Katalyst Publishing Group

Research Article

Journal of Current Trends in Agriculture, Environment and Sustainability

Awareness and Usage of Information and Communication Technologies (ICTs) among Farmers in Federal Capital Territory, Nigeria

Ebisike Chiazoka[1]*, Fadiji Taiye Oduntan[2] and Sennuga Samson Olayemi[3]

[1,2]Department of Agricultural Extension and Rural Sociology, University of Abuja, Nigeria

[3]School of Agriculture, Food and Environment, Royal Agricultural University, Stroud Road, Cirencester, Gloucester, United Kingdom, GL76JS

***Corresponding author:** Ebisike Chiazoka, Department of Agricultural Extension and Rural Sociology, University of Abuja, Nigeria; E-Mail: chiazokaflora@gmail.com

Received Date: 27 August, 2021
Accepted Date: 06 September, 2021
Published Date: 09 September, 2021

Citation: Ebisike Chiazoka, Fadiji Taiye Oduntan, Sennuga Samson Olayemi (2021) Awareness and Usage of Information and Communication Technologies (ICTs) among Farmers in Federal Capital Territory, Nigeria. Cur Tre Agri Envi Sust 2(1): 1-4.

Abstract

The purpose of this work was to examine awareness and usage of information and communication technologies (ICTs) facilities among farmers in Federal Capital Territory, Nigeria. Data were gathered through structured questionnaire from a total of 349 cassava farmers. Descriptive survey was the research design used on this study. The data were analyzed using frequency, percentage, and multiple regressions. The result shows that majority of the farmers are aged between 31-50 year (65.7%), majority are male (76%), 50% are married, majority of the farmers (85.7%) obtained formal education. Majority of the farmers have farming experience ranging from 5-15 years (74.4%), 38.1% have family size of 6-10 members. Only (41.7%) respondents have farm size of 2 hectares and above, and majority (82%) of the farmers belongs to a social organization. The regression result showed that there is a positive significant effect between awareness (t=0.000*) and usage (t=0.000*) of ICT by farmers and level of farming activities at 5% level of significance. The farmers should be encouraged to make use of ICT more in farming activities. This could be achieved through making ICT facilities available to farmers by government and non-governmental organizations. The ICT service providers in FCT can partner with the various farmers' associations and department of agriculture with aim of providing subsidized and efficient ICT service to the farmers.

Keywords: Information and Communication Technologies, Awareness, Usage, Farmers

Introduction

Information and Communication Technologies (ICTs) are any devices, tools that permit the exchange or collection of data through interaction or transmission. ICT is an umbrella term that includes radio, television, mobile phone, internet, electronic money transfer, etc. ICTs increase productivity, access to markets and adaptability to weather conditions in agriculture. More effective interventions are needed in agriculture because rising food prices pushed over 40 million people in to poverty since 2010 [1]. The growing global population which is expected to reach 9 billion by 2050, has heightened the demand for food and placed pressure on already- resources. Feeding that population will require a 70 per cent increase in food production [2]. Usage of ICT in agriculture is increasingly becoming steady in developing countries and this could facilitate self-reliance for national growth. Agriculture plays a vital role in the social and economic development of most African countries and is the main contributor to economic growth and stability [3]. Electronic-agriculture describes an emerging field focused on the enhancement of agricultural and rural development through improved information and communication processes. The e-agriculture disseminates useful information through Decision Support System (DSS), Management Information System (MIS) and Expert System (ES) by infusing the User Interface and Knowledge Management System [4].

Nigeria's agricultural sector is the most important economic vehicle given its capacity for wealth creation and general wellbeing. Information is one of the major resources to increase food production, and effective information delivery service greatly enhances agricultural development [5]. The sector draws upon infinite sources of widely dispersed, locally contextualized knowledge and a considerable body of research materials. It relies upon continuous flow of information from local, regional and world market [6]. Information and communication technologies (ICTs) are new technologies that cannot be ignored in Africa especially for development in all sectors agriculture inclusive. This is because, ICT is one of the main driving forces that can bring about development and change in this present digital age [7]. Emenari noted that, the great transformation in the lives of the people especially in the developing countries depends on

advances ICTs [8]. The rapid development of ICTs continues to have major influence on the livelihood of people across the world. Social research has shown that, adoption of ICTs can be a major fuel for economic and community development in rural areas [9].

