

INFORMATION AND COMMUNICATION TECHNOLOGY USAGE AMONG MEMBERS OF CASSAVA GROWERS ASSOCIATION IN OYO STATE: IMPLICATION FOR AGRICULTURAL EXTENSION SERVICES

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Abstract

Information and Communication Technology (ICT) for extension services involves the transfer of practical knowledge and exchange of market information through ICT platforms. This study analysed the ICT usage among members of cassava growers' association in Oyo State. Purposive and Random Sampling techniques were used in selecting 110 respondents for the study. This article discussed the role of ICT usage in ensuring food production, food security and effective extension service delivery. It was revealed that the mean age of the respondents was 43 years, and they were predominantly males (66.36%), moderately educated (67.27%), well experienced in farming (77.27%) and own ICT tools (91.82%). It was also revealed that the respondents' perceived level of ICT adequacy in disseminating information were majorly on conflict resolution issues, and credit and loan access (\bar{x} = 3.4). The respondent's most frequently used ICT tools include mobile phones (98.18%) and radio (93.63%). The study further showed that the use of ICT is constrained by erratic power supply (\bar{x} = 3.40), High cost of ICT hardware and software (\bar{x} = 3.23). The study concludes that ICT is a potent tool for reaching farmers and solving the inadequacies emanating from poor farmer-extension agent ratio. The study recommends that extension agent should explore ICT more in disseminating information to farmers.

Keywords: Agricultural Extension Services; Cassava Growers Association; ICT; Usage.

I. INTRODUCTION

Millions of smallholder farmers are the foundation of agriculture and food supply chains in most developing countries. Yet, the agricultural produce of these farmers are not sufficient to meet the food demands of these countries. Inadequate information about critical inputs and knowledge about modern and efficient agricultural practices contribute to low farm yields (CTA, 2000). The Academy for Educational Development and Win Rock International (2003) opined that, Information and Communication Technology (ICT) can assist extension services in the transfer of practical knowledge and exchange of market information through ICT platforms. While traditional media such as radio and television continue to play a major role in extension and development communication, growth in the use of internet and mobile technology for communication is perceived to be a game changer in the extension service space. ICT extension service providers offer a wide range of information services to the small holder farmers, from production to post-harvest stages. They help farmers to understand and adopt agricultural best practices on crop selection, input management, land selection and preparation, finance, transportation, packaging, processing, and marketing of the agricultural produce (Greenridge, 2003; Lightfoot, 2003; Shirke and Rachool, 2013).

Information and Communication Technology can facilitate wide dissemination of relevant information at the right time in a cost-effective manner. The increasing penetration of mobile phones and internet, more specifically budget friendly smart phones can support a business model that expands information sources and farmers' ability to access the same (Arokoyo, 2003; Kimaro, Makandiwa and Mario, 2010). Such solutions have significant impact in the rural and remote regions of developing countries with large farmers' population.

Sustainability and productivity of the agricultural sector depends on the quality and effectiveness of extension service delivery among other factors. Matanmi and Olabanji (2013). explained that there is gap between agricultural (farmers) performances and available research information in developing

countries. This gap can be attributed to poor extension service delivery as well as limited interactions among major actors in the extension service. For effective farming practices, teaching and learning experience in this century, it is necessary that farmers alike possess the relevant skills for operating ICTs' tools (Jagboro, 2003).

This study investigated the extent of Information Communication Technology usage among cassava growers in the study area, type of ICTs owned by the farmers', farmers' awareness of the educational roles of ICTs and constraints inhibiting the use of ICT in information dissemination in the study area.

II. METHODOLOGY

The study was conducted in Oyo State. Oyo state is one of the three states carved out of the former Western state of Nigeria in 1976. The state covers approximately 27,249 square kilometres in land area and a population of 4.5million (NPC, 2006). Agriculture is the major source of income for the larger number of the people of the State. It is bounded in the south by Ogun State and in the north by Kwara State, in the west; it is bounded partly by Ogun State and partly by the Republic of Benin and in the East by Osun State.

