Uses of ICT by Farmers in Oluyole Lga, Oyo State, Nigeria (Logit and Probit Approach)

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ABSTRACT

Aim: The study was conducted to investigate the use of Information and Communication Technologies by farmers in Oluyole Local Government Area, Oyo State, Nigeria using the logit and probit approach.

Method and Materials: A multistage sampling technique was used to select the local government, villages and farmers per village. One thousand (1000) respondents were sampled. Analytical techniques included descriptive statistics of logit and probit model analysis.

Results: Mode age of the farmers was observed between 51 and 60 years, while majority (78.4%) were male and 21.6% were female. The study revealed that majority of the respondents did attend school and high percentages (86.0%) of the respondents were married. The majority ICTs usage led by the respondents is radio. Logit and Probit model results show that independent variable like age, marital status and major occupation were positively related to the use of information technology and were significant at 0.01 and 0.05 level of probability.

Conclusion: Logit and Probit model concluded that the independent variables like age, marital status and major occupation were positively related to the use of information communication technology and were significant at 0.01 and 0.05 level of probability. The marital status will enhance increase family labour while the major occupation (farming) which is positively related will improve food security and standard of living of the farmers.

Keywords: Communication, Farmers information and technologies, Logit and Probit model,

Introduction

Information and Communication technology (ICT) are being used in the fields of socio-economic development, international development and human rights. The theory behind this is that more and better information and communication furthers the development of society. Aside from its reliance on technology, it also requires an understanding of community development, poverty, agriculture, healthcare and basic education. This makes ICT appropriate technology [1].

It is suggested by [2] that I is related with "library and information sciences", the C is associated with "communication studies", and the T is linked with "information technology system". It is aimed at bridging the digital divide and aid economic development by fostering equitable access to modern communication technologies. It is a powerful tool for economic and social development.

In the literature, several authors have conceptualized ICT's. Also, [3] interpreted ICT's as technologies that facilitate communication and processing and transmission of information by electronic means. However, ICT's in a broader sense, refers to sets of tools, equipment, application, and service that are utilized to produce, capture, store disseminate and exchange information [4]. In the light of these definition, ICT tools that have great potential for application in Agricultural extension communication for rural development include: Radio and Television, Telephones, short Message service, The Web, search engines, Camera, Video, E-mail, Computers , CD – ROM, DVD, Web publishing printed materials Photographs, and workshops. All these are sources of Agricultural information available for farmer worldwide.

Information and communication technologies are rapidly transforming the face of agriculture in industrialized countries. Many if not most activities in the agricultural marketplace are now mediated by web- linked databases specifying prices, qualities, and quantities demanded.

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The face of developed agriculture has changed as ICT's have become increasingly critical to farmers and agricultural planners in the developed world. In economic terms, information has become so critical that it needs to be recognized explicitly as a fourth production factor in agriculture [5].

Methods and Materials

The Study Area

The study was conducted in Oluyole Local Government Area in Oyo state of Nigeria. Its headquarters is in the town of Idi Ayunre, Ibadan. The major occupations of the people of the area include farming and trading, farm produce processors, drivers, commercial motor cycle riders, hunting and pottery. Farming activities include fish farming, livestock farming and crop production.

Sampling Procedure and Sample Size

The primary data used for the study were collected through personal interview with the use of well structured questionnaires from the respondents. Multistage sampling technique was used by first selecting. Four villages from the local government area were randomly selected. The total numbers of respondent used were 1000.

Method of Data Analysis

Data were analyzed using descriptive and inferential statistics. The Logit and Probit model was used to determine the effect of the independent on the dependent variable. The model is explicitly stated as:

$$L_i n = In\left[\frac{P_n}{1-P_n}\right] = z = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_n x_n + e_i \ldots . (1)$$

$$\Pr(Y_n) = \frac{exp\beta_0 + \beta_{11} x_1 + \beta_{21} x_2 + \cdots + \beta_{k1} x_k}{\sum \exp(\beta_0 + \beta_{11} x_1 + \beta_{21} x_2 + \cdots + \beta_{k1} x_k)} \ldots \ldots (2)$$

Where:

Y_n= Use of ICT by farmer in the study area.

The dependent variables are as listed below:

x_1 =Age (yrs)

x_2 =Gender (1 for female, 2 for male, otherwise 0.)

x_3 =Marital status

x_4 =Education status

x_5 =Major occupation

x_6 =Farming experience

e =Error term

β_0 – β_6 are parameters to be estimated

Results and Discussion

The distribution of farmers with respect to their socio economic characteristics showed in Table 1. The result showed that 43.6% among the farmers have their age between 51 and 60 years. The mode age of the farmers was 52 – 60 years. It means that majority of the farmers were adult who were fully involved in farming as their childhood and take farming as their major occupation. It also showed that the farmers still have the ability and capability for farming. The result further shows that 78.4% of the respondents were male while only 21.6% were female. This could be due to the fact that men were more conversant with their environment and get first hand information when any technology is being introduced which they relate to their female counterpart who are into marketing of agricultural produce. According to [6], men have energy and ability to withstand the ruggedness and drudgery of farming than female.

Educational qualification represents a predetermined factor in information assimilation, dissemination and adoption of technologies among rural farmers in diverse socio-economy. The educational status a farmer does not only raise his productivity and income, but also increases his ability to understand and evaluate the information on new techniques and processes. Those with no formal education accounted for 10.8%, while those with primary, secondary and higher education constitutes 14.0%, 39.6% and 35.6% respectively. The result shows that there exists high level of literacy among farmers which might enhance high level of usage of ICTs in the study area. Majority (86.0%) of the respondents were married. The number of respondents has farming experience between 6 and 10years was 70.8%.

