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## **Assessment of Access to Information and Communication Technology among Agricultural Extension Officers in Kwara State, Nigeria**

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## Assessment of Access to Information and Communication Technology among Agricultural Extension Officers in Kwara State, Nigeria

### Abstract

The study examined the factors associated with the level of access of Agricultural Extension officers in Kwara State to Information and Communication Technology (ICT). It also identified the constraints to the usage of ICT for the purpose of sourcing agricultural information. Data for the study were collected from the Subject Matter Specialists (SMSs) and Extension Agents (EAs) of the Kwara State Agricultural Development Project (KWADP) through the use of a structured questionnaire. Descriptive and inferential statistical tools were employed for the data analysis. The study revealed that about 70% of the EAs do not earn above ₦20, 000. Only 8.8% of the EAs possessed university degrees and none had access to computer systems at work. All the SMSs had official computers, although none of the computers were connected to the internet. Income of the respondents was found to be significant and positively related to access to ICT. The numbers of years on the job and the age of the respondents had negative but significant relationship with access. Apart from the general constraints to the use of ICT such as, high cost of personal computer, inadequate electricity supply and poor internet access, poor training and technological knowhow were also identified as specific constraints faced by the EAs. The study therefore recommended the need for easier access by all agricultural extension officers to ICT. Besides, training workshops should be organized for Extension officers in the area of ICT and computer appreciation.

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### Introduction

Improved agricultural production is the major weapon in the fight against world hunger, improving rural livelihood and increasing economic growth. The World Development Report of the World Bank (2008) argued that the growth in the agricultural sector contributes proportionally more to poverty reduction than growth in any other economic sector. This argument is supported by the levels of commitment of various economies to agriculture world over. Any effort towards a meaningful improvement of agriculture in Nigeria must be targeted at the rural farmers who constitute the bulk of agricultural production in Nigeria.

Information is a vital resource and has its application in rural, agricultural, social and industrial development (Nwachukwu et al., 2009). A prime challenge of the typical Nigerian rural farmer is the dearth of timely, up to date agricultural information in spite of several research findings lying in shelves in various research organizations. For instance, inadequate information may be responsible for the

low level of yields among farmers in spite of availability of improved seed varieties (Idachaba 2000). Agricultural extension officers are the direct link bridging the communication gap between the agricultural researchers and the farmers. In order to perform this role effectively and efficiently, agricultural extension personnel must have steady access to up to date agricultural information. This brings to fore the need for a comprehensive and well-articulated agricultural extension program which ensures adequate and timely delivery of services to farmers if meaningful growth is to be achieved in the agricultural sector.

The potentials of Information and Communication Technology (ICT) to make agricultural extension in developing countries more effective appear unassailable (Omotayo, 2005). ICT is commonly used to embrace a multitude of media including telephone, television, video, telex, voice information systems, fax as well as those requiring the use of the personal computers fitted with a

modern or supply technologies that facilitate communication, processing and transmission of information by electronic means ranging from radio and television to telephone (fixed or mobile) and the internet (Warren, 2001; CTA, 2003; Omotayo, 2005). Nkwocha et al, 2009, reported that ICT can promote access to and sharing of information in agriculture and allied industries. The inherent advantages in the pluralistic and seamless nature of information flow via ICT, if properly explored, will have a significant positive effect on the productivity of extension service providers. The international network of computers in particular is a global information superhighway and a haven of sort for continuously updated information on all fields of study.

