

UTILIZATION OF INFORMATION AND COMMUNICATION TECHNOLOGIES AMONG CROP FARMERS IN EDO STATE, NIGERIA

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ABSTRACT

Effective communication of innovations is paramount to boosting of agricultural productivity especially in the rural areas where most of the agricultural activities take place. Technical information can be promptly and effectively communicated to farmers through the use of Information Communication Technology (ICT) tools such as radio, Television sets, computers and mobile phones. This study was conducted in Uhumwonde and Orhionmwon Local Government Areas of Edo State. Specifically, the study described the socio-economic characteristics of the respondents, evaluated the level of access, availability, and determined the usage of ICT tools among respondents as well as identified the constraints faced by respondents in the use of ICT tools. Eighty (80) farmers were sampled from four (04) rural communities and were interviewed using questionnaire. The results revealed that more than half (60%) of the respondents had no access to ICT tools. Surprisingly, it was found that 50% of the farmers had never used any of these ICT tools while 72.5% had no knowledge of the usage of ICT tools. It was however encouraging to find that the rural farmers used ICT tools to access information on weather (24.5%), market situations (35.8%), sources of credits (17.0%), government policies relating to agriculture (5.7%), other information on crops and livestock (17.0%) as well as new farming techniques. The major challenges faced by the respondents in the usage of ICT was erratic power supply (42.5%), lack of technical know-how in the use of the ICT tools (33.8%) and unavailability of ICT tools (23.8%). The study recommended that government should give priority to increased steady generation and supply of electricity; training/workshops on the use and importance of ICT in agriculture should be organised by the extension delivery organisations and prompt and efficient implementation of government policies.

KEYWORDS: Utilization, Information, Communication Technologies, Crop Farmers

INTRODUCTION

The role of information and communication technology (ICT) in agricultural development cannot be overemphasized because it forms the

channel or medium through which information on new technologies and innovations gets to farmers (Importance of Communication, 2017). Information and communication have always been

deployed in agriculture for centuries; people have grown crops, raised livestock and fish as they sought for several information from various establishments in the industry.

Farmers in a village may have planted the same crop for centuries, but over time, weather patterns and soil conditions change; epidemics of pests and diseases also come and go. Updated information allows the farmers to cope with the trend in technology and even benefit from these changes. Providing such knowledge can be challenging because of the highly localized nature of agriculture. It means that such information must be tailored specifically to distinct conditions (George *et al.*, 2011).

Information and Communication Technology (ICT) is the use of technological tools in the collection, arrangement, and dissemination of information as well as the re-arrangement, management, manipulation, and transfer of such information. All these ensure the ease of access to information, quicker dissemination of information and even the manipulation of such information to suit different needs (Mba, 2016).

Promoting better information access to improve the socio-economic conditions of farmers has always been lacking in the nation's agricultural sector and this has hindered productivity and agricultural development. FAO (2011) stressed that exchanging information is critical for the stakeholders in agriculture value chain in order to reduce and bridge the gap in information and communication as well as to reduce the vicious circle of poverty. Furthermore, the role of ICTs

in accessing relevant information in order to enhance food security and support rural livelihoods have also been increasingly recognized and officially endorsed at the World Summit on the Information Society (WSIS) 2003-2005 (IICD, 2007).

Accurate and timely information regarding areas of food surplus and shortages driven by the vagaries of climate can be facilitated through ICT (Abdulsalam *et al.*, 2016). Such use can contribute to improved food management and food security. It is now needful to know that agricultural growth is therefore, essential for fostering economic development and feeding the growing population. The one tool which can be used to boost agricultural production is the engagement of the potentials of ICT tools (Datt and Ravallion, 1996).

Mtega and Msungu (2013) established that ICTs are suitable for the provision and dissemination of agricultural information among farmers due to several features they offer in term of portability, infrastructural coverage and affordability. Rural settlements especially in developing countries are however characterized with high levels of poverty, low lively hoods and dearth of infrastructures (such as electricity) which seriously impedes the usage of ICT tools especially in the agricultural sector in Nigeria.

