



Determinants of Information Communication Technology Accessibility for Community Development Activities among Male and Female Agriculture Extension Workers in Edo State, Nigeria

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ABSTRACT: This study identified the determinants of (information communication Technology) ICTs accessibility among male and female agriculture extension workers for community development activities in Edo State, Nigeria. Primary data were collected from randomly selected one hundred and twenty-five (125) agricultural extension workers with the use of validated questionnaire. Means and Pearson's Product Moment Correlation (PPMC) statistics were used as analytical tools. Results showed that the mean deviations of gender of agriculture extension workers in terms of age ($\bar{x} = 1.4$), household size ($\bar{x} = 0.2$), years of training ($\bar{x} = 0.4$), and job experience ($\bar{x} = 0.7$) were nuance. PPMC results showed that male and female agriculture extension workers age ($r = -0.32$; $r = -0.31$) and female job experience ($r = 0.29$) were the significant correlates of accessibility of ICTs at 5% significance level while male and female agriculture extension workers age (male $r=0.32$; female $r = -0.31$), years of training (male $r= 0.63$, female $r=0.55$), and male job experience ($r=0.39$) correlated with their accessibility to ICTs at 0.01 level of significance. The study recommends that agriculture extension institutions should make adequate provisions for staffs to take care of their household members which will in turn enable them pay much attention to official work and have sufficient time to access ICTs facilities. Also, young people should be employed to carry out extension works since they have higher accessibility to ICTs than older staffs.

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Globally, agriculture extension experts and institutions are promoting access and use of Information and Communication Technology (ICT). ICTs are greatly influencing people's life in all aspects of social, economic and political endeavour (Odiaka, 2011). ICTs expedite processes of agriculture technologies transfer from research and development institutions to all categories of farmers. It improves adoption of agriculture technology by supporting farmer learning, problem solving, and accessibility to profitable markets for their crops (World Bank, 2011). ICTs can contribute to the reduction of uncertainty in activities and transactions, reduce the extent to which markets

are thin, missing or incomplete, and reduce extent to which information asymmetries can be exploited by the relatively informed to extract rent when transacting with the relatively uninformed (Oladele, 2015). ICTs are all technologies used for the widespread, transfer, sharing of information, they are rapidly consolidating global communication networks and international trade with implications for people in developing countries and can be used to enable, strengthen or replace existing information systems and networks (Oladele, 2015). ICTs promote, distribute new and existing farming information and knowledge which are communicated within the agricultural sector since

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information is essential for facilitating agricultural and rural development and for bringing about social and economic changes (Swanson and Rajalahti, 2010). ICTs are rapidly transforming the agricultural extension and they are acting as key agent for changing agrarian situation and rural dwellers' lives by improving their access to information and sharing knowledge. ICT based extension brings credible opportunities and has the potential of enabling empowerment of farming communities (Saravanan, 2010) and none farming communities as well. According to Munyua *et al.*, (2009), Information and knowledge play central role in rural agricultural development. In describing the roles of gender in agriculture and rural development, information and knowledge are essential if gender are to respond to opportunities and major challenges of the coming century, in emphasizing roles of information and knowledge; information and knowledge is described as prime productive resources (Oladele, 2015). According to World Bank (2011), gender is the socio-cultural differences or ascribed roles between men and women in any society; the attributes, opportunities and relationships are socially constructed, learned through socialization processes and they are context-/time-specific and changeable. Gender determines what is expected, allowed and valued in a women or a man in a given context. In most societies particularly in Africa, a very wide gender differences and inequalities exist in virtually all aspects: in the area of decision making opportunities, assigning of responsibilities /undertaken, in areas of access to and control of resources and several others. Also, gender is said to be part of the broader socio-cultural context. Other important criteria for socio-cultural analysis include class, race, poverty level, ethnic group and age (United Nation, 2017). Hence the objective of this paper is to evaluate the determinants of information communication technology (ICT) accessibility by gender among agriculture extension workers for community development in Edo State, Nigeria

MATERIALS AND METHODS

Study Area: This research was conducted in Edo State, one of the 36 States in Nigeria. It is located between latitudes 05° 44' North and 07° 34' North and longitude 05° 04' East and 06° 43' East 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 17,820km² and population estimate of 3,218,332 made up of 1,640,461 males and 1,577,871 (National population census, 2006). Edo State is located in 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 between November and April with harmattan period between December and January. But the weather and temperature of the State are fast changing.