In spite of the abundant agricultural information hoisted on the internet, farmers' productivity has continued to be hindered by poor access to timely information. According to Omotayo (2005), most Nigerian farmers are illiterate, live in rural areas; hence have no knowledge on the use of information facilities like computer/internet. Although it is expected that agricultural extension will rise up to this challenge, the fact that little or no change is noticeable in the farmers' agricultural practices call to question the quality of agricultural extension officers who possibly are themselves not aware of agricultural information most of which are available on-line due probably to inadequate access to the ICT. Available statistics show that there is very little knowledge on the use of ICT among extension officers across Nigeria. For instance 57.14% and 55.71% of extension officers in the North-Central and South-West Nigeria respectively, do not have requisite knowledge in computer usage (Ndag et al. 2008). While there has been several studies evaluating the use of ICT in information dissemination to farmers, not much has been done on the use of ICT in sourcing for agricultural information by extension service providers. In KWADP, SMSs and EAs play important roles in extension service delivery. The SMSs are usually involved in giving training in specific areas of agriculture to the EAs who in turn are required to pass the information to the farmers. Very little information is available on the level of access and use of ICT by these two categories of extension workers. This study therefore compares the socio-economic characteristics of the SMSs and EAs and the relationship between such socio-economic characteristics and the extension officers' access to ICT. It also identified the constraints faced by extension officers' in accessing ICT for the purpose of sourcing agricultural information.

### Objectives of the Study

The main objective of this study is to carry out an assessment of access to ICT among extension officers in Kwara State. The specific objectives are:

- i. To determine the socio-economic characteristics of SMSs and EAs in Kwara State;
- ii. To determine the relationship between selected socio-economic characteristics and access to ICT among the extension officers;
- iii. To identify the major constraints to ICT access among the extension officers.

### Methodology

The study area is Kwara State, Nigeria. Complete enumeration technique was employed due to the small size of the entire population. Hence, all seventy nine (79) Extension Agents (EAs) and twenty (20) Subject Matter Specialists (SMSs) of the Kwara State Agricultural Development Project (KWADP) constituted the respondents. Data was collected with the use of a structured questionnaire. Simple descriptive statistics involving the use of frequencies and percentages was used to compare the socio-economic characteristics of the two groups of extension officers. Pearson Product Moment Correlation (PPMC) was employed to examine the relationship between the following selected socio-economic variables and respondents' access to ICT:

- $X_1$  = monthly income in Naira
- $X_2$  = work experience in years
- $X_3$  = dummy for educational level (1 for university graduates, 0 otherwise)
- $X_4$  = household size
- $X_5$  = age of respondent in years
- $X_6$  = Gender (1 for male, 0 for female)
- $X_7$  = dummy for job designation (1 for SMS, 0 otherwise)

Access to ICT was scored 1 for availability of any form of access, 0 otherwise

A five point likert - type scale was employed in measuring the constraints faced by the agricultural extension officers as follows:

Strongly disagree = 1; disagree = 2; indifferent = 3; agree = 4; strongly agree = 5.

The respondents were requested to rank a list of possible problems associated with their access to ICT. The ranking was based on average score of the respondents ranking of the problems.

### Results and Discussion

#### Socio-economic Characteristics

This section presents the socio-economic characteristics of the respondents such as income, experience, education status, household size, age and job designation. The

distribution of the socio- economic characteristics of the respondents are as presented in table 1.

**Table 1: Selected Socio-Economic Characteristics of Agricultural Extension Officers**

Variables	Extension Agents		Matter Specialists	
	Frequency	%	Frequency	%
<b>i. Income</b>				
≤ N 10000	5	6.3	0	0
N 10001 – N 20000	50	63.3	4	20
N 20001 – N 30000	24	30.4	15	75
> N 30000	0	0	1	5
<b>Total</b>	<b>79</b>	<b>100</b>	<b>20</b>	<b>100</b>
<b>ii. Experience</b>				
< 10 years	36	45.6	5	25
≥ 10 years	43	54.4	15	75
<b>Total</b>	<b>79</b>	<b>100</b>	<b>20</b>	<b>100</b>
<b>iii. Highest Education Status</b>				
School Certificate	21	26.6	0	0
OND	27	34.2	0	0
NCE	4	5.1	0	0
HND	20	25.3	7	35
First Degree	5	6.3	8	40
Higher Degree	2	2.5	5	25
<b>Total</b>	<b>79</b>	<b>100</b>	<b>20</b>	<b>100</b>
<b>iv. Household size</b>				
1-6	31	39.2	6	30
>6	48	60.8	14	70
<b>v. Age</b>				
≤ 30	6	7.6	0	0
31- 50	59	74.7	18	90
>50	14	17.7	2	10
<b>Total</b>	<b>79</b>	<b>100</b>	<b>20</b>	<b>100</b>

