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### Gender utilization of information communication technology (ICTs) among agriculture extension workers for community development in Edo state, Nigeria

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#### Abstract

The study assessed gender utilization of among agriculture extension workers in Edo State, Nigeria and specifically, described the socio-economic characteristics of respondents, determined level of gender use of ICTs, and ascertain gender difference in the use of ICTs were ascertained. Data were collected with use of structured questionnaire administered to hundred and twenty-five (125) simple randomly selected agriculture extension workers. Means, percentages and t-statistic statistics were used for data analysis. Results showed that 77.6% of the sampled respondents were males 22.4% females while 85.0% males and 50.0% females were married. All (males 97 and females 28) agriculture extension workers had higher educational degrees and job experience of 5 to 9 years (males 56.7%; females 53.6%) respectively. There is low (20%) use of ICTs by agriculture extension workers. The result of t-statistic showed that significant gender difference existed in the agriculture extension workers use of ICTs ( $t=3.27$ ,  $p<0.01$ ). It is recommended that in-service training on ICTs importance and use for agriculture extension works should be organize for agriculture extension workers. Also, official vehicles should be provided for agriculture extension workers for official purpose.

**Keywords:** Gender, use of ICTs, community development

#### Introduction

Agriculture is the main source of food for mankind; rural small-scale farmers that use crude farm implements are main producers of agricultural crops in sub-Saharan Africa. Extension services/or works are critical to human food security and progress which probably explain why it is at the hub of all human fields of study. World present population grows from 6.7 to 9.1 billion by 2050 and food production will need to double over same period. Agricultural extension is an important public service with widest range of responsibilities for agricultural and rural development (Adeyanju and Akinwumi, 2015)<sup>[1]</sup>. Therefore, availability of proven agricultural information and rural development cannot be undermined. Agricultural information creates awareness among community farmers about relevant modern agricultural technologies for adoption which is needed for overall development of agriculture and for improvement of living standard of farmers (Bello and Obinne, 2012)<sup>[4]</sup>. Thus, more effective and efficient extension services are needed to tackle agricultural challenges among small scale farmers in developing countries. There is need for adequate and appropriate use of ICTs to transform agricultural extension to enable it help in the all-round rural development. Use of ICTs in agriculture is increasing globally. ICTs such as mobile communication, electronic mail (email), facsimile, Internet and others are extensively used for

information dissemination in agriculture in developed countries (Lio and Liu, 2006)<sup>[11]</sup>. It had been asserted that the advent of ICTs like personal computers, the internet and mobile telephone during the last two decades have provided much wider choice in collection, storage, processing, transmission and presentation of information in multiple formats to meet the diverse requirement and skills of people (Kwadwo *et al.*, 2012)<sup>[9]</sup>.

Gender could be social attributes, opportunities, the relationships between male and females. According to World Bank (2011)<sup>[16]</sup> it is the socio-cultural differences or ascribed roles between men and women in a given society. Gender is an important factor for socio-cultural analysis including class, race, poverty level, ethnic group and age.

#### Problem Statement

The use of ICTs by agriculture extension workers, community developers is significant especially now that ICT use has witness upsurge in all areas of life in many Africa countries where it has provided media for adequate access to agricultural information despite the persisting problems of access, connectivity, literacy, content and costs (CTA, 2003)<sup>[5]</sup>. Since agriculture extension works are based on the dissemination of proven information emanating from different sources to the end users, it becomes very necessary to tap from numerous benefits ICT provides to boost rural agriculture and community development efforts through

effective dissemination of up-to-date information. Arokoyo (2005)<sup>[2]</sup> reported that radio and television have been major ICTs use in agricultural extension delivery in Nigeria. Despite the important roles information and communication technology (ICT) is playing in extension service delivery and efforts of government towards making ICTs accessible to all Nigeria citizens, ICT use is said to be low or very limited due to several factors (Katengeza *et al.*, 2011)<sup>[8]</sup>. So, this study assessed the use of ICT by gender among agriculture extension workers in Edo state, Nigeria.

#### The study objectives are to:

1. Examine the socioeconomic characteristics of extension workers,
2. Ascertain level of gender utilization of ICTs, and
3. Ascertain if there is significant gender difference in agricultural extension workers use of ICT in Edo State.