The state lies in the equatorial rainforest belt and the rainfall around this area varies from 155mm to 1800mm per annum. There is distinct wet season from April to late October and dry season from November to March, the areas have a mean annual temperature of 26.2 degree Celsius, and the humidity is high between July and December and low between December and February. The luxuriant forests are arranged in two or three layers consisting of undergrowth, medium higher trees and tall tree. The variety of plant species found here is one of the richest in the world (CDU Bulletin, 2007). The forest zone with high humidity favours the cultivation of tree crops such as Cocoa, Kola, Mango, Citrus and oil palm as well as arable crops like maize, cassava, Yam and Rice.

The State has 33 Local Government Areas. For ease of administrative conveniences, Oyo State Agricultural Development (OYSADP) grouped the local government areas (LGAs) into four agricultural zones based on ecology and farming system. These include Ogbomosho Zone, Oyo Zone, Saki Zone and Ibadan/ Ibarapa Zone.

A three stage sampling technique was used for this study. First stage involved a purposive selection of Ogbomosho zone with a preponderance of cassava producers., the second stage involved stratified sampling of 60% of the five extension blocks and the third stage involved random sampling of respondents from Oriire (37), Ogo Oluwa (37) and Suruulere (36) agricultural extension blocks respectively making a total of one hundred and ten (110) respondents for the sample size. Data were collected with questionnaire and analyzed with descriptive statistics and Logit regression model. Specifically, objective 1 (socio-economic characteristics was realized using frequency counts, percentages and means. Similarly, objective 2 (Perceived level of ICT adequacy in disseminating information) was measured using likert scale of strongly agreed (5), agreed (4), undecided (3), disagreed (2) and strongly disagreed (1). The frequency of ICT usage was measured using yes or no options. To ascertain the awareness of farmers on ICT educational roles (objective 4) a 3- point Likert-type scale of very aware (2), fairly aware (1), and not aware (0) was employed. Responses were classified and mean calculated as: $(2+1+0)/3 = 1$. Any mean of 1.00 and above was regarded as aware. To ascertain constraints to the use of ICT among cassava farmers (objective 5), a 5 -point Likert scale of strongly agree (5), agree (4) undecided (3), disagree (2) and strongly disagree (1) was used. Responses were classified and mean calculated as: $(5+4+3+2+1)/5 = 3.00$ which was used as a bench mark for decision rule. Decision rule for serious and not too serious constraints. T-test was used to analyse the stated hypothesis at 0.05 level of significance.

III. RESULTS AND DISCUSSION

Socio-economic characteristics of respondents

The result in Table 1 revealed that more than half (66.36%) of the respondents were males while about 33.64% were females. The age distribution ranges from 30 to 68 years, averagely, the respondents were aged 43 years with a modal age of 49 years. This implies that the respondents were still young. At this Age, they are expected to be economically active, highly motivated and innovative (Matanmi and Olabanji, 2013). A reasonable proportion (67.27%) of the population had primary school education. Most of them (93.64%) were married with an average household size of about 6 members. This finding tallies with that of Oyekanmi and Okeleye (2007) that, high percentages of cassava farmers in Southwest zone are literate. This attribute is expected to influence their perception about ICT usage. The mean years of farming experience of the respondents was 21 years. With this years of experience in farming, they have been exposed to various challenges that

could facilitate their willingness to learn new things and use research findings to better their practices. Also, the result revealed that majority (91.82%) of the respondents own ICTs tool. This gives them access to information sources.

TABLE 1: Distribution of the Socio Economic Characteristics of the respondents

Variables	Frequency	Percentage	Mean
Age	18	16.36	
30-40			
41-50	79	71.80	43 years
51 and above	13	11.80	
Sex			
Male	73	66.36	
Female	37	33.64	
Educational Qualification			
Primary School	74	67.27	
'O' level	20	18.18	
NCE/OND	08	7.27	
B.Sc. and Above	05	4.55	
Others	03	2.73	
Marital Status			
Single	07	6.36	
Married	103	93.64	
Household size	02	1.81	
1-5	65	59.09	6 persons
6 and above	45	40.91	
Farming experience			
Below 10years	04	3.64	
11-20 years	09	8.18	21 years
21-30years	85	77.27	
31 and above	12	10.91	
Ownership of ICTs			
Yes	101	91.82	
No	09	8.18	

