



Information and Communication Technology Usage among Extension Workers in Kwara State, Nigeria

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Abstract

The ability of the extension workers to access right and updated knowledge and information will assist them to accomplish their job as front liners in the agricultural extension delivery system. The study assessed the use of ICTs among extension agents in Kwara State ADP. One hundred and twenty extension agents were selected from all the zones. Data for the study were obtained with the aid of questionnaires administered to extension agents. The majority of the extension agents were in the age range of 41-50 years, were males (70.8%) and married (87.5%). The entire extension agents had formal education with the HND holders having the highest percentage of 39.2%. Most of the respondents had working experience of about 11-20 years. The result shows a low usage of IPAD (25.4%) and organization website (40.8%). ICT usage in agriculture shows that it was used mainly for dissemination of valuable information to farmers on new breeds and variety of crops (93.3%) However, on the level of severity of the constraints, 'lack of exposure to ICT' was ranked 1st ($\bar{X} = 2.059$). The result shows a positive correlation between ICT use and educational level ($t=0.010$).

Keywords: ICT, Usage, Extension agents

1.0 Introduction

Over the years, agriculture and agricultural communication have undergone many transformations recent among which is the arrival of Information and Communication Technology (ICT) (Sylvester, 2017). Information and communication technology has been defined in many ways by various authorities. McNamara *et al.*, (2017) defined ICT to include any tool, application or device that allows for the collection and exchange of data through transmission and interaction. It encompasses the full range of ICTs from radio and television to telephones (fixed and mobile), computers and the internet. Globally, ICT has been seen as one of the solutions to addressing the short- and long-term challenges in agriculture most especially in providing answers to the abundant information needs of farmers (Barrett and Slavova, 2017). In Africa and particularly in Nigeria, the growth and utilization of ICT in agriculture have been witnessing an unprecedented growth (Yakubu, Abubakar, Atala and Muhammed, 2013). Agricultural extension, being the knowledge subsector of the agricultural sector depends largely on a chain of information exchange among extension workers, farmers and other actors in the Agricultural Knowledge and Information System (AKIS) (Omotesho, Ogunlade and Muhammad-Lawal, 2012). Such an information exchange mechanism needs to be operated to be in line with current realities. This has positioned agricultural extension workers to make use of ICT in accessing and transferring information across the AKIS as they carry out their routine activities (Umar, Musa, Olayemi and Suleiman, 2015).

The ability of the extension workers to access right and updated knowledge and information will go a long way in assisting them to accomplish their job as front liners in the agricultural extension delivery system. The need for ICT in agricultural extension is further informed by the fact that agriculture is highly dynamic and progress in the sector is almost a daily affair. A lot of agricultural innovations are

continuously been generated, however, as a result of the gap in communication between research stations and extension workers on one hand and from extension workers to farmers on the other hand, these promising research finding usually become obsolete by the time they reach the farmers, that is if it even eventually gets to them. This situation cannot bring about the meaningful and sustainable transformation of the agricultural sector which is required for ensuring food security, employment generation, poverty reduction and the overall economy of the rural communities. However, since ICT is a veritable tool that has the potential to transform agricultural extension service delivery, it is very pertinent for us to examine the level of its utilization among extension workers in channeling relevant information to farmers in the most efficient ways. Thus, this study is focused on assessing the use of ICT among extension workers in Kwara State Agricultural Development Programme as a result of the scarcity of current research focused on this theme in the study area. Specifically, the study intends to;

1. describe the socio-economic characteristics of extension workers in Kwara State ADP;
2. determine awareness of specific ICT tools among the extension workers,
3. examine the information accessed or shared through ICT tools among the extension workers,
4. identify the constraints attached to the use of ICT tools among extension workers.

2.0 Hypothesis

H_0 -There is no significant relationship between some selected socio-economic characteristics of the respondents and their use of ICT tools.