ICT is important in the total development of nations, and it helps to promote agricultural production (Mugo and Vermeulen, 2011)<sup>[12]</sup>. Information is viewed as power and an important working tool for advancement of human and society (Apata and Ogunrewo (2010)<sup>[14]</sup>. To Lal (2007)<sup>[10]</sup>, major factors inhibiting ICT diffusion and intensive utilization is poor physical infrastructure represented by inadequate and interrupted electricity supply and communication connectivity infrastructure. Also, Zainab *et al.* (2008)<sup>[17]</sup> identified problems associated with ICT use as frequent power failure and lack of alternative power supply, lack of basic knowledge of ICT utilization, system difficulties operation, inadequate finance for procurement and maintenance of ICT facilities (components), and lack of adequately trained staff to handle ICT facilities.

#### Methodology

##### Study Area

This research was conducted in Edo state. Edo State is one of the 36 states in Nigeria. The State is located between longitude 05° 04' East and 06° 43' East and latitudes 05° 44' North and 07° 34' North of the Greenwich. It is bounded to the North by Kogi, to the South by Delta, West by Ondo and East by Anambra States. It is made up of 18 local government areas, divided into 3 senatorial districts which include Edo Central, Edo South and Edo North. It has a total area of 17,820 km<sup>2</sup> and population estimate of 3,218,332 made up of 1,640,461 males and 1,577,871 (National population census, 2006)<sup>[13]</sup>.

Edo state is located in the rain forest belt of Nigeria. It has two distinct weathers: wet and dry seasons. The wet season is between April and October with a break in August while the dry season is November to April with harmattan period between December and January. The annual rainfall in the area exceeds 2000 mm, minimum and maximum temperature recorded is 25 °C to 28 °C respectively (National Bureau Statistics, 2013). Edo has a flat landscape, lacking in rocks and mountains and good for agriculture. The tableland though reddish brown in colour is fertile for farming.

##### Population of the Study

The population of this study was male and female agriculture extension workers in Edo State, Nigeria.

#### Sampling Procedure and sample size

A simple random sampling method was used to select 97 male and 28 female agriculture extension workers from the list of extension staffs of NIFOR, CRIN and Edo ADP. These added together gave a total of 125 respondents.

#### Instrument for Data Collection

Data was collected from both primary and secondary sources. A structured questionnaire was used to obtain primary data from the extension workers.

#### Data analysis

The collected data were analysed using descriptive and inferential statistics such as frequency count, percentage, mean and t-statistic.

#### Results and Discussions

##### Socio-economic characteristics of respondents

Table 1 shows that 30.9% male and 25.0% female agriculture extension workers in the study area were between age bracket of 30 and 40 years while 22.7% of males and 21.6% of females were found to be above 51 years of age respectively. The finding shows that male agriculture extension workers are slightly older than their female counterparts. Both the male and female agriculture extension workers were still within their farm labour active and productive ages. The finding implies that male and female agriculture extension workers may adopt and use Information and Communication Technology (ICT) tools to disseminate useful information as modern ICTs is adjudged effective and efficient in information dissemination; and information is pinpointed as useful and the hallmark of extension activities (Oladele, 2015)<sup>[15]</sup>. The use of ICT has been confirmed to positively and significantly correlate with age (Arokoyo, 2010)<sup>[3]</sup>.

Table 1 shows that 85.5% of male and 50.0% of female agriculture extension workers were married but 32.2% of females were slightly higher (14.5%) than single males. Being married is a call for responsibility which should promote and enhance one's seriousness at work. But in situation in which there is large family to cater for, it would have negative effects on staff use of ICTs for official purpose/duties as much time would be devoted to caring for family members. More so, two are better than one concept may assist extension workers in acquiring knowledge of the use of ICTs as spouse may assist in teaching each other the use of some of the ICTs that are for extension works.

Furthermore, all (97) male and (28) female agriculture extension workers had higher educational degrees. This shows that all extension workers read beyond first degree level in their education pursuits. This high educational attainment/exposure of agricultural extension workers is useful in promoting the use of ICTs in the development of rural community agriculture and other rural sectors. 19.6% of male and 28.6% of female agriculture extension workers had less than 3 persons eating from same pot under the same roof while 74.2% of male and 46.4% of female agriculture extension workers had 4 and 6 persons respectively. Small household is likely to promote use of ICTs as much time will be available for user of ICT.

On the year of training, results show that about 43.3% of male and only 14.3% of female extension workers had

between 11 and 15 years of training while 38.1% of males and 60.7% of females had between 6 and 10 years of training. This shows that both male and female respondents had relatively high number of years of training, but male extension workers recorded higher training years. This is probability due the fact that male extension workers have had more (5 to 15 years, 81.4%) experience in the use of ICTs in carrying out extension works delivery than females (below 5 to 9 years, 78.6%).

