International Journal of Agriculture, Environment and Bioresearch

Vol. 3, No. 04; 2018

ISSN: 2456-8643

EVALUATION OF FACTORS AFFECTING USE OF INFORMATION AND COMMUNICATION TECHNOLOGY AMONG FARMERS IN TARABA STATE, NIGERIA

BakariD[1], Gisilanbe S.A[2], Chia J.I1. and Mamman A[2]

[1]Department of Agricultural Extension and Communication, University of Agriculture, Markudi, Benue State. PMB 2373.

[2]Department of Agronomy, Taraba State University, Jalingo, Taraba State, PMB 1167 Jalingo..

ABSTRACT

The study was carried out to evaluate factors affecting use of information and communication technology among farmers in Taraba State, Nigeria. Structured questionnaire and interview schedule were used to collect data from a sample of two hundred and fourteen (214) respondents. Data were analyzed using frequency, percentage, mean scores, standard deviation, and Logistics regressions model. Results indicated that, major factors that encouraged use of ICTs by male respondents included availability of electricity (60 %), provision of training (68.5 %), and level of education(51.3 %) while that of females were use of generator (78.7 %), extension contact (72.7 %), among others. Factors that discourage use of ICTs among male respondents were inadequate training (76.5 %), among others while that of females were inadequate extension agent contact (72.7 %), poor knowledge on use of ICTs (57.6 %).Coefficient of age was negative (-0.036) and significant at 10% level of significance. The coefficient of education was positive (0.089) and significant at 1% level of significance. Therefore the hypothesis that socio-economic characteristics of the respondents do not have any significant effect on their usage of ICTs was rejected. Government should formulate policies that will provide equal opportunitiesin terms of ICTs training, to encourageboth male and females to be more productive in their contribution to the economy. The study highlights the need for physical infrastructure such as electricity is put in place by the three tiers of government to encourage the use of ICTs to sustain agriculture.

Keywords: Economy; Poor farmers; Information Communication Technology; Electricity

1. INTRODUCTION

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; Technical Centre for Agricultural and Rural Cooperation, CTA 2003; Omotayo, 2005). Adejo and Haruna (2010) classified ICT into conventional ICT (radio, television) and contemporary ICT (telephones, computer/internet). ICTs are foundation of the new global information based

Vol. 3, No. 04; 2018

ISSN: 2456-8643

economy (Okwusi*et al.,* 2009). They are increasingly becoming the key drivers of socio-economic growth worldwide (Hellerstein, 2005).

Cross the developing world, agriculture is a major contributor to Gross Domestic (GD) and to employment (Ahmed, 2003; World Bank, 2012). For this reason, significant effort has been expended in the past decade to increase the use of ICT in agriculture, especially with the aim of improving the economic status of small-scale farmers in developing nations (Singh, 2006). However, over and over again, the reports seem to point to similar challenges that hinder the use and adoption of ICT. In many African countries, there are several factors affecting ICTs usageamong which are: the high cost of maintenance services in addition to its non-availability in remote and rural areas greatly affect the effective utilization of ICT, especially with regard to those institutions that depend on information supplied from remote field stations (Bashir, 2008). There is a need for selective dissemination in order to steer farmers in a particular direction. According to (Ahmed, 2003), almost all farmers agree that the technologies provided are costly to adopt and even if the technologies were inexpensive, farmers have limited financial resources.

Aina(2007) stated that the dissemination of agricultural information in Africa is affected by lack of basic infrastructure, such as good power supply, good road network, pipe borne water etc.It is thought that the modern sources of information have social, educational, economic, cultural and technical constraints which limit their effectiveness in disseminating agricultural information to farmers (Bashir, 2008). Socio economic factors such as knowledge and skills, which are often mediated by gender, class, and race also affects ICTs access and usage. Okiy, (2005) points out poor and inadequate telecommunication facilities; poor level of computer literacy, even within the academic community; poor level of computer facilities; poor level of awareness of Internet facilities among policy makers, government officials and the ruling class in general; and minimum involvement of academic institutions in network building in Africa as challenges militating against the use of ICTs.

1.1 Statement of the Problem

In spite of government contribution to ensure effective use of ICTs through introduction of ICTs programs e.g. e-wallet, growth enhancement schemes among others, there is still wide gap in the level of ICTs usage. Although a lot of research has been conducted in some States of the Federation by other researchers on application of ICTs in Agriculture, little or nothing has been done onevaluation of factors affecting use of information and communication technology among farmers in Taraba State, Nigeria. For example, Omoteshoet *al.* (2012) worked on assessment of access to information and communication technology among Agricultural Extension Officers in Kwara, State Nigeria, while Nnenna (2013) worked on access and application of information and communication technology ICTs among farming households of south east Nigeria. It is based on this background that the study evaluates factors affecting use of information and communication technology among farmers in Taraba State, Nigeria. Specifically the study ascertained factors affecting the use of ICTs among male and female farmers in Taraba State and based on the specific objectives of this study; the null hypotheses was stated and tested as thus:

H_{01}: The socio-economic characteristics of the respondents do not have any significant effect on their usage of ICTs.