Awareness of older ICTs like radio, print media, and television are more prevalent among farmers as compared with newer ICTs such as internet, cable televisions, social media [10]. Singh, Kumar and Singh, reported that Agriculture Information System (AIS) is a computer based information system which contains all the interrelated information which is of immense help to farmers in managing information and policy decision making [11]. The ICT devices that help facilitating farming activities encompassed applications such as; radio, television, mobile phones, computers, tablets and networking, hardware and software, satellite systems [12,13]. In the same way, reports that radio is extensively used to inform users on agricultural information's, including new and upgraded farming techniques, production management, and market information [12,14]. This shows that farmers may take advantage of using radio in the absence of technology especially rural farmers. The Internet and web-based applications are extensively used in sharing and dissemination of agricultural knowledge, marketing of goods and services. The study conducted by Ramli, Samah, Hassan, Omar, Bolong, and Shaffri have shown evident that ICT is an effective solution to problems that militate against the development of agricultural industry, such as weak marketing linkages, poor information management, low productivity, low income and lack of diversity [15]. Singh noted that the importance of ICT in agriculture by sharing agricultural information system to farmers at all level.

Usage of ICTs enables farmers to enjoy higher profits when food prices rise and to manage their farms in a sustainable manner. In the past, farmers sourced their propagating materials from close sources. These days, with technology, they can buy materials from a farmer in another state or international market. This is possible courtesy of an e-market portal and farmers' exchange platform provided by Harvest Plus Nigeria. These enable them to find where farmers are offering quality propagating materials across the country.

In spite of the international spread of ICTs, the availability, benefits and use impacts have been geographically uneven. In Nigeria for instance, there are various challenges such as high cost of ICT facilities, poor network connectivity, erratic power supply, lack of awareness of the benefits of ICT usage in agriculture, just to mention a few which create barriers to farmers owning and using ICTs. And this tends to make modern technology not available to local communities and farmers found in remote regions. Remote regions in Federal Capital Territory seem to have a poorly developed ICT infrastructure that enhances its agricultural information search. Although some farmers now have ICT gargets for information and data management, most of the gargets have limited or no internet access. Also, there is paucity of information on the problems and factors affecting the use of ICT by the farmers. As such, this study will seek to answer the following research questions:

i. What are the socio-economic characteristics of farmers?
ii. How does awareness of ICT affect level of ICT usage among farmers in the study area?

Objectives of the Study

The purpose of the study is assessing awareness and usage of information communication technologies, (ICTs) among farmers in Federal Capital Territory, Nigeria. To achieve this, the following specific objectives were formulated;

i. Describe the socio-economic characteristics of farmers in the study area.
ii. Ascertain how awareness of ICTs affects the level of ICT usage among the farmers in the study area.

Methodology

The study was carried out in the Federal Capital Territory, Nigeria. FCT is the capital city of Nigeria. FCT was founded in 1976, it was carved out from parts of the then state of Nassarawa, Niger and Kogi. It is within the middle belt region of the country. Four out of the six zones was sampled, namely; Abaji, Gwagwalada, Kuje, and Kwali, with the population of 148,600, 402,000, 246,400, and 218,400 respectively. The territory is made up of six agricultural zones namely; Abaji, Abuja Municipal Area Council, Bwari, Gwagwalada, Kuje, and Kwali. The territory is located just north of Lokoja the confluence of the Niger River and Benue River. It is bordered by the states of Niger to the West and North, Kaduna to the northeast, Nasarawa to the east and south, and Kogi to the southwest. Lying between latitude 9.0830c and longitude 7.5330c, FCT is geographically located in the center of the country. The Federal Capital Territory has a land mass of approximately 923,768 km². It is situated within the Savannah region with moderate climatic conditions.

The indigenous inhabitants of FCT are the Gbagyi (Gwari) as the major language, Bassa, Gwandara, Gade, Ganagana, Koro. The major stable crops grown in the area includes; cassava, yam, sweet potato, sorghum, maize, millet, onions, tomatoes, pepper, rice, groundnut, cowpea, etc.

The target population is the respondents who are farmers. The population of the study is the total number of farmers in the select zones totaling 3025, (FCT-ADP extension services report, 2017). Sample size was determined using Taro Yamane formulae.