3.0 Methodology

The study was carried out in Kwara State. The population consists of extension officers in all the zones of Kwara State ADP. There are four 4 ADP zones in the study area which includes Zone A, B, C and D. The Kwara State ADP as a whole has mainly 128 extension agents out of which 120 was used. The respondents were selected based on the sampling frame and percentages range from 78 to 100 was used to select the respondents. All the extension agents in Zone A (11 extension agents) Zone B (50 extension agents) and Zone C (29 extension agents) were selected while 78% of the extension agents present in Zone D were selected (30 out of 38 extension agents) to give a sample size of 120 respondents.

The questionnaire was used to elicit information from the respondents. The data were analyzed using both descriptive and inferential statistics. Descriptive statistics like the use of tables, percentages mean and frequency tables were used. A regression model was used to test the hypothesis.

4.0 Results and Discussion

4.1 Socio-Economic Characteristics of Respondents

The results from Table 1 showed that the mean age of the extension agents was 42 years. This agrees with the findings of Olorunfemi *et al.* (2018) who reported that extension agents in Kwara State are young and generally in their economically active years. This attribute is expected to enhance their innovativeness on the use of ICT. Also, Table 1 revealed that majority (70.8%) of the respondents are male implying that KWADP is predominantly staffed by men. This agrees with Adesiji *et al.* (2015) who reported a similar finding among extension agents in Kwara State. Furthermore, the majority (87.5%) of the extension agents were married implying that they can be tagged as responsible adults who are likely to be committed and focused on their duty as extension agents.

The findings from Table 1 also revealed that the majority of the extension agents had HND and above level of education. This finding agrees with Oladele (2011) and Olorunfemi *et al.* (2018) who stated that most of the extension agents in the South Western zone of Nigeria are educationally well trained. Furthermore, Table 1 also showed that the mean years of working experience for the respondents was 12 years. This implies that the respondents are quite experienced in extension work and are expected to be willing in the use of ICT to discharge their duties more effectively. This agrees with Omotesho *et al.*, (2012) who stated that extension agents in Kwara State are experienced. Finally, Table 1 revealed that, the majority (63.3%) of the extension agents stated that they reside in their job location. This attribute is expected to enhance effectiveness of extension service delivery in the area.

Table1 Socio-economic characteristics of the respondents(n=120)

Variable	Measure	Percentage
Gender	Male	70.8
	Female	29.2
Age	21-30	9.2
	31-40	38.3
	41-50	40.0
	51-60	11.7
	60 and above	0.8
Educational level	OND	29.1
	HND	39.2
	BSC	31.7
Marital status	Single	10.0
	Married	87.5
	Divorced	2.5
Years of experience	1-10	41.7
	11-20	54.2
	21-30	2.5
	31-40	1.6
Residence	Job location	63.3
	Outside job location	36.7

Source: (Field Survey, 2015)

4.2 Awareness and Use of ICT Tools

All the respondents were aware of one or more ICT tools. Table 2 revealed that majority (98.3%) of the respondents were aware of the use of radio and this agrees with Akinbile and Alabi, (2011) who stated that the strength of traditional technologies such as radio, television, or a telephone is supported by the fast evolution of new media. Other ICT tools that the respondents were prominently aware of are television (97.5%), Internet (93.3%), computer (95.8%), Mobile phone (96.7%), projectors (81.7%), iPad (72.5%), Email (87.5%), and Organizational websites (72.5%). These findings are in tandem with Yakubu *et al.* (2013) who also reported a similar trend among extension agents in Kano State, Nigeria. This implies that the extension agents are familiar with the various ICT tools that are available which as opined by several researchers is a precursor that can facilitate adoption and usage.

Furthermore, the results in Table 2 showed that the prominent ICT tools utilized by the extension agents as means of communication are radio (98.3%), Television (95.8%), Mobile phone (92.5%) and Computers (73.3%). This finding reveals the consistent increase in the use of ICT tools such as mobile

phones and computer-related communication among extension agents in the study area. This might be as a result of the rapid evolution and high level of awareness of these tools among the respondents. This agrees with the findings of Umar et al. (2015) who stated that the majority of extension agents in Kaduna State use mobile phones as a communication tool. On the other hand, only a few (25.8%) of the extension agents made use of tools such as IPAD. This might be as a result of the higher level of sophistication and cost associated with such ICT gadgets.