The annual rainfall in the area exceeds 200cm. Minimum and maximum temperature recorded is about 25°C and 28°C respectively (National Bureau Statistics, 2013). Edo State has 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 for this study was male and female agriculture extension workers in Nigeria Institute for Oil Palm Research (NIFOR), Cocoa Research Institute of Nigeria (CRIN) and Edo Agricultural Development Programme (EDADP), Edo State, Nigeria.

Sampling Procedure and sample size: A simple random sampling method was used to select 97 male and 28 female 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 primary and secondary sources. A structured questionnaire was used to obtain primary data from the extension workers.

Measurement of variables: Agricultural extension workers and researchers accessibility to ICTs facilities by gender was measured on a three point rating scale as follows, high accessibility was coded 3, accessibility coded 2 and low accessibility 1. Mean of 2 and above implies high accessibility otherwise implies low accessibility.

Data analysis: The collected data was analysed using mean and standard deviation descriptive statistics. Pearson product moment correlation was used to test the hypothesis. Pearson product correlation coefficient is used when a more precise quantitative parameter is to be measured. It is written as r_{xy} for a particular sample

$$r_{xy} = \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum (x_i - \bar{x})^2 \sum (y_i - \bar{y})^2}}$$

Where r_{xy} = Pearson Correlation; X_i = i th value of X-variable; Y_i = i th value of Y-variable; \bar{X} = mean of X-values; \bar{Y} = Mean of Y-values

RESULTS AND DISCUSSION

Means of Selected Socio-Economic Characteristics of Respondents: The results of analysed data in Table 1 show mean deviation for male and female extension workers age, household size, years of training and job experience to be 1.4, 0.2, 0.4, and 0.7 respectively. The mean deviations are nuance. There is negligible difference between male and female extension workers in terms of aforementioned variables. The mean age of male ($\bar{x} = 49.7$) agriculture extension workers is higher than females' ($\bar{x} = 41.6$) while females ($\bar{x} = 22.4$) had more experience on the job than males ($\bar{x} = 20.1$) counterpart. This may be in the area of office work and not field works as males are more likely to be deployed for field works than females because of the tedious nature of field works and other African beliefs. The male and female agriculture extension workers are within farm labour active and productive age. The relatively young age of respondents is a pointer to prospect of rural agriculture and community development in the study area. The

result shows gender household means of $\bar{x} = 5.1$ and $\bar{x} = 4.7$ size for males and females respectively. This is an indication that there is no difference between males and females households in terms of number of persons eating from same pot under the same roof; an indication that respondents had small household size. On year of training, results show male and female respondents means of 19.2 and 15.5 years respectively. The findings show that male and female respondents had relatively high number of years of training. Male extension workers had higher training years than female counterpart though the mean difference is nuance. This is another indication that there is no much gender difference in terms of years of training. There is the possibility that males may likely have more educational experience in the use of ICTs in carrying out extension works than the females. Although job experience results indicate that mean deviation was (0.7) nuance but there is the likelihood that female ($\bar{x} = 22.4$) agriculture extension workers had higher experience than males ($\bar{x} = 20.1$).

Table 1: Mean distribution of Agricultural Extension Workers

Variables	Gender				
	Male, n= 97		Female, n= 28		Mean Deviation
	Mean	SD	Mean	SD	Mean
Age	49.7	9.3	41.6	10.7	1.4
Household size (number of persons)	5.1	1.0	4.7	1.2	0.2
Years of training (number of years)	19.2	2.7	15.5	3.1	0.4
Job experience (number of years)	20.1	7.1	22.4	6.4	0.7

Source: Field survey, 2019.