Four out of the six zones was sampled. Farming communities that are involved in farming within the four zones were randomly selected. The method of research basically followed that of a well-structured questionnaire administered to farmers. Two blocks was chosen from each of the four selected zones making a total of 8 blocks. Two cells each was selected from the 8 blocks making a total of 16 cells. The random sampling procedure used in this survey is such that every member of the population has equal chance of being selected. This study used a variety of instruments in data collection which include a questionnaire, oral interviews and documentary review. The instruments are expected to provide precise and adequate data relevant to the objectives of the study.

Data was collected on socio-economic characteristics of the respondents, awareness and level of usage of ICT in farming. Both descriptive and inferential statistics tools were the analytical techniques employed in this research.

The regression model is specified as;

$Y = a + b_1X_1 + b_2X_2 + \mu$ …… (Equation 1)

Where:

Y = Level of ICT usage (Dependent Variable).

a = constant

b = regression coefficient

μ = Error terms

X_1 = Awareness of ICT usage

X_2 = Usage

Results and Discussion

The result in Table 1, shows that majority of the farmers are aged between 31-50 year (65.7%), majority are male (76%), 50% are married, majority of the farmers (85.7%) obtained formal education. Majority of the farmers have farming experience ranging from 5-15 years (74.4%), 38.1% have family size of 6-10 members. Only (41.7%) respondents have farm size of 2 hectares and above, and majority (82%) of the farmers belong to a social organization.

Table 1: Distribution of Respondents According to Socio-economic Characteristics (n = 328)

Socio-economic characteristics of the respondents	Frequency	Percentage
Age (Years)		
21 – 30 years	27	8.2
31 – 40 years	93	28.5
41 – 50 years	122	37.2
51 – 60 years	63	19.1
Above 60 years	23	7.0
Gender		
Male	249	76
Female	79	24
Marital Status		
Single	95	29
Married	163	50
Divorce	41	12.5
Windowed	29	8.5
Educational Qualification		
No formal Education	47	14.3
Quranic Education	61	18.54
Adult Education	54	16.5
Primary Education	89	27.1
Secondary Education	54	16.5
Tertiary Education	23	7.1
Years of Farming		
0 – 5 years	21	6.4
6 – 10 years	116	35.0
11 – 15 years	126	38.4
16 – 20 years	47	14.3
Above 20 years	18	5.5
Family Size		
1- 5 Member	95	29.0
6 – 10 Member	125	38.1
11 – 15 Member	98	29.9
Above 15 Member	10	3.0
Farm Size		
0.5 – 1	49	14.9
1.1 – 1.5	68	20.7
1.6 – 2	74	22.6
2.1 – 2.5	78	23.8
Member of Social Organization		
Yes	269	82
No	59	18

Effect of Awareness on Usage of ICTs by Farmers in the Study Area

Awareness of ICT facilities by farmers has a positive significant effect on ICT usage ($p< 0.01$). This indicates that the level of ICT usage in the studied area will increase by 109% for every 1% increase in awareness of ICT. This implies that there is a positive significant effect on awareness of ICT by farmers and level of ICT usage in the studied area ($t= 10.95685$). This agrees with Aker, 2010 that majority of the respondents are aware of the potentials, opportunities, and benefits of ICTs as a means of receiving agricultural information. Aker, 2010 also observed that over the past decade, mobile phone and other ICT tools awareness has spread rapidly in developing countries of Africa, Asia and Latin America. Mobile phone significantly reduces communication and information costs to poor farmers in developing countries. This not only provide new opportunities for rural farmers to obtain access to information on agricultural technologies but also to use these media tools in agricultural extension systems.

Usage of ICT by cassava farmers is positively significant ($p < 0.01$) in the study area. This indicates that the level of farming activities in the study area will increase by 78% for every 1% increase in the usage of ICT. This concurs with Mtega and Msungu, 2013. ICT applications such as calls and Short Messaging Services have been found to be used often by farmers. The regression result in Table 2, shows a high coefficient of regression determination (R2) of 71%. This means that there is a 71% variation in the dependent variable (level of ICT usage), which was caused by changes in the independent variables (awareness and usage) included in the regression model. The influence of the independent variables on the dependent variable was shown by the value of F-statistics (120), which was highly significant at 5% level of significance (p-value = 0.000000).