Table 2: Extension agents Awareness and Utilization of ICT Tools (n=120)

ICT tools	Awareness (Percentage)	Use (Percentage)
Radio	98.3	97.5
Television	97.5	95.8
Internet	93.3	55.8
Computer	95.8	73.3
Mobile phone	96.7	92.5
Projectors	81.7	46.7
IPAD	72.5	25.8
E-mail	87.5	60.0
Organization website	72.5	40.8

Source: (Field Survey, 2015)

4.3 Information accessed or shared through ICT Tools

The most prominent statements as ranked by the respondents were statements that they use ICT in ‘disseminating valuable information to farmers on new breeds and variety of crops’ (93.3%), ‘it ensures collaborative learning among extension workers and farmers’ (92.5%), ‘Outbreak of disease in poultry and livestock can be tackled with immediate effect’ (92.5%), ‘Obtain new information on technology’ (91.7%), ‘Enhances the knowledge of farmers on livestock management’ (90.8%), ‘Practical means of storing products are easily demonstrated to farmers’ (90.0%), ‘Time sensitive information such as market prices are easily exchanged’ (90.0%), ‘It assists in the areas of water supply through irrigation’ (89.2%), ‘to obtain information on new breeds of animals’ (89.2%), ‘Improve logistics and reduces transaction costs’ (88.3%), ‘inputs distributions to farmers is very easy and timely’ (88.3%), ‘it ensures peer to peer sharing among extension workers’ (88.3%), ‘used to call attention of the extension agents or farmers’ (88.3%), ‘to present seminars to farmers’ (85.8%), ‘obtain information on farming practices such as budding and grafting’ (85.8%), ‘enlighten women in the processing of some food crops’ (85.0%), ‘Farmer’s wife get information and ideas on new recipes’ (81.7%). These imply that the extension agents have a positive perception about the benefits and potentials of the use of ICT in improving knowledge and information transfer among the various stakeholders in the Agricultural Knowledge and Information System (AKIS) and extension service delivery to the rural farmers. This result is in line with the findings of Balaji (2007) who reported that ICTs are seen as useful tools in improving linkages between the research and agricultural extension system. Furthermore, Adekunle *et al.* (2004) stated that farmers require information to link various inputs at reasonable prices and also link output markets and ICT is playing a great role in making this much more possible.

Table 3: Distribution of the respondents by information accessed or shared through ICT tools

ICT usage	Yes
Dissemination of valuable information to farmers on new breeds and variety of crops	112 (93.3)
Enlighten women in the processing of some food crops such as garri processing	102 (85.0)
Obtain information in the area of feed formulation for poultry	98 (81.7)
Farmer's wife get information and ideas on new recipes	98 (81.7)
Enhances the knowledge of farmers on livestock management	109 (90.8)
It is used to present seminars to farmers	103 (85.8)
Details on a particular crop which includes planting distance, planting dates and species of crops can be gotten through the use of ICT	101 (84.2)
Information which involves pictures and videos is easily accessed and interpreted	106 (88.3)
Obtain the information on farming practices such as budding and grafting	103 (85.8)
It is used to call attention of the extension agents or farmers	106 (88.3)
It is used to obtain information on new breeds of animal	107 (89.2)
It assists in the areas of water supply through Irrigation	107 (89.2)
Outbreak of disease in poultry and livestock can be tackled with immediate effect	111 (92.5)
It helps to improve logistics and reduces transaction costs.	106 (88.3)
Agricultural inputs distribution to farmers is very easy and timely.	106 (88.3)
It ensures peer to peer sharing among extension workers.	106 (88.3)
Practical means of storing products are easily demonstrated to women farmers	108 (90.0)
Time-sensitive information such as market prices are easily exchanged	108 (90.0)
It ensures collaborative learning among farmers and extension agents	111 (92.5)
It is used to obtain new information on technology	110 (91.7)

