



Assessment of Accessibility of Information and Communication Technology by Gender among Famers in Taraba State, Nigeria

D. Bakari¹, S. A. Gisilanbe^{2*} and P. Samuel¹

¹*Department of Agricultural Economics and Extension, Taraba State University, Jalingo, Nigeria.*

²*Department of Agronomy, Taraba State University, Jalingo, Nigeria.*

Authors' contributions

This work was carried out in collaboration between all authors. Author DB designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author SAG helped to design the study, wrote the protocol, helped to write the first draft of the manuscript and managed the analyses of the study. Author PS helped to design the study and managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Information and Communication Technology (ICT) is the future of communication and it is integral to human interaction and ease of doing things. It is important in the 21st century for almost all human endeavors. This study was aimed to assess the accessibility of ICT by Gender among Famers in Taraba State, Nigeria. Both purposive and multi-stage random sampling techniques were adopted for the selection of 214 respondents. Primary data were collected using structured questionnaires and interview techniques administered on respondents and analyzed using descriptive statistics and independent t-test statistical tool. Results indicated that mobile phone (M=3.71 for males and M=3.60 for females) radio (M=3.68 for males and M=2.69 for females) and television (M=3.04 for males and M=2.59 for females) were the best means of accessing ICTs by gender. However, males had more access to radio, television and mobile phone than females. In access to ICTs by location, results revealed that mobile phone (M=3.67 for urban and M=3.62 for

*Corresponding author: Email: gisilanbe27poksman@gmail.com;

rural), radio (M=3.17 for urban and M=3.2 for rural), television (M=3.16 for urban) and internet (M=2.67 for urban) were most readily accessible among both urban and rural farmers whereas television and internet were best accessible in the urban area. Results further showed that there was a statistically significant difference at $p < 0.01$ for access to radio between male and female respondents ($t=8.718$), television between male and female respondents ($t=3.552$), internet between male and female respondents ($t=4.182$) and computer between male and female respondents ($t=3.858$). This indicated that male had more access to ICTs than females in the study area. Women are actively involved in improving soil texture and structure and also, improving soil fertility and productivity in the study area. Hence, empowering rural farmers by providing them with adequate infrastructural facilities and basic amenities that can enhance their access to ICTs is imperative. This will go a long way to alter inequality of access between rural and urban communities and also increase their access to soil inputs like fertilizers and other soil tillage tools for crop production in the study area.

Keywords: Gender; accessibility; soil inputs; information communication technology; Nigeria.

1. INTRODUCTION

Information and communications technology - or technologies (ICT) generally refers to any communication device or application. This includes radio, cellular phones, television, computer and network hardware and software devices and satellite systems. It may also include the various services and applications associated with them, such as video conferencing and distance learning [1]. Typically, the importance of ICTs lies less in the technology itself than in the capacity to facilitate improved access to information and communication. ICTs, therefore, find applicability in virtually every field of human endeavor: agriculture, education, health, food security, transport, social work, soil improvement, space travel, survey, politics, law and even religion. It is considered a critical driver in enhancing economic development in poor countries, by facilitating greater access to market information, fostering learning opportunities through distance-learning, as well as raising incomes of families through e-commerce. This study on ICT covers five specific devices; radio, television (TV), mobile phone, personal computers (PC) and the Internet [1].

Evidence can be found that access to ICT (such as telephones) can break down the isolation of individuals, enhance their chance of economic inclusion and thus provide diverse avenues for women's social, political and economic empowerment [2]. Most of the studies in recent years on women's access and usage of ICTs argue that there is a significant gender divide in ICT access and usage, particularly in developing countries. A study carried out by the Gender and

ICT Network reveals that, globally, women's chances to benefit from the advantages of the information society are one third less than men's [3].

Several studies [4,5] have shown that the womenfolk constitute a formidable and significant source of labour in small-scale farming in most developing nations especially in Nigeria. Hence, their access to information on agricultural production and other aspects of rural life is pertinent. However, woman access to ICTs and technical resources are inadequate for their agricultural production [4]. The resultant effect of the lack of access to improved knowledge through effective communication is that women continue with the traditional practices despite the negative effects on agriculture [5].

Although a lot of research has been conducted in some States of the Federation in Nigeria by other researchers on application of ICTs in Agriculture [6,7], little or nothing has been done on assessment of the accessibility of ICT by Gender among Farmers in Taraba State, Nigeria. For example, [6] worked on the assessment of access to information and communication technology among Agricultural Extension Officers in Kwara, State Nigeria, while [7] worked on access and application of information and communication technology among farming households of south-east Nigeria. It is based on this background that this study assessed the accessibility of ICT by Gender among Farmers in the study area. Specifically, the study sought to ascertain the access to ICTs by gender and also, to find out the access to ICTs by location (rural versus urban) in the study area.