Vol. 3, No. 04; 2018

ISSN: 2456-8643

1.2 Methodology

This study was conducted in Taraba State, Nigeria. It has an estimated population of 2,294,800 million and land area area 54,428km^2 (National Population Commission, 2006). The farmers in Taraba State constitute the respondents in this study. In selecting respondents for the study, a multistage sampling technique was employed. In the first stage, Taraba State was stratified into three Agricultural zones into which the state is classified (Ministry of Agriculture Taraba State 2015). The zones are zone A (Taraba South), zone B (Taraba North), and zone C (Taraba Central).

The second stage was a purposive selection of one local government area from each zone, which makes up three Local Government Areas for the study. These local government areas are selected based on their accessibility and Usage of ICTs. Two wards from each of three Local governments Areas were selected by simply random sampling for this study. A proportionate random sampling was employed to select the respondents from each Local Government Area.The sample size for the study, which is (0.05) of the sampling frame was selected from Wukari, Gassol, and Jalingo population respectively. The sample size for this study is 214 farmers.

1.3 Data collection

Data for the study were collected from primary sources; It involves the use of structured questionnaire, interviewing method were employed for the collection of data. The respondents were asked questionson their socio- economic characteristics. They were also asked to indicate factors affecting their use of ICTs.

2.1 RESULTS AND DISCUSSION

2.1.1Factor encouraging the use of ICTs among farmers

The result on Table 1 shows the factors encouraging the use of ICTs by gender. The result revealed that majority (60%) of males (57.5%) of the females indicated that electricity encourages their use of ICTs. This implies that the males were more encouraged by electricity for the usage of ICTs than the females. This could be because electricity is more economical for the usage of ICTs since the males are more often responsible for most of the domestic cost. About (78.7%) of females and (69.5%) of the males indicated that, generator is one of the factors that encouraged their usage of ICTs. The females were more encouraged with the use of generator than their males' counterpart. This could be because women as house wives they are more likely to use generator than males especially now that power holding company is not reliable. About 68.5% of males' and 52.5% females showed that training is what encourages their use of ICTs. This implies that training encouraged males in terms of usage of ICTs than the females. This difference could be because as the head of the family, responsibility lies upon them to acquire additional knowledge in order to improve their skills and earning capacity.

Vol. 3, No. 04; 2018

ISSN: 2456-8643

Majority (72.7%) of the female respondents and 46.9% of the males indicated extension visit as what encourages their usage of ICTs. This showed that females were more encouraged to use ICTs went motivated by and extension agent than the males. This could be because women are too emotional; therefore they require more attention as means of motivation to enable them involved in the use of ICTs. About (51.3%) of the males and (39.3) of females respondents showed that their educational level is what encouraged them to use ICTs. This indicates that the males were more encouraged by education than their female counterpart. This could be because men have higher educational attainment than most females. About (59.1%) of males and (41.1%) of females respondents showed that government was what encourages their usage of ICTs. This indicated that males were more encouraged by government than their female counterpart. This difference could be because of men benefit from ICTs programs initiated by the government. About (47%) of the females and 31.3% of males indicated that nongovernmental organizations is what encouraged their usage of ICTs. This implies that the females were more encouraged by nongovernmental organizations to use ICTs than the males. This could be because most nongovernmental organizations are gender sensitive.

Table 1: Distribution of Respondents According to Factors Encouraging ICTs Use

Factors	Male(n=115)		Female(n=99)	
	Freq (f)	Percentage (%)	Freq (f)	Percentage (%)
Electricity	69	60	57	57.5
Generator	80	69.5	78	78.7
Training	79	68.5	52	52.5
Extension agent Visit	54	46.9	72	72.7
Education	59	51.3	39	39.3
Government	68	59.1	41	41.4
Non-government	36	31.3	47	47.4

Source: Field Survey, 2016

2.1.2 Factors discouraging the use of ICTs by gender

The result on table 2shows the factors discouraging the use of ICTs by gender. The result revealed that majority (63.5%) of males and of females (59.6%) complained that lack of electricity is what discouraged them from using ICTs. This indicates that males were more discourage went there is no availability of electricity to enable them use ICTs than their female counterpart. This could be because males are more often involved with the use of ICTs, while females concentrate on their domestic activities. Majority of males' farmers (76.5) and female

Vol. 3, No. 04; 2018

ISSN: 2456-8643

(66.6%) complained that lack of training is what discouraged their usage of ICTs. This implies that males were more discouraged by lack of training than their females' counterpart. This could be due to the desire by men to acquire more skills in order to improve farming enterprise. About (57.6.8%) of females and (48.6%) of males indicated that lack of awareness is what discouraged their usage of ICTs. This implied that the females were more discouraged than their female counterpart. This could be because women are often house wives who are not really exposed to ICTs like the men.