Source: Field Survey, 2017

Perceived level of ICT adequacy in disseminating information

Table 2 shows the distribution of the respondents based on their perceived adequacy of information received through various ICT medium. Issues on conflict resolution and information on Loan and credit services ranked 1st with weighted mean score of 3.45. Weather information updates ranked 2nd ($\bar{x}=3.38$), market and market updates ranked 3rd ($\bar{x}=2.82$), information relating to agricultural practices ranked 4th ($\bar{x}=2.72$), Information relating to Government. Agricultural Policy ranked 5th ($\bar{x}=2.44$), and Improved crop availability ranked 6th ($\bar{x}=2.54$). Considering the overall mean of 3.00, the finding indicates that, ICTs are perceived adequate. The fact that, ICT is relevant to marketing of cassava produce is in line with the findings of Usman et al. (2012) who stated that, marketing information is one of the most relevant ICTs services which could be offered to farmers in Nigeria.

Table 2: Distribution of respondents based on their perceived level of ICT adequacy in disseminating information

S/N	Information received	Mean	Rank	Remark
1.	Market and market updates	2.82	3rd	Low
2.	Issues on conflict resolution	3.45	1st	High
3.	Agricultural practices	2.72	4th	Low
4.	Improved crop availability	2.54	6th	Low
5.	Weather – Information updates	3.38	2nd	High
6.	Loan and credit services	3.45	1st	High
7.	Information relating to Govt. Agric. Policy	2.64	5th	Low

Overall Mean

3.00

Source: Field Survey 2017

Strongly Agreed=5, Agreed=4, Neutral=3, Disagreed=2, Disagreed=1

Frequency of ICTs Usage

The result showed that mobile phones (98.18%) were the most frequently used ICTs among members of the cassava growers' association followed by radio (93.63%), television (77.27%) and laptop computers (45.46%) others includes desktop computer (18.18%), video (16.36%), digital camera (10.90%) and Electronic music device,(e.g., mp3 player, ipad, etc) (8.18%). The possession of smart phones by the farmers is an indication that e-extension service can thrive in the study area. This can conveniently replace the extension agents who are inadequate and inefficient. Arokoyo (2005) noted that ICTs including mobile telephone, innovative communicating radio and television programmes, videos shows, web portal, rural telecasters, videoconference, offline multimedia CDs, open distance learning etc can help expand outreach to a large number of farmers. Increased use of ICTs could also offer a solution to resource and capacity issues within the agricultural sector as there may be less need to increase the number of extension staff.

Table 3: Distribution of respondents based on most frequently used ICTs

Types of ICTs	*Frequency (n)	Percentages (%)
Television	85	77.27
Desktop computer	20	18.18
Laptop computer	50	45.46
Radio	103	93.63
Mobile phone	108	98.18
Electronic music device,(e.g., mp3 player, ipad,etc)	09	8.18
Digital camera	12	10.90
Video	18	16.36

*Multiple choice questions

Source: Field survey 2017

Awareness of ICT's Educational Roles

Table 4 revealed that the level of awareness of the respondents on ICTs educational roles. Majority of the farmers indicated awareness that Information relating to government agricultural policies can be accessed through ICTs (\bar{x} =1.71), Agricultural practices can be learnt from electronic media (\bar{x} =1.54), ICTs can foster farmers' commitment to learning(\bar{x} =1.57), ICTs can offer interactive opportunities among farmers from various geographical location (\bar{x} =1.51), Information on weather forecast is accessible on ICT platforms (\bar{x} =1.70), ICTs keep farmers updated (\bar{x} =1.56) and that it makes farmers have better view of what they do (\bar{x} =1.68) while they indicated no awareness that Service providers locations can be accessed via ICTs (\bar{x} =1.47). This finding align with that of Olumirin (2008), who asserted that it is when an individual is aware of the principles and content policy that such an individual can cultivate the right type of attitude that will result in improved and productive use of the message.