This probably shows that the female extension workers may be more at administrative level compared to their male counterparts who usually are more on field work.

Agriculture Extension Workers Accessibility to ICTs: Results in Table 2 show that male and female extension workers had only 20% high accessibility to ICT tools. The 4 variables that males and females had high accessibility are television (means = 2.92; 2.16), radio (Mean = 2.59; 2.29), GSM (mean = 2.89; 2.64), and telephone (mean = 2.89; 2.64).

The findings show that male and female agricultural extension workers in the study area did not have high accessibility to most of the ICTs that could promote the desires changes in rural agriculture and development. This may be due to the infrastructural decay and poor basic amenities that are capable of making life easier for people especially rural dwellers who are main 'food basket' in developing countries in Africa.

For example, male and female extension workers did not have high accessibility to internet and computers.

Table 2: Means and standard deviations of respondents' accessibility to ICT tools

ICTs	Male		Female	
	Mean	Std. Dev	Mean	Std. Dev
Television	2.92*	0.18	2.16*	0.41
Radio	2.59*	0.32	2.29*	0.66
Internet	1.15	0.52	1.21	0.14
G.S.M	2.89*	0.39	2.64*	0.13
Telephone	2.89*	0.44	2.64*	0.13
Computer	1.52	0.13	1.55	0.39
Video CD	1.21	0.39	1.12	0.51
Printers	1.13	0.41	1.37	0.63
Video camera	1.28	0.32	1.61	0.41
Satellite	1.19	0.13	1.12	0.65
Fax machine	1.21	0.11	1.09	0.43
Transmitter	1.31	0.58	1.72	0.76
Word processors	1.15	0.42	1.38	0.61
Web publishing	1.12	0.52	1.92	0.19
Multimedia projector	1.39	0.19	1.51	0.11
Short morga series	1.22	0.51	1.22	0.43
E-commerce	1.37	0.61	1.31	0.63
Teleconferencing	1.22	0.49	1.45	0.51
Email	1.51	0.66	1.82	0.71
Spread sheets	1.11	0.32	1.17	0.17

Source: Field survey, 2019 Mean ≥ 2.0 = high accessibility, otherwise low accessibility

Arokoyo (2010) stated that internet accessibility is very crucial for effective extension delivery in the

modern day extension activities. This shows that without internet it becomes almost impossible for rural dwellers to update/develop themselves on contemporary issues that are capable of improving their knowledge on their work. Therefore, having access to few ICTs may hinder every aspect of rural people lives and area development.

Relationship between Respondents' Socio-Economic Characteristics and Accessibility to ICTs: Table 3 shows that age (-0.32), years of training (r = 0.63) and job experience (r = 0.39) significantly correlated with

male respondents' accessibility to ICTs at 0.05 and 0.01 significant levels. Similar trend occurs among female extension workers where age (r = -0.31), years of training (r = 0.55) and job experience (r = 0.29) significantly correlated with their accessibility to ICTs. The negative sign associated with age for male and female respondents show that younger extension workers has more accessibility to ICTs than older agricultural extension workers while higher the number of trainings received the better their accessibility to ICTs for both male and female agricultural extension workers.

Table 4: Relationship between respondents' socio-economic characteristics and accessibility to ICTs tools

	Male			Female		
	Correlation Coefficient (r)	Sig	Decision	Correlation Coefficient (r)	Sig	Decision
Age (Years)	-0.32	0.05	S	-0.31	0.05	S
Household size	0.13	0.59	NS	0.17	0.72	NS
Years of training	0.63	0.01	S	0.55	0.01	S
Job experience	0.39	0.01	S	0.29	0.05	S

Source: Field survey, 2019; S= Significant; NS = Non-Significant

Conclusion: Results revealed that the mean deviations of gender, age, household size, years of training, and extension workers experience were very small. Younger agriculture extension workers whether male or females unlike older ones have more accessibility to ICTs, and agriculture extension workers years of training and on job experience correlated with their accessibility to ICTs. Therefore, young prospective agriculture extension workers should be employed and given on-the-job training.

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