On experience on the job, results indicate that about 56.7% male agricultural extension workers had 5 to 9 years of training experience and 53.6% females were in this category. 18.6% of males and 25.0% of females had less than 5 years of experience on the job. This indicates that female agriculture extension workers had higher years on the job experience than their male counterpart. It shows that most of the female agriculture extension workers may likely be at administrative level. 33.0% of male and 42.9% of female agriculture extension workers were trained in the field of agricultural extension while 36.1% of male and 53.6% of female had their training background in agricultural economics. This shows that many of the people employed as extension works do not have training background in agricultural extension but in other agricultural science disciplines like animal science, crop science, fisheries and forestry. Thereby corroborating earlier study finding by Torimiro and Akinyemiju (2004). This may pose a serious problem to effectiveness in agricultural extension service delivery if on the job training is not provided for those employed to carry out work. 60.8% of male agriculture extension workers were Block Extension Officers while 42.9% were females. Only 1.0% of males

occupied the position of District Extension Officer and none of the females.

On movement of agricultural extension workers from one location to another in discharge of their duties, only 2.1% male and 3.6% female agriculture extension workers have access to official vehicles. 37.1% males and 10.7% females had no vehicle to carry out official duties; 37.1% males and 32.2 females used commercial vehicle; 10.3% males and 10.7% female agriculture extension workers used motorcycle. The era of using motorcycle is gone as it was the popular means of mobility among agricultural extension workers during the period of World Bank sponsorship. Lack of official vehicles to carry out duties would discourage extension agents from carrying out their duties faithfully. The use of commercial vehicle and motor bikes are not appropriate means of mobility for extension work. The foregoing are very important reasons why extension worker should be empowered to use ICTs to reduce their physical contact with their clientele, reduce cost of extension innovation delivery and make extension work less stressful to extension workers. Furthermore, majority of male (83.5%) and female (75.0%) agricultural extension workers were on full employment 9.3% male and 14.3% female respondents work are part-time workers. The fact that majority of the extension workers work on full time basis is an ideal way of encouraging them to be more committed to work as it will go a long way in ensuring extension worker use modern ICTs in dissemination information, skills, and other innovations to clientele/farmers and their household members.

**Table 1:** Frequency and percentage socio-economic characteristics of agriculture extension workers

Variables	Male, n= 97 (77.6%)		Female, n= 28 (22.4%)	
Age (Years)	Frequency	%	Frequency	%
Below 30	9	9.3	6	21.4
30 and 40	30	30.9	7	25.0
41 and 50	36	37.1	9	32.2
Above 51	22	22.7	6	21.4
<b>Marital status</b>				
Married	83	85.5	19	50.0
Single	14	14.5	9	32.2
<b>Educational status</b>				
No formal education	0	0	0	0
Primary education	0	0	0	0
Secondary education	0	0	0	0
Higher education	97	77.6	28	22.4
<b>Household size</b>				
Below 3	19	19.6	8	28.6
4 and 6	72	74.2	13	46.4
7 and 8	6	6.2	7	25.0
<b>Years of training</b>				
1-5 yrs	12	12.4	6	21.4
6-10 yrs	37	38.1	17	60.7
11-15 yrs	42	43.3	4	14.3
Above 16	6	6.2	1	3.6
<b>Job experience</b>				
Below 5 yrs	18	18.6	7	25.0
5-9 yrs	55	56.7	15	53.6
10-15 yrs	24	24.7	6	21.4
<b>Training background</b>				
Crop science	3	3.1	1	3.5
Animal science	13	13.4		

Fisheries	11	11.3		
Forestry and wildlife	3	3.1		
Agric& Ext and Rural Sociology	32	33.0	12	42.9
Agric Economics and Farm Management	35	36.1	15	53.6
<b>Rank</b>				
DEO	1	1.0		
SEO	2	2.1	2	7.1
AEO	14	14.4	11	39.3
VEO	21	21.7	3	10.7
BEO	59	60.8	12	42.9
<b>Mobility</b>				
Motorcycle	10	10.3	3	10.7
Office vehicle	2	2.1	1	3.6
Personal vehicle	13	13.4	12	42.9
Commercial vehicle	36	37.1	9	32.1
No vehicle	36	37.1	3	10.7
<b>Job location</b>				
Urban	21	21.6	12	42.9
Semi urban	12	12.4	3	10.7
Rural	64	66.0	13	46.4
<b>Nature of employment</b>				
Full time	88	90.7	24	85.7
Part time	9	9.3	4	14.3