Table 4: Distribution of the respondents based on their awareness of ICT's educational roles

Statement	VA	FA	NA	Score	WMS	Remark
	Freq(%)	Freq(%)	Freq(%)			
Information relating to Government Agricultural Policies can be accessed through ICTs	20(18.2)	38(34.5)	52(47.3)	188	1.71	Aware
Service providers locations can be accessed via ICTs	10(9.1)	32(36.4)	68(54.6)	162	1.47	Not Aware
Agricultural practices can be learnt from electronic media	15(13.6)	30(27.3)	65(59.1)	170	1.54	Aware
ICTs can foster farmers'	13(4.3)	37(47.3)	60(48.3)	173	1.57	Aware

commitment to learning							
ICTs can offer interactive opportunities among farmers from various geographical location	17(15.5)	29(26.4)	57(51.8)	166	1.51	Aware	
Information on weather forecast is accessible on ICT platforms	27(24.6)	23(20.9)	60(48.3)	187	1.70	Aware	
ICTs keep farmers updated	16 (14.5)	30(27.2)	64(58.2)	172	1.56	Aware	
It makes farmers have better view of what they do	20(18.2)	35(31.8)	55(50.0)	185	1.68	Aware	

Source: field survey 2017

VA=Very Aware, FA=Fairly Aware, NA=Not Aware, WMS=Weighted Mean Score

Constraints to the use of ICTs

Table 5 shows the responses of the respondents to the perceived constraints to the use of ICTs. It was shown in the study that the use of ICT is constrained by erratic power supply (\bar{x} =3.40), High cost of ICT hardware and software (\bar{x} =3.23), Poor communication network (\bar{x} =3.20), Complex nature of ICT on usage (\bar{x} =3.12), Program variation and language barriers and Lack of access to ICTs (\bar{x} =3.08). This confirms the assertions of Mukesh, Deepati and Kanini (2010) who mentioned that poor infrastructural development on which ICTs depend, such as erratic and fluctuating power supplies determines the length to which ICTs can be utilized. The implication of this finding is that the dissemination of information through ICTs will be limited as the extension agents will be handicapped mainly due to infrastructural and policy factors. It is imperative for policy makers to bridge this gap so as to maximize the benefits of ICTs.

Table 5: Distribution of the respondents based on perceived constraints

S/N	CONSTRAINTS	MEAN	RANK
1.	Lack of knowledge/technical know-how on ICTs' handling	3.15	3 rd
2.	Program variation and language barriers	3.08	5 th
3.	Complex nature of ICT on usage	3.12	4 th
4.	High cost of ICT materials procurement and usage	3.03	6 th
5.	Inadequacy of time to operate ICTs	2.83	7 th
6.	Epileptic and erratic power supply	3.40	1 st
7.	Poor communication network	3.20	3 rd
8.	Lack of access to ICTs	3.08	5 th
9.	High cost of Software	3.23	2 nd
10.	High cost of ICT hardware	3.23	2 nd

Source: Field Survey 2017

Strongly Agreed=5, Agreed=4, Neutral=3, Disagreed=2, Disagreed=1

Test of Hypothesis

Table 6: T-test Analysis Output for Significant Difference in the awareness of ICTs educational roles on the Basis of Sex

Variable	N	Mean	SD	df	t _{cal}	p _{value}	Decision
Male	73	27.60	6.77	108	0.709	0.282	Accept H ₀₃
Female	37	31.26	5.71				

Significant at p<0.05

The result in Table 6 shows that the difference in awareness of ICTs educational roles for Male (27.60) and female (31.26) yielded a t-statistics of 0.709 and p-value of 0.285; this result was not statistically significant since the obtained p-value (0.282) was more than 0.05 level of significance. Therefore, there is no significant difference in awareness of ICTs educational roles based on sex of the respondents. This implies that both sexes have similar level of awareness.

CONCLUSION

The study concludes that ICT is a viable tool for disseminating agricultural information and when properly used by extension service providers, wider audience will be reached. The study recommended that, the use of ICTs to disseminate relevant agricultural information to cassava farmers

in the study area should be considered by the extension institution in Nigeria so as to enable quick access to information.

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