This study investigated the utilization of information and communication technology among farmers in Edo State, Nigeria. Specifically, the study described the socio-economic characteristics of rural farmers in the study area; evaluated the level of access, availability, and usage

of ICT tools among farmers as well as identified challenges faced by farmers in the use of ICT tools.

Objectives of the Study

The broad objective of this study is to evaluate the utilization and constraints of information and communication technology in agricultural development in Edo state.

Specific Objectives

- to identify the socio-economic characteristics of respondents in the study area.
- to evaluate the level of access, availability, and usage of ICTs among farmers.
- to examine the constraints faced by farmers in the use of ICTs

Hypothesis

Ho1: There is no significant relationship between the usage of ICT tools and the socio-economic relationship (Age, Sex, Education level, religion, Marital Status) of the respondents.

Ho2: There is no significant relationship between ICT usage and challenges faced in the rural areas.

RESEARCH METHODOLOGY

Study Area

The study was carried out in selected Local Government Areas of Edo State, Nigeria. Edo State lies within the geographical co-ordinates of latitude 05° 44' North and 07° 34' North of the Equator and longitude 05° 04' East and 06° 43' East of the Greenwich meridian. The State is divided into three senatorial districts namely; Edo North (comprising of Etsako Central, Etsako East, Etsako West, Akoko Edo, Owan West and Owan East LGAs), Edo South (comprising of Egor, Oredo,

Orhionmwon, Ovia North East, Ovia South West, Ikopba-Okha, and Uhumwonde LGAs) and Edo Central (comprising of Esan Central, Esan North East, Esan South East, Esan West, and Igueben) making up a total of eighteen (18) Local Government Areas (LGAs) and Benin - City as its capital. Edo State has a tropical climate characterized by two distinct seasons: dry season and wet season with average temperatures of about 28°C in the dry season and about 25°C in the wet season (Edo State Government, 2018).

The study was carried out in selected Local Government Areas in Edo South Senatorial district which includes: Uhumwonde and Orhionmwon Local Government Areas. Uhumwonde Local Government Area has its headquarters in the town of Ehor. It has an area of 2,033 km² and a population of 120,813 at the 2006 census (NPC, 2010). The other Local Government Area under-studied, Orhionmwon, has its headquarters in the town of Abudu. It has an area of 2,382 km² and a population of 206,717 at the 2006 census (NPC, 2010). The study areas were selected because of the presence of high concentration of farming related activities.

Sampling Technique and Sample Size

A three stage multistage sampling technique was employed in sampling the respondents for this study. Firstly, two (2) local governments were purposively selected from Edo South Senatorial district based on rurality and high concentration of farming related activities. The second stage involved the random sampling of two rural communities from each of the two selected local government areas. The

third stage involved random sampling of 20 respondents from each of these selected four (04) communities and thus giving a total of 80 respondents that was sampled for this study. The information elicited in this study was predominantly obtained through interview schedule.

RESULTS AND DISCUSSION

Socio-Economic Characteristics of the Farmers

The mean age of the respondents in the study area was found to be approximately 48 years (Table 1); this implies that a considerable number of the respondents were below 50 years of age which agrees with to the findings of Okwu and Iorka (2011) who found that the age group between 21 to 40 years was the most prevalent among farmers. This means that the active group is engaging in farming as their major economic activity and they are the ones who are likely to be more familiar with the usage of ICTs facilities.

Table 1 reveals that both males and females were fairly involved in farming activities in the study areas. This corroborate with the findings of Scott *et al.* (2005) who discovered that both males and females were fairly participating in agricultural production because of the increase in responsibilities to both parties. Their involvement in agricultural activities may be due to the fact that both males and females depend on farming as an activity that can help provide the resources that could meet the family needs. It was also revealed that the males were slightly more involved in farming (about 54 %), it implies that the males are usually the ones likely to possess ICTs facilities in the study area.

Table 1 also shows that married people (58%) dominated the farming activities in the area than the female. Since farming is a major economic activity for most of people in rural areas, the married ones participate in farming activities so as to cater for their family needs. Table 1 also shows that the average household size was 8 persons which implies that more hands would be available for family labour (Daudu *et al.*, 2005).

