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ASSESSMENT OF FARMERS USAGE AND EFFECTIVENESS OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN NIGER STATE NIGERIA

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ABSTRACT

The study assessed farmers' usage and effectiveness of information and communication technologies in Paiko local government area of Niger State, Nigeria. Data were obtained through the use of questionnaire administered on 60 farmers that were randomly selected and analysed using simple percentages and logit regression. The study revealed that an overwhelming majority (81.7%) of the respondent were males with an average age of 43 years with formal education. Farm size ($z=-2.13$) and number of extension visits ($z=1.72$) were the factors that influenced the use of ICT. It was recommended that ICT facilities and training should be channeled more to the large scale farmers since they have a higher likelihood of using them.

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 in a quality and timely way as a knowledge filled society is becoming paramount for the welfare of the rural population (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) is 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 in the agricultural system. This therefore calls for the use of new emerging information and communication technologies 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. 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 2,066km 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 technique was used for the study. In the first stage Paiko 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 10 farmers from each of the 6 blocks 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;

$$ETV = \frac{scale-grade \cdot corresponding\ responses}{total\ number\ of\ questions}$$

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; $Y_i = \log \left(\frac{P_i}{1 - P_i} \right) = b_0 + b_1 X_1 + b_2 X_2 + \ldots + b_n X_n + u_i$

Where: Y_i =dichotomous response variable (1 for farmers who use new ICTs; 0 otherwise)

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

RESULTS AND DISCUSSION

The main aim of this study was to assess the level of farmer's awareness and usage of ICT and the results is as presented below. As shown on table 1 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 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% 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.

Table 1: Descriptive Statistics of Respondents

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		
0-2	47	78.3
3-5	13	21.7

Source: Data from Field Survey, 2014

According to this study, 48.3% of the respondents have used 4 or more forms of ICTs. However, telephone and radio seems to be the most used 91.7% and 68.3% respectively as shown on 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. 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

Description Number of ICT	Frequency	Percentage
0-3		
4-7	31	51.7
	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: Data from 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: Data from Field Survey, 2014

Table 3: Estimates 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: Data from Field Survey 2014

CONCLUSION

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.

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