1.1 Statement of Hypotheses

Based on the Specific objectives of this Study, the null hypotheses were stated and tested:

H_{01} : There is no significant difference in access to ICTs by gender.

2. METHODOLOGY

This study was carried out in Taraba State, Nigeria. It has an estimated population of 2,294,800 million and land area of 54,428 km² [8]. The farmers in Taraba State constitute the respondents in this study. In selecting respondents for the study, a multistage sampling technique was employed. In the first stage, Taraba State was stratified into three Agricultural zones into which the state is classified [9]. The zones are; A (Taraba South), zone B (Taraba North), and zone C (Taraba Central).

The second stage was a purposive selection of one local government area from each zone, which makes up three Local Government Areas for the study. These local government areas are selected based on their accessibility and usage of ICTs. Two wards from each of the three local governments areas were selected by simply random sampling method. A proportionate random sampling was employed to select the respondents from each Local Government Area. The sample size for the study which was 0.05 of the sampling frame was selected from Wukari, Gassol, and Jalingo population respectively. The sample size for this study was 214 farmers. Null hypotheses were stated and tested: H_{01} : There is no significant difference in access to ICTs by gender.

2.1 Data Collection

Data were collected from primary sources; It involves the use of a structured questionnaire and interviewing methods were employed. The respondents were asked questions on their access to ICTs by gender in the study area. They were also asked to indicate access to ICTs based on their location (rural versus urban).

2.2 Data Analysis

The data were analyzed by descriptive statistics and independent t-test statistical tool using statistical package for social science (SPSS version 17).

3. RESULTS AND DISCUSSION

3.1 Respondents Access to ICTs by Gender

The expected mean for the best means of accessing ICTs was $M=2.50$. Results depicted in Table 1 revealed that mobile phone ($M=3.71$ for males and $M=3.60$ for females), radio ($M=3.68$ for males and $M=2.69$ for females) and television ($M=3.04$ for males and $M=2.59$ for females) had their mean above the expected mean $M=2.5$. This implies that radio, television, and mobile phone were the best means of accessing ICTs by gender in the study area. This could be because radio, television and mobile phone were predominantly available and affordable as the easiest means for receiving information for both male and female farmers. Furthermore, male farmers had more access to radio, television and mobile phone than the female farmers. This could be attributed to the fact that most male farmers were closely in contact with their social system where most of the ICTs are predominant than the female farmers in the study area. The similar result was reported by [10], they stated that there was evidence of a digital divide of the same magnitude in high socio-economic groups in their survey, which show an overall disparity between male and female access to ICTs.

However, result indicated that internet ($M=2.16$ for males and $M=1.74$ for females), computer ($M=2.03$ for males and $M=1.68$ for females), video ($M=1.81$ for males and $M=1.29$ for females) and telephone ($M=1.15$ for males and $M=1.08$ for females) were below the expected mean ($M=2.5$) for both male and female farmers. This could be linked to internet, computer, video and telephone as contemporary ICTs are often very expensive and less accessible for most of the farmers in the study area. These results agree with the findings of [11] that generally indicated a low access for both male and female alike to that of contemporary ICTs except for that of global system for mobile communication (GSM) where there was a relatively appreciable access to ICTs in the case of GSM.

3.2 Respondents Access to ICTs by Location

The expected mean for access to ICTs by location was $M=2.50$. The result indicated that mobile phone ($M=3.67$ for urban and $M=3.62$ for rural), radio ($M=3.17$ for urban and $M=3.20$ for

rural), television (M=3.16 for urban) and internet (M=2.67 for urban) had their mean above the expected mean (M=2.5), as shown in Table 2. This implies that mobile phones and radio were the most readily accessible ICTs among both the urban and rural farmers whereas television and internet were best accessible in the urban area. This could be attributed to most rural farmers who have poor income and can't afford television and internet facilities which are often too expensive and difficult to install and maintain. Furthermore, the urban farmers had more access to radio, television, mobile phone and internet than their rural counterparts. This result agrees with findings of [12] that stressed the inadequate accessibility to ICTs among farmers was more pronounced in the rural communities than the urban areas.

Other means of accessing ICTs were computer (M=2.43 for urban and M=1.19 for rural), video (M=1.75 for urban and M=1.34 for rural) and telephone (M=1.23 for urban and M= 1.02 for rural) which were below the expected mean (M=2.5). This might be due to computer, video and telephone as contemporary ICTs were often expensive and less accessible for most farmers in the study area.

3.3 Hypothesis H₀₁

The results of t-test (Table 3) shows difference in access to ICTs between male and female farmers. The result indicated that there was statistically significant difference at p<0.01 in access to radio between male and female respondents (t=8.718). This implies that, male had more access (average 3.72) than the female (2.61) farmers. The difference in the result might be due male farmers were closely in contact with the social system while the female farmers were more involved with domestic work, for example most of the northern women are full-time house wife's in this instance and only assist when

invited. This result corresponds to the findings according to a joint *BBC World Service* and *SFCG* study on media consumption habits in Sierra Leone [13], their report stated that men were more likely than women to own or have access to radio and to listen more frequently.

