ASSESSMENT OF FARMERS USAGE AND EFFECTIVENESS OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN PAIKORO LOCAL GOVERNMENT AREA, NIGER STATE, NIGERIA

A. Ogaji, A. I. Oseghale, S. Jibrin, F.D. Ibrahim andYusuf, A.K.

Department of Agricultural Economics and Extension Technology, Federal University of Technology Minna
Corresponding email address: itodine@yahoo.com

Abstract

The study was conducted in Paiko local government area of Niger State, Nigeria, with the objective of assessing farmers' usage and effectiveness of information and communication technologies and also to determine respondent's level of use of new information and communication technologies. Data were obtained through the use of questionnaire administered on 60 farmers that were randomly selected and analysed using descriptive statistics, 3-point likert scale and logit regression. The study revealed that an overwhelming majority (81.7%) of the respondent were males with an average age of 43years with formal education. Farm size and number of extension visits were the factors that influenced the use of ICT. While increase in the farm size lead to decrease in the odds of ICT usage, increase in extension visit on the other hand led to increase in the odds of ICT usage. Based on the findings of the study, it is therefore recommended that ICT facilities and training should be channeled more to the large scale farmers since they have a higher likelihood of using them.

Keywords; *Farmer, Information, technology, communication, effectiveness*

Introduction

Agricultural productivity has been associated with the use of technology and hence it has become crucial for extension services to provide farmers with the knowledge, information and technology required Quality and timely information has become necessary since the welfare of the rural population is dependent on a knowledge filled society. (United Nations (UN, 2005). Communication makes technology handier to the rural farmers and thus enables them increase knowledge about the production and management (McBean, 2005). According to Olaniyi (2013), the use of conventional communication methods such as farm and home visits by extension workers and contact farmers has failed to yield results in recent time. Also, Adebayo and Adesope (2007) are of the view that stagnation may occur in the dissemination and utilization of agricultural development if modern Information and Communication Technologies (ICTs) facilities are not utilized by farmers. This therefore calls for the use of new emerging ICTs by agricultural information providers

Technical Center for Agricultural and Rural Cooperation (CTA, (2003) describes ICTs as technologies that facilitate communication, processing and transmission of information by electronic means. it involves a wide range of facilities such as radio, television, telephones (fixed and mobile), computers and the internet among others. ICTs accelerate rural development by contributing to a more effective and rapid knowledge dissemination. Agricultural extension alone is not the key that directly unlocks the doors to national prosperity; it can only be effective in its proper sphere of influencing the agricultural sector if fuelled by a steady supply of relevant ICT (Babatunde *et al*., 2008). Hence this study assessed farmers' usage and effectiveness of ICTs in the study area.

Materials and Methods
Study Area

The study was carried out in Paiko Local Government Area of Niger State. It is located between latitude $9^0 36^'$ and $9^0 4'$N and longitude $6^0 36^'$E-$7^0 2^'$E with an annual rainfall of about 1600mm and temperature of about 34^{0C}. It has an area of $2,066 km^2$ and a population of 158,086. Agricultural activities form the major occupation of the people because about 80% of the population engaged in farming either directly or indirectly.

Sampling Technique and Method of Data Collection

Multistage sampling procedure was used to select the respondents for the study. In the first stage Paikoro Local government area was purposively selected in Niger state because of its rural nature and proximity to the state capital. The second stage was the random selection of 60 farmers in the study area. Primary data based on personal administration of questionnaire was use for the study. The respondents were asked questions that had to do with their socio- economic characteristics such as age, sex, educational level and others questions that had to do with ICT.

Method of Data Analysis

Study data were analyzed using descriptive statistics, 3-point likert scale and logit regression analysis. The 3-point likert scale was used to assess the effectiveness of various ICTs and it is expressed as;

$$ETV = \frac{scale-grade*corresponding\ responses}{total\ number\ of\ quetions}$$

Where, ETV = effectiveness test value, scale-grade is represented as 1= not effective, 2= Indifferent and 3=Effective. Hence ETV < 2 is ineffective while ETV >2 implies ICT is effective in information dissemination.

The logit regression model was used to determine the factors that influenced the use of ICT and the model is expressed as; $Y_i = \log\left(\frac{p_i}{1-p_i}\right) = b_0 + b_1X_1 + b_2X_2 + \ldots\ldots + b_7X_7 + u_i$

Where: Y_i =dichotomous response variable (1 for farmers who used new ICTs; 0 otherwise)
Y represents ICT usage. Hence farmers who utilized more than 3 out of the 7 ICTs identified were scored 1 indicating usage of ICT while farmers who utilized between 0 and 3 were scored 0.
p_i= probability of a farmer using new ICT and
$1-p_i$ otherwise
X_1= Age of farmer (years)
X_2= Educational level of farmers (years of Schooling)
X_3= farm size (hectares)

X_4= membership of associations (number of associations a farmer belongs to)
X_5= number of extension agents
u_i= error term

Presentation of Results and Discussion

Socioeconomic Characteristics of the respondents
Data in Table 1 shows that the majority (81.7%) of the respondents are males within the age of 31-50 years with mean age of 43 years. This facilitates better access to information and also increases the possibility of the farmers adopting the use of ICT. The implication is that they are young and energetic which make them to have better access to information and are more likely to adopt the use of new ICT. In addition, majority (65%) of the respondents have had one form of formal education with 31.7 percent having secondary education. The implication of this is that farmers in the study area have a higher tendency of using ICT facilities since a high literacy level enables the farmers cope with the complexities that accompany new technologies.