Source: Field survey, 2019

#### Agricultural Extension Workers' Level of Use of ICTs

Table 2 shows the result for respondents' level of identified ICTs use for extension activities. Only GSM ( $\bar{x} = 2.88$ ) and telephone ( $\bar{x} = 2.88$ ) were the ICTs that were highly used among male agriculture extension workers, while female category, television ( $\bar{x} = 2.41$ ), GSM ( $\bar{x} = 2.76$ ) and telephone ( $\bar{x} = 2.76$ ) recorded high level of use. The implication of this finding is that benefits accruable from the other numerous ICTs not highly used would be denied the system thereby hindering early agriculture and rural development. Interestingly, the ICT tools used might be use by agriculture extension workers for personal activities and

not official duties. For instance, use of telephone and GSM may not necessarily be for official activities as everyone uses them for calls and for sending messages on daily basis. Hence, male agriculture extension workers in the study area had high level of use of the two ICTs while females had high level use of Television ( $\bar{x} = 2.4$ ), GSM ( $\bar{x} = 2.76$ ), and telephone ( $\bar{x} = 2.76$ ) respectively. Generally, there is low level use of ICT tools among agriculture extension workers in study area and the result is likely to impact negatively on rural agriculture and rural community development as rural dwellers would continue in their old ways farming and developing their respective communities.

**Table 2:** Agriculture extension workers' level of use of ICTs

	Male		Female	
ICTs	Mean ( $\bar{x}$ )	Std. Dev	Mean ( $\bar{x}$ )	Std. Dev
Television	1.13	0.11	2.41*	0.76
Radio	1.28	0.58	1.32	0.61
Internet	1.19	0.42	1.22	0.19
G.S.M	2.88*	0.52	2.76*	0.11
Telephone	2.88*	0.52	2.76*	0.11
Computer	1.15	0.51	1.55	0.63
Video CD	1.12	0.61	1.12	0.51
Printers	1.27	0.49	1.37	0.71
Video camera	1.31	0.66	1.73	0.17
Satellite	1.21	0.32	1.54	0.41
Fax machine	1.22	0.18	1.88	0.66
Transmitter	1.71	0.32	1.61	0.14
Word processors	1.43	0.52	1.63	0.13
Web publishing	1.22	0.39	1.65	0.13
Multimedia projector	1.81	0.31	1.77	0.39
Short merge series	1.41	0.31	1.51	0.51
E-commerce	1.79	0.39	1.33	0.63
Teleconferencing	1.44	0.41	1.67	0.41
Email	1.63	0.32	1.32	0.65
Spread sheets	1.15	0.13	1.32	0.43

Source: Field survey, 2019;  $\bar{x} \geq 2.0$  = High Use;  $\bar{x} \leq$  = low use of ICTs



### Gender Difference in the Use of ICT between Male and Female respondents

Results in Table 3 show that significant difference exists in the gender use of ICTs between male ( $\bar{x} = 22.17$ ) and female ( $\bar{x} = 9.74$ ) agricultural extension workers with a t-value of 3.27 at 0.01 significant level. This means gender difference exists in use of ICTs for agriculture extension works. Looking at the results, it simply that males used ICTs more than their females' counterparts with high mean values of 22.17 as against 9.74 for females. The reason for this may not be farfetched as males may be more involved in extension field works than their female counterparts due to social, cultural and gender issues that may restrict females to office administration office works in their respective agricultural institutions.

**Table 3:** Gender difference in agriculture extension workers in use of ICTs

	Mean ( $\bar{x}$ )	Std. Err	Mean Diff	t-test	Sig	Decision
Male	22.17	2.28	12.63	3.27	0.01	S (significant)
Female	9.74	0.16				

Source: Field survey, 2019

### Conclusion and Recommendations

From the results of this study, gender extension workers use of ICTs was low in the study area despite the undeniable immense benefits accruable from use of ICTs globally. It was observed that respondents are within labour active age which potent prospects for agriculture extension services delivery and rural development but their low use of ICTs especially by female extension workers and the gender difference in ICTS use may likely hinder the prospects. Based on the findings, the following recommendations were made:

1. In-service training on ICTs use/benefits should be organize for all categories of agriculture extension workers paying much attention on younger staffs.
2. Relevant bodies/agencies should provide modern miss of mobility for agriculture extension service delivery.

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