Education plays a significant role in skill acquisition and enhances one's ability to understand and apply technological innovations as well as ability to plan and take risks. Table 1 further shows that about 87% of the farmers had at least one level of formal education; only about 13% had no formal education. Worthy of note is the fact that the level of farmer's education could make them to be more responsive to the usage of ICT tools. Sometimes low level of education can lead to low ability in accessing information as compared to the literate ones. Okwu and Iorka (2011) asserted that literate farmers can effectively use ICT tools to access information. However, rural farmers with higher level of education are likely to be more efficient in the use of resources especially information.

Table 1 also reveals that the farmers in the study area were predominantly small holders with about 66.3% having farm size of less than one hectare. This supports the submission of FAO, (2018) that a high percentage of farmers in Nigeria are smallholders owning average farm size of below one hectare of land. Results also revealed that majority (74%) of the farmers had farming experience of less than 10

years. This finding implied that a good number of the respondents are relatively new to farming and would be more open to adopting innovations emanating from new information. According to Agwu *et*

al. (2008) and Obinne, (1991), long farming experience is an advantage for increase in farm productivity since it encourages rapid adoption of new farm innovation.

Table 1: Distribution of Respondents according to Socio - economic Characteristics

Variable	Categories	Frequency	Percentage	Mean (\bar{X})
Age (Years)	20-30	19	23.8	$\bar{X} = 48.00$ years
	31-40	12	15.0	
	41-50	15	18.8	
	51-60	17	21.3	
	61-70	9	11.3	
	70 and above	8	10.0	
	Total	80	100.0	
Sex	Male	43	53.8	
	Female	37	46.3	
	Total	80	100.0	
Education level	No formal education	10	12.5	
	Primary education	48	60.0	
	Secondary education	19	23.8	
	Tertiary education	3	3.8	
	Total	80	100.0	
Marital Status	Married	46	57.5	
	Single	14	17.5	
	Divorced	9	11.3	
	Widow/widower	11	13.8	
	Total	80	100.0	
Farm size (Ha)	< 1	53	66.3	$\bar{X} = 1.04$ Ha
	1 – 2	22	27.5	
	>2 – 3	4	5.0	
	>3 – 4	1	1.3	
	Total	80	100.0	
Household size	1-5	30	37.5	$\bar{X} = 8.00$ persons
	6-10	37	46.3	
	11-15	11	13.8	
	16-20	2	2.5	
	Total	80	100.0	
Farming experience (years)	1 – 5	28	35.0	
	6 – 10	31	38.8	
	11- 15	6	7.5	

	16 – 20	11	13.8	
	21 – 25	1	1.3	
	26 – 30	3	3.8	
	Total	80	100.0	$\bar{X} = 9.60$ years
ICT Training	Yes	22	27.5	
	No	58	72.5	
	Total	80	100	

Availability of ICTs Facilities and Accessibilty to Agricultural Information

Results in Figure 1 revealed that radio (36.4%) was the ICT tool most available and accessible to the sampled respondents. This is closely followed by mobile phones (33%). This could be because radio sets are relatively cheaper than other ICT tools and many radio stations are widely spread throughout

the area of study. This finding is in consonance with Olaleye *et al.* (2009) who opined that radio is the number one source of agricultural information due to its affordability, timeliness of information dissemination, appropriate airing time and quality of agricultural information. The result further suggests that availability and accessibility to ICT tools were rather low as less than 50% of the farmers owned them.

