. In: Ogunbameru, B.O.; Udiandeye, U.C. and Ani, A.O. (Eds.): Agricultural Extension Methodologies. Apani Publications, Kaduna, 1-12 Pp.
- Okwu, O.J., Ejembi, S.A. and Oguntolu, F.R. (2010). Folk Media Usage in Extension Service Delivery in Kaduna State, Nigeria. In: Amalu, U.O, Obinne, C. P.O. and Obijai, K. K. (Eds). Rural Development and Democracy: The Nigerian Experience, Proceedings of NSIKAD. Pp 103
- Omotayo, O.M. (2005). ICT and Agricultural Extension: Issues in transferring agricultural technology in developing countries proceedings of 3rd annual conference of AESON Ilorin . Pp132-135.
- National Population Commission of Nigeria. (2006). 2006 *population and housing census* (Priority Table Vol.III, pp. 1-64). Abuja, Nigeria: NPC of Nigeria.
- Warren, M.F. (2001). "Adoption of ICT in Agricultural Management in the United Kingdom: The Intra-rural digital divide". Landuse and Rural management, University of Plymouth UK.