Source: Field Survey, 2010

With mean incomes of ₦ 17,555.30 and ₦ 23,304.00 for EAs and SMSs respectively, the average monthly income of the extension officers appear too low for them to afford the purchase of personal computers. The mean years of work experience given as 12.3 years for EAs and 15 years for SMSs can be expected to have a positive effect on the extension officers' disposition to ICT. This is because length of time on the job could portend negative influence on attitude since ICT is a new innovation. The fact that only 8.8% of the EAs had university degrees is worrisome given the fact that the use of ICT in sourcing information requires intellectual ability. 65% of the SMSs are university graduates and can be expected to have higher access. The modal household sizes stood at 7 for EAs and 10 for SMSs.

The larger the household size, the larger the negative financial impact on the respondents with implications for ICT access. The study also revealed that about 70% of the agricultural extension officers were below the mean ages of 42.5 for EAs and 43 for SMSs respectively. Still being relatively young, it can be expected that they should be able to adapt to new innovation in agricultural development brought about by ICT.

#### Access to ICT

This section examines the level and nature of extension officers' access to ICT. The nature and the level of extension officers' access to ICT is as presented in table 2

**Table 2: Respondents Access to ICT**

Variables	Extension Agents		Matter Specialists	
	Frequency	Percentage	Frequency	Percentage
<b>iv. Access to Official P.C.</b>				
Yes	0	0	20	100
No	79	100	0	0
Total	79	100	20	100
<b>v. Connectivity of Official PC to the Internet</b>				
Yes	-	-	0	0
No	-	-	20	100
Not Applicable	79	100	0	0
Total	79	100	20	100
<b>vi. Private Ownership of PC</b>				
Yes	9	11.4	13	65
No	70	88.6	7	35
Total	79	100	20	100
<b>vii. Connectivity of Private PC to the Internet</b>				
Yes	2	2.5	4	20
No	7	8.9	9	45
Not Applicable	70	88.6	7	35
Total	79	100	20	100
<b>viii. Mode of Internet Access</b>				
Personal	2	2.5	4*	20
Handset	12	15.2	11*	55
Cybercafé	17	21.5	20*	100
None	48	60.76	0	0
Total	79	100		

Source: Field Survey, 2010

\*Multiple responses

Table two shows that none of the EAs had computers in their offices. This is at variance with the SMSs, all of whom have access to official computers. While 11.4% of the EAs had personal computers of their own, only 2.5% of these personal computers were connected to the internet with about one - fifth of them paying visits to cyber cafes. This points to a very poor access level among the extension agents with its implications for their level of knowledge of agricultural information available on-line. The level of access recorded among Subject Matter Specialists was observed to be much better with 65% of them owning personal computers. Even though all SMSs have computers in their offices none of these computers was connected to the internet. This may explain the reason for all of them visiting cyber cafes. The difference in level of access

between both groups may not be unconnected to the varied job designation. Extension agents being the field officers are mostly on the road and hence may require a more mobile means of access.

#### **Selected Socio-economic Characteristics and Access to ICT**

This subsection carried out an assessment of the relationship between selected socio-economic characteristics of the EAs. As revealed earlier (Table 2), all the SMSs had access to ICT. Since the analysis of the relationship between their socioeconomic characteristics and access to ICT could not be carried out, the results of the relationship between the socio-economic characteristics and access to ICT among the EAs are as presented in Table 3.