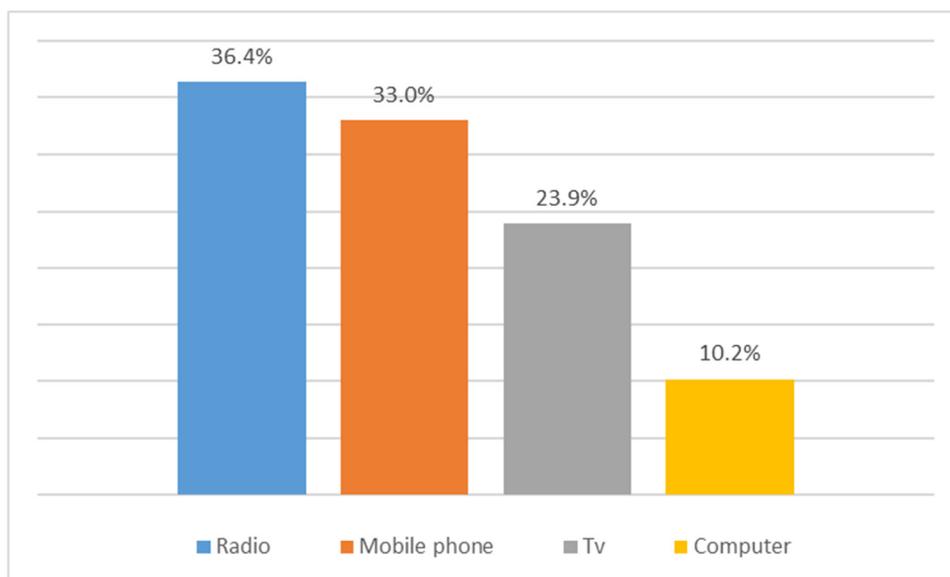


Fig. 1: Bar Chart showing Availability of ICT Tools

Accessibility of Agricultural Information through ICTs tools

Table 2 shows that less than one-half (47.5%) had access to agricultural information through ICT tools while

52.5% had no access. This is probably because ICT tools are relatively unavailable to the rural farmers and little or no technical know-how on the usage of these tools to access

agricultural information. This finding is in agreement with Islam *et al.* (2017) who reported that the overall utilization of ICT tools for agricultural extension services in Bangladesh was very low.

Table 2: Distribution of Respondents according to Accessibility of Agricultural Information through ICT tools

Access to Agricultural Information	Frequency	Percentage
Yes	38	47.5
No	42	52.5
Total	80	100.0

Frequency of ICT tools Usage

Results presented in Table 3 indicates that 48.8 % of the respondents in the study area never had access to the used of any ICT tool; However 25% of the respondents used ICT tools weekly while 23.8% use them monthly.

Table 3: Distribution of Respondents according to Frequency of ICT tools Usage

Frequency of usage	Frequency	Percentage
Weekly	20	25.0
Once in a Month	19	23.8
Twice in Six Months 3	2	2.5
Never	39	48.8
Total	80	100.0

Training on How to Use ICTs

Table 4 shows that a larger percentage (73%) of the respondents

had no ICT proficiency training on the use of ICT tools. However lower percentage of the respondents (27.5%) had training on ICT tool usage to source agricultural information. This corroborates Islam *et al.* (2017) that earlier reported that there is a positive relationship between training exposure of farmers to ICT tools and farmers utilization of ICT tools in Agricultural extension services.

Table 4: Training on ICT Tools Usage

ICTs Training	Frequency	Percentage
Yes	22	27.5
No	58	72.5
Total	80	100

Distribution of Respondents according to Kind of Agricultural Information Accessed through ICT Tools

Result in table 4 shows that most of the respondents (35.8%) used their ICT tools to access current market information which corroborates with the report by IICD (2006) which states that market information is about best time of when to buy, sell goods and at the right place. This is instrumental in making decisions about future crops and commodities. Respondent (24.5%) also used ICT tools in accessing information on weather conditions. This agrees with Churi *et al.* (2012) that asserted that information on climate is a very important input to farming decisions, especially in rain-fed agricultural systems.