Source: (Field Survey, 2015)

4.4 Constraints to the Use of ICT

The results in Table 4 reveal the level of severity of constraints militating against the use of ICT among extension agents in the area. It was found that 'lack of exposure to ICT' was ranked 1st with a mean of 2.059, 'problem of connectivity in the rural' area was ranked 2nd with the mean of 2.041 and 'problem of the high cost of mobile phone service' was ranked 3rd with the mean of 2.071. This implies that some of the ICT tools are expensive and not in the reach of the extension agents, this leads to not being able to utilize it effectively. This agrees with Omotesho *et al.* (2012) who reported that high cost of ICT equipment and weak connectivity were severe constraints preventing effective ICT utilization by extension agents.

Table 4: Constraintsto the use of ICT and level of severity

Constraints	Mean Score	Ranking
Lack of accessibility to most of the tools	1.800	10 th
The Problem of affordability of the tools	1.992	4 th
The Problem of connectivity in the rural area	2.041	2 nd
Inadequate power supply to operate the devices	1.949	6 th
Lack of skills and technical competence	1.941	7 th
The High cost of mobile phone service	2.017	3 rd
Limited access to computer and internet service	1.916	8 th
Low level of readiness in embracing the use of ICT tools	1.975	5 th
Low level of communication policy and high level of rural poverty	1.858	9 th
Lack of exposure to ICT tools	2.059	1 st

Source: (Field Survey, 2015)

4.5 Relationship between Socioeconomic Characteristics and Use of ICT Tools

The result of the regression analysis reveals that out of all the socioeconomic characteristics presented; only the educational level of respondents is significantly related to the use of ICT tools. This implies that the educational level of the respondents affect their use of ICT tools. It means that the more educated the respondents are, the more their use of ICT tools.

Table 5: Relationship Socio-economic characteristics and use of ICT tools

Variable	B	S. E	WALD	d.f	Sig.	Exp (B)
Gender	-0.036	.547	.004	1	.947	.964
Age	.000	.042	.000	1	.992	1.000
Education			8.888	2	.012	
Education (1)	-1.433	.595	5.791	1	.016	.239
Education (2)	.131	.592	.049	1	.825	1.140
Religion			.185	2	.912	
Religion (1)	.229	48650.677	.000	1	1.000	1.258
Religion (2)	.435	48650.677	.000	1	1.000	1.545
Marital status			.000	2	1.000	
Marital status (1)	.163	29504.80	.000	1	1.000	1.177
Marital status (2)	-20.324	27412.27	.000	1	.999	.000
Year of experience	-.059	.050	1.404	1	.236	.942
Location (1)	.319	.521	.375	1	.540	1.375
Constant	21.717	40192.862	.000	1		1.000
	2.701921480.61					

Source: (Field Survey, 2015)

P- value ≤ 0.05

-2 Log likelihood = 113.708

Cox & Snell R Square = .177

Nagelkerke R Square = .260

5. Conclusion and Recommendations

The study concluded that extension agents in Kwara State ADP were aware of ICT tools and they prominently make use of ICT tools such as radio, television, mobile phone and computer for the transfer of information. However, the lack of exposure to the use of modern ICT tools and gadgets, high cost of some of these tools and poor network connectivity in the rural areas were some of the major constraints militating against the effective usage of these tools in the area. It was therefore recommended that extension workers should be exposed to more training on the use of ICT tools especially on the new evolving sophisticated gadgets to improve their skill on how to source for and transfer relevant and up-to-date information to farmers and other stakeholders via these channels to boost agricultural production. Also, network coverage should be expanded and well extended to rural areas to ameliorate the problem of weak connectivity hindering effective communication through the use of these ICT tools.



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