Distribution of Respondents by Number and Type of ICTs Used

According to this study, 48.3percent of the respondents have used 4 or more forms of ICTs. However, telephone and radio were mostly used by 91.7percent and 68.3percent of the respondents respectively (Table 2). The use of telephones by the farmers could be as a result of its affordability and less dependence on infrastructure when compared to other means of communication as posited by Jensen (2007). Also, telephones provide audio, video and radio functions which promote its use. It is interesting to note that farmers perceived telephones as the most effective means of communication with an ETV of 2.9 followed by radio with an ETV of 2.4. However, audio cassettes, websites and email were considered ineffective as presented on Table 3.

Table 1: Selected socio-economic characteristics of farmers

Variable	Frequency	Percentage
Age		
21-30	6	10
31-40	19	31.7
41-50	17	28.3
51-60	18	30
Mean	43	
Gender		
Male	49	81.7
Female	11	18.3
Educational Level		
No formal education	23	35
Primary	11	18.3
Secondary	19	31.7
Tertiary	9	15
Extension visit/month		
0-2	47	78.3
3-5	13	21.7

Source: Field Survey, 2014

The result of the Logit regression to determine the factors that influenced use of ICT is as shown on Table 4. The result revealed that farm size and extension visit were the factors that influenced ICT usage in the study area. The coefficient of farm size was significant and negative implying that an increase in the area cultivated by 1ha will translate into decrease in the odds of ICT usage by 0.42(e- -0.8445798) while increase in the number of extension visit will increase the odds associated with ICT usage by 2.09(e- 0.7402648). The reason is not farfetched as increase in the number of extension visits will reduce dependence on ICT facilities since information will be transferred face to face and feedback obtained immediately.

Table 2: Distribution of respondents by Number and Type of ICTs Used

Variable	Frequency	Percentage
Number of ICT		
0-3	31	51.7
4-7	29	48.3
ICT Type		
Email	9	15
Website	13	21.7
Television	38	63.3
Radio	41	68.3
Video	32	53.3
Audio cassette	26	43.3
Telephone	55	91.7

Source: Field Survey, 2014

Table 3: Effectiveness of ICTs

ICTs	Effective(E)	Not Effective(NE)	Indifferent(ID)	ETV	Remarks
Email	9(27)	8(16)	43(43)	1.43	NE
Website	13(39)	4(8)	43(43)	1.5	NE
Television	38(114)	2(4)	20(20)	2.3	E
Radio	41(123)	2(4)	17(17)	2.4	E
Video	32(96)	7(14)	21(21)	2.18	E
Audio cassette	26(78)	4(8)	30(30)	1.9	NE
Telephone	55(165)	5(10)	-	2.9	E

Source: Field Survey, 2014

Table 4: Estimate of the Logit Regression

Variable	Estimated Coefficient	Z-value
Constant	-0.2327847	-0.11
Age	0.0347251	0.78
Education	0.1328704	1.35
Farm Size	-0.8445798**	-2.13
Farmers Association	1.184449	1.32
Extension Visit	0.7402648*	1.72
Pseudo R-square	0.2441	
Log likelihood	-20.433649	

Note: *, ** implies corresponding coefficient is significant at 10% and 5% respectively
Source: Field Survey, 2014

Conclusion and Recommendation

The main tenet of this study was to assess farmer's usage and effectiveness of ICTs in Paiko LGA of Niger state. Based on the results, the study concludes that farmers in the study area considered telephone and radios to be the most effective ICT facility hence they were the most used. Furthermore, the decision to use or not to use was influenced by the farm size and number of extension visits. Based on the result, the study recommends that ICTs facilities and training should be targeted at large scale farmers. In addition, the current distribution of mobile phones to farmers in some areas should spread across all farmers since telephone has been found to be the most effective form of information transfer.

References

Adebayo, E. L. and Adesope O.M. (2007). Awareness, Access and Usage of Information and Communication Technologies between Female Researchers and Extensionists. *International Journal of Education and Development using Information and Communication Technology (IJEDICT) 3(* 1):85-93.

Babatunde, R.O., Olorusanya, E. O. and Adejola, A. D. (2008). Assessment of Rural Household Poverty: Evidence from South Western Nigeria. *American Eursian Journal of Agricultural and nce. 3(6):900-905*

Technical Center for Agricultural and Rural Cooperation (CTA 2003). Transforming Agriculture and Extension. E-discussion. 20th August -29th September

Jensen R. (2007). The Digital Provide: Information (Technology) Market Performance and Welfare in the South Indian Fisheries Sector. *The Quarterly Journal of Economics 122(3):874-607*

Mcbean (2005). What Matters in a Communication Strategy. Retrieved from www.ngopulse.org on 9/12/2014

Olaniyi, O.A (2013). Assessment of Utilization of Information and Communication Technologies among Poultry Farmers in Nigeria: An Emerging Challenge. *Transnational Journal of Science and Technology 3(6): 29-43*

United Nations (2005). The Digital Divide Report: ICT Diffusion 2005. United Nations Conference on Trade and Development. UNCTAD/ ITE/ IPC/ 2006/5. Retrieved from unctad.org on 9/12/2014