There were statistical significant differences at p<0.01 level in access to television between male and female respondents (t=3.552). This implies that, male had more access (average 3.09) than the female farmers (2.53). The difference could be attributed to male farmers ability of gaining higher income than their female counterpart which enables them to access television in order to watch soccer or news while their female counterpart is more concern about carrying out their domestic activities. This result is supported by the findings of [14], that women generally have less access to ICTs and significantly more men than women watch television.

The results also indicated that there were statistical significant differences (p<0.01) in access to internet between male and female respondents (t=4.182). This shows that male farmers had more access (average 2.25) than their female counterparts (1.62). These could be due to most men were partly employed and also men patronize cyber cafes and often use laptops with modem to access internet than their female counterpart. This result corresponds to the finding of [15] who reported that women have less e-skills in 9 out of 17 African countries surveyed. Woman was expected to have fewer opportunities to use the internet, since they were less often employed and more often housewives or might approach new technologies with caution. This is counterproductive.

The results showed that there were statistical significant differences at p<0.01 for access to computer between male and female respondents

Table 1. Distribution of farmers according to their best means of accessing ICTs

ICTS	Male (n=115)		Female(n= 99)	
	Mean	Sd	Mean	Sd
Radio	3.68	0.738	2.69	1.169
Television	3.04	1.017	2.59	1.308
Mobile phone	3.71	0.716	3.60	0.936
Internet	2.16	1.242	1.74	1.052
Computer	2.03	1.226	1.68	1.064
Video	1.81	1.119	1.29	0.752
Telephone	1.15	0.618	1.08	0.460

Mean=2.5; Source: Field Survey, 2016

Table 2. Distribution of respondents according to their accessibility to ICTs by location

ICTS	Urban (n =115)		Rural (n= 99)	
	Mean	SD	Mean	SD
Radio	3.17	1.084	3.20	1.125
Television	3.16	1.056	2.46	1.223
Mobile phone	3.67	0.792	3.62	0.889
Internet	2.67	1.152	1.21	0.611
computer	2.43	1.178	1.19	0.695
Video	1.75	1.161	1.34	0.702
Telephone	1.23	0.762	1.02	0.020

Mean=2.5; Source: Field Survey, 2016

Table 3. t-tests access to ICTs by gender

ICTs	Sex	N	Mean	standard deviation	Md	T	Df	Sig (2tailed)
Radio	Male	115	3.72	0.682				
	Female	99	2.61	1.159	1.116	8.718*	212	0.000
Television	Male	115	3.09	0.99				
	Female	99	2.53	1.312	0.562	3.552*	212	0.000
Mobile phone	Male	115	3.71	0.732				
	Female	99	3.6	0.996	0.117	1.04	186.2	0.312
Internet	Male	115	2.25	1.255				
	Female	99	1.62	0.966	0.585	4.182*	209.5	0.000
Computer	Male	115	2.13	1.253				
	Female	99	1.55	0.961	0.585	3.858*	209.3	0.000
Video	Male	115	1.83	1.134				
	Female	99	1.23	0.694	0.563	4.449	192.4	0.101
Telephone	Male	115	1.17	0.666				
	Female	99	1.05	0.361	0.123	1.717	180.6	0.088

*t-test significant at 1%; Source: Field Survey, 2016

(t=3.858). This showed that male farmers had more access (average 2.13) than their female counterparts (1.55). These differences could be related to the fact that men were partly or mostly employed and have higher income and the ability of obtaining more grants than the female farmers. This corresponds to reports by [16] that more males had more access to personal computers (laptops) than their female counterparts.

4. CONCLUSION

The results revealed that radio, televisions, and mobile phone, were the best means of accessing ICTs by gender. However, male farmers were found to access ICTs more than their female counterparts and H_{01} which stated that; there is

no significant difference in access to ICTs by gender is rejected. The results also indicated that radio, television and mobile phone were the best means for accessing ICTs by location, while urban farmers had more access to ICTs than the rural farmers. Women should be involved from the grass root in decision making and policy formulation that can enhance their participation and performance in accessing ICTs for an improve agriculture. Since they also participate in farming activities and improving soil conditions and productivity, they should be empowered for efficiency. Enabling rural farmers by providing them with the adequate infrastructural facilities and basic amenities that can enhance their access to ICTs will alter inequality of access between rural and urban farming communities in the study area. Improving soil fertility and erosion

hazards which confronts farmers will mean farmers can save more and afford to buy ICT facilities for optimum production in the study area.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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