About (71.7%) of the females and (67%) of the males complained that, lack of extension agent visit is what discouraged their usage of ICTs. This indicates that females were more discouraged by lack of extension visit than their males' counterpart. About (64.3%) males indicated that lack of education is what discouraged their ICTs usage while (59.6%) of the females respondents indicated that lack of education is what discouraged them from using ICTs. This showed that males were more discouraged by lack of education than the females.About (13.1%) of the females respondents and (9.6%) of the males respondents indicated that religion is what discourages their use of ICTs. This implies that, the females were more discouraged by religion than the males. This could be because; most especially Muslims women from the northern part of Nigeria have some restriction from socializing due to their religious ethics serving most often as house wife's.

About (43.4%) of the females respondents and (39.1%) of the males indicated that language barrier is what discourages their use of ICTs. This could be because men are more educationally sound than women. From the findings, the factors that discouraged the males' mostly over females were lack of electricity, lack of training, lack of ICTs awareness and lack of education. The factors that discouraged females' respondents' more than their males' counterparts were Lack of extension visit, religion and language barrier.These findings correspond with that of Arokoya (2005) which found that the major constraints affecting the use of ICTs were erratic and unstable power supply, problem connectivity, low level readiness of research and extension organizations to embrace the use of ICTs, high costs of telephone services, limited access to computers, lack of communication policy high level of rural poverty and illiteracy, limited access to world wide data bases due to foreign exchange constraints.

Table 2: Distribution of Respondents According to Factors Discouraging the Use of ICTs

Factors	Male (n=115) Freq (f)	Percentage (%)	Female(n=99) Freq (f)	Percentage (%)
Lack of electricity	73	63.5	59	59.6
Lack of training	88	76.5	66	66.6
Lack of ICTs awareness	56	48.6	57	57.6

Vol. 3, No. 04; 2018

ISSN: 2456-8643

Lack of ext agent visit	77	67	71	71.7
Lack of education	74	64.3	59	59.6
Religion	11	9.6	13	13.1
Language barrier	45	39.1	43	43.4

Source: Field Survey, 2016.

Hypothesis H_{O1}

Logistic regression analysis was used to examine the effect of the socio-economic characteristics of male and female farmers on usage of ICTs. The chi-squared goodness of fit (x^2=22.031, df=10, p= 0.015) was significant. It implies that the socio-economic characteristics of the farmers are significantly related to their usage of ICTs. Therefore the null hypothesis that says the socio-economic characteristics of the respondents do not have significant effect on their usage of ICTs is rejected. The non-significance of $(x^2 = 9.884, df = 8 \; and \; p > 0.015)$ Hosmer-Lemeshow test result shows that the model is non-significantly different from the standard model.The final model predicted 14.2% of the variance (Nagelkerke R^2 = 0.142, Cox and Snell R^2 = 0.098).

Coefficient of age is (-0.036) negative and significant at 10% level of significance, implying that age reduces the probability of using ICTs. This indicates that, the more younger people the more their use of the ICTs, while a lower rate of use of ICTs is found paramount among the older farmers. This is in consistent with Hill et al. (2008) who found age to be negatively associated with the likelihood of ICT engagement. Samah et al. (2009) also established that the young age group adopted ICTs more easily.

The coefficient of education (0.089) was positive and significant at 1% level of significance. This shows that, education increases the probability of using ICTs. This implies that the higher the educational level of an individual the more tendency of using ICTs Results were consistent with Galloway and Mochrie (2005) and Simeunović and Russo (2010) who found that education was an important aspect in adoption and use of ICT However the coefficient of farm size, sex, experience, house hold size, farm income, nonfarm income, farmers association and extension visit, had no significant influences on using ICTs.