Table 2: Effects of awareness on usage of ICT by cassava farmers in the study area

Variable	Coefficient	Stan Error	t-stat	p-value
Constant	0.193697	0.229536	0.843863	0.4029
Awareness	0.584716	0.053365	10.95685	0.0000*
Usage	0.501922	0.064057	7.835510	0.0000*

t* is significant at 10% (0.01)
$R^2 = 0.714 = 71.4\%$
Adj $R^2 = 0.708 = 70.8\%$
F-Statistic = 120.05 (p-value = 0.000)

Conclusions

From the result of the analysis of this survey, it is concluded that most of the cassava farmers in FCT are within the economic active age, has low educational qualification even though educated, have adequate farming experience with large family size and small farm size. The study concluded that cassava farmers are aware of as well as use ICT facilities such as GSM, radio set, television, print media, internet/e-mail, computer, social media. Information Communication Technologies should be accessible, not only the physical availability of communication equipment and methods but also the existence of the right conditions for their use in getting

information. These should include ease of use of the technologies, regular electric power supply and improving network connectivity also reducing its cost. Overcoming these challenges would ensure increased use of ICTs for agricultural activities.

The study found out that awareness of ICT and the level of usage of ICT impact positively in farming activities in FCT.

Recommendation

ICT facilities should be made accessible and affordable to farmers in the rural ears in order to increase the usage of ICT in these areas. Infrastructural facilities, internet connectivity should also be improved in these local areas. This will encourage more farmers in accessing information about new innovations, adopting them, thereby increasing productivity.

References

1. Work Bank (2011) ICT in agriculture: connecting smallholders to knowledge, network, and Institution, world 64604: 424.

2. FAO (2011) The role of Information and Communication Technologies (ICTs) in the improvement of Agricultural value chains.

3. Bhalekar P, Ingle S and Pathak K (2015) The study of some ICT projects in agriculture for rural development of India 76-78.

4. Behera BS, Das TK, Jishnu KJ, Behera RA, Behera AC, et al. (2015) E Governance Mediated Agriculture for Sustainable Life in India. Procedia Computer Science 48: 623-629.

5. Olaniyi OA (2013) Accessibility and relevance of ICTs among cassava farmers in Nigeria. African Journal of Agricultural Research 8: 4514-4522.

6. Akinbile LA and Alabi OE (2010) Use of information and Communication Technologies (ICTs) among fish farmers in Oyo State Nigeria. Journal of Agricultural Extension 14: 25-35.

7. Olaniyi OA and Adewale JG (2014) Women farmers' perception and utilization of Marketing information on cassava in Ogun State Nigeria. Journal of Agricultural Extension 18: 25-37.

8. Emenari OG (2004) Internet broadcasting: Possibilities and challenges In: Media Technology, issues and trends. Uwakwe, O (ed) Afrika-link Books. Enugu, Nigeria 36-47.

9. Osiakade IL (2010) Determinants of use of information and communication technologies among agricultural researchers in Edo State, Nigeria. Int J Appl Agric Apicult Res 6:82-90.

10. Fawole OP, and Olajide BR (2012) Awareness ans Use of Information Communication Technology by Farmers in Oyo State, Nigeria. Journal of Agricultural and Food Information 13: 326-337.

11. Singh KM, Kumar A, Singh RKP (2015a) Role of Information and Communication Technologies in Indian Agriculture: An Overview.

12. Munyua H, Adera E, and Jensen M (2008) ICT-Applications to Align Global Resources with a Growing Population. Grand Societal Challenges in information systems research and education 2: 11-15.

13. Pande N and Deshmukh P (2015) ICT: A Path towards Rural Empowerment through Telecommunication, Egovernance, and E-Agriculture. IBMRD's Journal of Management & Research 4: 47-54.

14. Yimer M (2015) The Role of ICT for Good Governance and Agricultural Development in Ethiopia: Local Evidence from Southern Ethiopia. International Journal of Political Science and Development 3: 30-39.

15. Ramli SA, Samah BA, Hassan MS, Omar SZ, Bolong J, et al. (2015) Potential Benefits of ICT for Youth Agro-based Entrepreneurs in Malaysia. Journal of Applied Sciences 15: 411.