Accessed through ICTs

Table 4: Distribution of Respondents according to Kind of Agricultural Information

Agricultural Information	Frequency	Percentage
Current market information	19	35.8
Weather information	13	24.5
Availability of credit, subsidies and grants	9	17.0
Others (new farming techniques/strategies in crop and livestock production)	9	17.0
Government policies relating to Agriculture	3	5.7
Total	53	100.0

*Multiple responses from 19 respondents

Challenges Faced In the Utilization of ICT Tools

Figure 2 shows the major Challenges Faced in Utilization of ICT tools to include poor rural electrification leading to erratic and poor supply of power (42.5 %), no knowledge of the usage of ICT tools even when available (33.8 %), and unavailability of ICT tools was experienced by 23.8 % of the respondents. This finding corroborates

the submission of Arokoyo (2003) who asserted that electricity and power supply are absolute prerequisite to the use of contemporary ICT systems. Lack of technical know-how was also a notable impediment to maximum use of ICT tools in sourcing for agricultural information which is fundamental to its bringing real development to the rural communities and farmers.

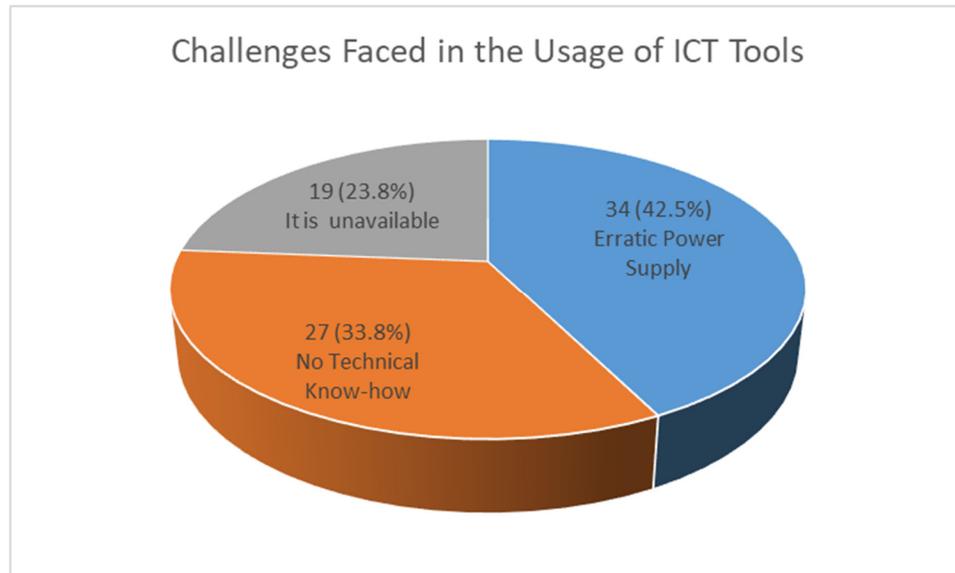


Fig. 2: Pie Chart showing Challenges Faced in the Usage of ICT Tools

CONCLUSION

This study has revealed that information sharing is crucial to the development of Agriculture. The use of ICTs tools such as radio, television and mobile phones were very useful in the dissemination of agricultural information in the study areas. Quality information shared promptly, well received and utilized enhanced agricultural production process; however lack of electricity was an impediment. The use of ICT tools contributed greatly to boosting the access to reports on market situation which would have ultimately enhanced revenue generation for the farmers, stabilize food security, improve the living standard of the farmers and positively contribute to the nation's Gross Domestic Product (GDP). ICT tools were indeed beneficial to the farmers because information acquired further boost their productivity index. Among the socio-economic characteristics tested were marital status, age level, education, sex, religion and these positively influenced their effectiveness in the utilization of ICT tools.

RECOMMENDATIONS

Based on the findings from the study, the following policy recommendations were made:

1. Government should ensure increased and steady electricity supply in rural areas where the bulk of agricultural activities take place; when done, it will facilitate processing of produce which improves value addition and increase profitability. It will also encourage the youth to remain in the rural areas.
2. Training workshops should be organised by the government, non-governmental organizations and other agricultural extension delivery agencies on the use and importance of ICT in agriculture should be organized for farmers. This will assist farmers to be acquainted with the usage of ICT tools which could culminate into better information flow and increase productivity.
3. Government policies on communication technology should be properly implemented by those saddled with such responsibilities; if done it could improve service delivery, improve accessibility and usage of ICT tools.

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