Vol. 3, No. 04; 2018

ISSN: 2456-8643

Table 3: Effects of Socio-Economic Characteristics of the Respondents on Use of ICTs

Variable	Co-efficient	S.E	Wald	Sig (2tailed)	Exp (B)
Age	-0.036	0.22	2.747	0.097***	0.964
Education	0.089	0.03	7.081	0.008*	1.093
Farm size	0.042	0.073	0.327	0.567	1.043
Sex	-0.123	0.357	0.119	0.730	0.884
Experience	-0.007	0.026	0.068	0.795	0.993
House hold size	0.039	0.034	1.339	0.247	1.040
Farm income	0.000	0.000	0.84	0.357	1.000
Nonfarm income	0.000	0.000	0.275	0.600	1.000
Constant	-1.328	0.817	2.641	0.104	0.265
Nagelkerker R^2	0.142				
Hosmer and Lemesho	9.884				
Chi- square	22.031*				

Source: Field Survey, 2016

*, *** significant at 1% and 10% level

3. CONCLUSION

The study revealed that, major factors that encouraged use of ICTs by male respondents included availability of electricity, provision of training, and level of education, while that of females were use of generator , extension contact among others.It was alsorevealed from the findings that, the factors that discouraged the male respondents mostly over the female counterpart were lack of electricity, lack of training, lack of ICTs awareness, and lack of education. While that of female respondents'were Lack of extension visit, religion and language barrier.Coefficient of age was negative (-0.036) and significant at 10% level of significance. The coefficient of education was positive (0.089) and significant at 1% level of significance.

4. RECOMMENDATION

Based on the findings of this study, the following are hereby recommended:

Vol. 3, No. 04; 2018

ISSN: 2456-8643

i. It highlights the need for physical infrastructure such as electricity to be put in place by the relevant three tiers authorities.
ii. Government should formulate policies that will provide equal opportunities in terms of ICTs training, to encourage both male and females to be more productive in their contribution to the economy.

REFERENCES

Adejo, P.E and U. Haruna, (2009).Access of farmers to ICTs for agricultural development in Bauchi local government area, Bauchistate.Proceedings of the 43rd annual conference of the Agricultural Society of Nigeria Abuja, 2009.

Ahmed, A. (2003). Technology management in the sudan: Strategic and policy challenges:*Journal of management decision, Vol.41 N03, pp.267-273*

Aina, L.O (2007) Globalisation and small –scale farminginAfrica:InformationCentres? World libraries and information congress 73rd IFLA General conferences and council. Durban, South Africa.

Bashir, Y.G.A. (2008). Assessment of agricultural information needs in African, Caribbean & Pacific (acp) states. Eastern Africa: Country Study Sudan.Technical Center for Agricultural and Rural Cooperation (CTA).

C T A (2003). Information and communication technology transforming Agricultural Extension, An e- discussion, 20th August to September, 2003

Hellersten, J. (2008). Training workshop on ICT for Rural Development: Access and Applications. http://go Worldbank.org/XL89032600 Idachaba, (2000). Retrieve on the 25th July 2015.

National.Population.Commission.(2006).Nigeriaunemployment rate.www.mcser.org/journal/index.php/ajis/articles/viewfile/3077/3033.Retrievedonthe 27/08/2016.

Nnadozie, B. Ibe I. (2002). Women in Agriculture: Problems and prospecting:Agriculture transformation in Nigeria.Noveltyind.Enterprises ltd.pp106-110

Nnenna A.E (2013). Access and application of information and communication technology (ICT) among farming households of south east Nigeria.Agriculture and Biology Journal of North America. Novelty ind. Enterprises ltd.pp106-110

Okiy, R.B (2005) Strengthening information provision in Nigerian University libraries through information communication technologies: The Electronic library 23(3), pp.311-318

Okwusi M.C, Nwachukwu I and Adesope O.M (2009). Assessment of the usefulness of agricultural information obtained from the internet among farmers in the South East Nigeria. Proceedings of the International Conference on global food crisis, FUT Owerri, Nigeria, April 19-24, 2009, Pp 42423.

Vol. 3, No. 04; 2018

ISSN: 2456-8643

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.

Omotesho, K. F., Ogunlade, I.O. and Muhammad Lawal (2012): Assessment of access to Information and Communication Technology among Agricultural Extension officers in Kwara State, Nigeria.Asian Journal Agriculture and Rural Development.2(2):220-225

Signal Allinace (2014) Nigeria Alliance for affordable Internet http://avai.org/.../2014/Nigeria-case.... Retrieved on the 25/08/2016

Warren, M.F. (2001). "Adoption of ICT in Agricultural Management in the United Kingdom: The Intra-rural digital divide". Land use and Rural management, University of Plymounth.

World bank (2012). World bank indicator 2012. http://data.worldbank.org/data.catalog/wotrrld-development-indicators. Retrieved on the 25/08/2016\