Farming accounts showed for the major (82.0%) occupation of the respondents in the study area followed by civil servants (12.0%) in Table 2. Few farmers engaged in private business such as trading, motorcycling, bicycle repairing, hairdressing. Therefore, it could be deduced that farming is the major occupation in the study area.

Table 1: Socio-economic characteristics of the respondents

Variable	Frequency	Percent	Mode	Std. Deviation
Gender				
Male	784	78.4		
Female	216	21.6	Male	0.413
Total	**1000**	**100.0**		
Age (years)				
Less than 20	0	0.0		
20-30	84	8.4		
31-40	204	20.4		
41-50	256	25.6		
51-60	436	43.6	Age 51-60	1.024
Greater than 60	20	2.0		
Total	**1000**	**100.0**		
Education				
Non formal education	108	10.8		
Primary	140	14.0		
Secondary	396	39.6	Secondary	0.965
Higher	356	35.6		
Total	**1000**	**100.o**		
Marital status				
Single	12	1.2		
Married	860	86.0	Married	0.603
Divorced	40	4.0		
Widowed	88	8.8		
Total	**1000**	**100.0**		
Experience (years)				
1-5	48	4.8		
6-10	708	70.8	6-10 years	0.504
Greater than 10	244	24.4		
Total	**1000**	**100.0**		

Source: Field survey, 2018

Table 2: Major occupation

Major occupation	Frequency	Percentage
Farming	820	82.0
Commercial	36	3.6
Motorcycle rider		
Trading	12	1.2
Civil servants	120	12.0
Others	12	1.2
Total	**1000**	**100.0**

Source: Field survey, 2018

It is indicated in Table 3 that all the respondents use radio as source of information. This was because radio remains the most important medium of communication in the rural areas due to its usefulness without electricity and it could cover large audience and also it is relevant to any strategy that involves rural development in Nigeria. It remains the most important medium for communicating with the rural and urban population of the countries. Also it could be observed that the cost of purchasing radio is minimal and could be use with battery where power supply is erratic or not available. This is particularly true in Africa where according to the British Broadcasting Corporation World Service (BBC-WS) estimated about 65 million radio receivers in 1996 and this appreciably increase with the use of other media like newspapers, television, mobile phone and so on till year 2000 [7].

It showed the constraints in the use of ICTs in Table 4. The major aim of information technologies is to know the problems encounter by the respondents while using any information technology newly introduced to them thereby providing a lasting solution to it. A majority (92.0%) of the respondents was faced with lack/fluctuation/inadequate of constant power supply, 82.0% were faced with inadequate infrastructure. More than half of the respondents (70.8%) were faced with inadequate knowledge about ICT. Other constraints include poor use of information (79.2%), lack of access time of information (70.4%) and rural poverty (86.8%).

Logit and Probit model analysis results of the variable which influenced the use of information and communication technologies in the study area (Table 5). Age was positive and significant ($p<0.01$), this implies that as farmers grow older there would be an increase in probability of using ICT. The farmers marital status was positive and significant ($p<0.05$). This implies that being married increases the probability of using ICT. The farmers' major occupation (farming) was significant ($p<0.01$) which implies that as farming experience increases, there is increase in probability in the use of ICT.

Table 3: Respondents usage of ICT

Variables	Frequency
Radio	1000
Internet	740
Mobile phones	954
Television	780

Source: Field survey, 2018

Table 4: Distribution of respondent according to constraints in uses of ICTs

Variable	Yes		No	
	Frequency	%	Frequency	%
Lack of constant power supply	920	92.0	80	8.0
Inadequate infrastructure to produce information	820	82.0	180	18.0
Barriers	496	49.6	504	50.4
Lack of awareness	320	32.0	680	68.0
Inadequate knowledge about ICT	708	70.8	292	29.2
Poor use of information	792	79.2	208	20.8
Lack of time access to information	704	70.4	296	29.6
Lack of knowledge about the use of internet	780	78.0	220	22.0
Government policy	864	86.4	136	13.6
Time wasting	424	42.4	576	57.6
High cost of equipment	492	49.2	508	50.8
Distance to the town	512	51.2	488	48.8
Accessibility to the village	420	42.0	580	58.0
Lack of network	652	65.2	348	34.8
Rural poverty	868	86.8	132	13.2

Source: Field survey, 2018

Table 5: Logit and Probit model analysis result of the relationship between socio-economic characteristics on the use of ICTs

Variable	Coefficient	P-Value	Remarks
Age	2.276	0.047**	S
Gender	2.801	0.143	NS
Marital status	3.891	0.021**	S
Educational status	2.874	0.144	NS
Major occupation	16.678	0.000*	S
Household size	2.42	0.000*	S
Farming experience	0.032	0.422	Ns

*Significant at 1% level of probability, ** Significant at 5% level of probability

Conclusion

The study examines the use of information and communication technologies by farmers in Oluyole, LGA, Oyo State, Nigeria. It was observed that the mode age of the farmers was between 51 and 60years, while majority (78.4%) were male and 21.6% were female. The study revealed that majority of the respondents did attend school while a high percentage (86.0%) of the respondents was married. The major ICTs usage by the respondents is Radio. It shows that lack of constant power supply, inadequate infrastructure to produce information, lack of awareness, lack of knowledge about the information among others were the constraints faced in the use of ICTs among rural farmers. Logit and Probit model show that the independent variables like age, marital status, and major occupation were positively related to the use of information communication technology and were significant at 0.01 and 0.05 level of probability. The marital status will enhance increase family labour while the major occupation (farming) which is positively related will improve food security and standard of living of the farmers.

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