**Table 3: Result of Partial Correlation Analysis between Selected Socio-economic Characteristics and Access to ICT among EAs**

Selected Socio-economic Characteristics	PPMC Correlation Coefficients
Income (X1)	-0.157
Experience (X2)	-0.481**
Education (X3)	0.270**
House hold size (X4)	-0.482**
Age (X5)	-0.555**
Gender (X6)	0.11

Source: Data Analysis, 2010

NB \*\*Coefficient significant at 1%

As shown in Table 3, experience, education, household size and age were found to be related to the respondents' access to ICT. While education was positively related to access, all other related characteristics showed a negative correlation with the respondents' access to ICT. Education plays a significant role in creating awareness and interest in innovations. It is also fundamental to the understanding of the usage, and functionalities of computer appliances. As shown in Table 3, educational level of the EAs was found to be significantly and positively related to their access. This therefore implies that the more educated the respondents were, the better their access to ICT. It also explained about 27% of the relationship between socio-economic characteristics and access to ICT. Older people are likely to have put in more years of work experience and be more resistant to change and innovations. With age and experience having about 50% correlation with ICT, it can be implied from this study that the older and or more

experienced the respondents, the lower their access to ICT. In view of the effect of household size on their per capita income, increase in household size reduced access to ICT among the EAs. This is as shown in Table 3 where household size had about 50% relationship with access to ICT among EAs. Therefore, the higher the household size, the lower the access. This is probably due to the negative effect of higher household size on the available income of the respondents.

**Constraints to ICT Access among Respondents**

This section examines the constraints to ICT usage among the extension officers. The constraints to ICT among the respondents are as presented in Table 5

**Table 5: Constraints to ICT Usage among Respondents**

Constraints	Extension Agents	Matter Specialists
	Mean	Mean
High cost of ICT equipment.	4.48	4.3
Inadequate Electricity Supply	4.34	5
Weak Communication	3.91	4.05
Distant Location of ICT Facility	4	2
Low Economic Status	3.95	3.3
Low Educational Level	2.32	1
Poor Technical Know-how	3.82	1.75
Poor Training on ICT	3.89	1.8
High Cost of Internet Access	4.1	4.85
Fear of ICT Usage	1.89	1

Source: Field Survey, 2010

Table 5 reveals that high cost of ICT equipment, inadequate electricity supply, weak communication and high cost of internet access were major constraints common to both EAs and SMSs in terms of their access to ICT. Furthermore, low economic status and distant location of ICT facilities constituted additional constraints to the EAs in acquiring access to ICT. This may be as a result of the low income level of the EAs and the field nature of the EAs job. The fact that poor technological knowhow and poor training were also identified as constraints to ICT access by the EAs generally implies that there is generally low level of education among the EAs.

**Conclusion and Recommendations**

This study was embarked upon with a view to assessing the level of access to ICT among agricultural officers in Kwara State. Based on the findings of this study, it can be concluded that agricultural extension officers particularly the EAs have low level of access to ICT. This is in spite of the importance of ICT to effective agricultural extension

service delivery. In order to improve on the situation, this study makes the following recommendations:

There is the need for an upward review of the salary of extension officers. This is because an increased income would guarantee better chances of personal acquisition of ICT equipment for the officers. In the interim, agricultural extension officers should be assisted to access ICT at affordable prices such as through hire purchase arrangements with payment extended over a period of time. Members are also encouraged to take advantage of cooperative societies common in most government establishments to acquire ICT devices at reduced interest rates and convenient payment terms.

Government should make adequate provision for internet facilities for use by extension service providers particularly the SMSs in their various offices. In this regard, laptops equipped with modems are recommended for EAs given the field nature of their job.

While the problem of electricity is being addressed at the national level, alternate power sources such as generator sets should be provided in offices. The solar energy alternative which is not only cheaper but also environmental friendly is recommended.

Finally, training workshops on ICT usage and computer appreciation should be organized for all extension officers. This would bring the extension officers irrespective of their educational status up to date on the use and application of ICT for improved extension service delivery in Kwara State.

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