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# Accessibility and relevance of information and communication technologies (ICTs) among cassava farmers in Nigeria

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The study attempts to investigate the level of awareness, access and relevance of information and communication technology (ICT) tools among cassava farmers in Osun State, Nigeria. Data were gathered through a survey interview scheduled on a total of 130 cassava farmers. The data were analyzed using frequency, mean, standard deviation, Spearman rho correlation and independent sampled t-test. The result revealed that, the mean age of the respondents was 45.3 years and mean years of farming experience of 17.7 years. Radio, television, video recorder, audio cassette, mobile phone (GSM), computer and camera were categorized into high level of awareness and access. These ICT tools were also rated as highly relevant to cassava production activities in the area of cassava stem selection, land selection, land preparation, time of planting of cassava stem; and marketing of cassava produce. Based on the result of independent sampled t-test, there were significant differences in the mean scores of awareness and access to radio, television, computer, video and camera. These ICT tools were highly relevant to cassava production in the study area. Spearman Rho correlation analysis revealed that significant relationship exist between age ($r = -0.434$, $p \leq 0.05$), cosmopoliteness ($r = 0.276$), $p \leq 0.05$); Sex ($r = -0.76$, $p \leq 0.05$), years of education ($r = 0.328$; $\leq 0.05$) and accessibility to ICT. Sequel to the findings of the study, it was recommended that, the extension institutions in Nigeria should concentrate their effort on agricultural information delivery through these ICT facilities accessible to cassava farmers in order to improved cassava production in the study area.

**Key words:** Information and communication technology, cassava farmers, extension delivery, Nigeria.

## INTRODUCTION

Information and communication technologies (ICTs) are new technologies that cannot be ignored in Africa especially for development in all sector agriculture inclusive. This is because, ICT is one of the main driving forces that can bring about development and change in this present digital age. It was in the light of this that

Emenari (2004) noted that, the great transformation in the lives of the people especially in the developing countries depends on advances ICTs. The rapid development of ICTs continues to have major influence on the livelihood of people across the world. Social research has shown that, adoption of ICTs can be a major fuel for economic

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and community development in rural areas (Osiakade et al., 2010). As noted by Onwubalili (2004), "the tremendous changes are quite glaring in every facet of our lives and touches simplest of domestic services to corporate and limitless industrial applications".

ICTs such as Internet could create and meet demands which satisfies human and corporate needs at all times and levels (Nwajinka, 2004). Infact, ICTs are what rural dwellers need to climb to the heights developed continent had reached. The recent development in ICT has broken national and international barriers and turned the world into a global village, making information available to everyone, everywhere and at any time it is needed (Onasanya et al., 2011). Then one could ask what is ICT?.

According to the Food and Agriculture Organization, FAO (1993) ICTs was defined as those technologies used in collecting, processing, storing, retrieving, disseminating, and implementing data and information using microelectronics, optics, and telecommunication and computers.

Broadly, the Technical Centre for Agricultural and Rural Cooperation (CTA, 2003) defined ICTs as those technologies that facilitate communication and the processing and transmission of information by electronic means for the benefits of its users. Odame et al. (2002) and Arokoyo (2005) stated that, ICTs covered a wide range of equipment and services. In agricultural extension, the ICTs used include: radio, television fixed and mobile phones, short message services (SMS), world wide web (www), search engines, packet digital assistants, cameras, video, e-mail, computer, contact data bases and systems, CD-Rom, DVD, rural radio and web publishing to mention a few.

Agriculture is an important sector with the majority of the rural population in developing countries depending directly or indirectly on it (Diao et al., 2007). The sector faces major challenges of enhancing production in a situation of dwindling natural resources necessary for production. The growing demand for agricultural products especially cassava, however, also offers opportunities for producers to sustain and improve their livelihoods. ICT play an important role in addressing these challenges and uplifting the livelihoods of the rural poor (ITU, 2009).

The role of ICT to enhance food security and support rural livelihoods is increasingly recognized and was officially endorsed at the World Summit on the Information Society (WSIS) in 2005. These include the use of computers, internet, geographical information systems (GIS), mobile phones, as well as traditional media such as radio and television. Although it is a relatively new phenomenon, evidence of the contribution of ICT to agricultural development and poverty alleviation is becoming increasingly available.

Since 1998, international institute for communication and development (IICD) has been involved in projects and policy trajectories and consistently monitor the progress and impact of the use of ICT in most of the developing countries. Increase in efficiency, productivity and sustainability of small scale farms is an area where ICT have been making a significant contribution in agricultural sector (IICD, 2007). According to Olajubu et al. (2006) and Sepehrdoust and Khodaee (2012) opined that, ICT have great impact on productivity, product differentiation, competitive advantage, effective communication and employment opportunity in many productive sectors of the economy. Due to these, developing countries should maximize the potentials of ICT for immense development purposes agriculture inclusive. Generally, agriculture is an information intensive industry. The sector draws upon infinite sources of widely dispersed, locally contextualized knowledge and considerable body of research materials. It also relies upon continuous flow of information from local, regional and world markets.

Nigeria remains the world leader in cassava production with the annual production ranging from 30 to 40 000 000 metric tons. This production outputs are in the hands of small scale farmers who cultivates is from 0.5 to 5 ha of land. Cassava has gained increased industrial, economic, and nutritional importance over the years because of its multifarious uses of the starch-rich roots (Karim et al., 2009). Cassava is used almost exclusively for consumption as 95% of the total cassava outputs produced was used as food. According to Nweke and Manyong (2000), cassava farming has been transformed from being a staple food to a source of income as well.

Cassava farmers thus, need information to optimize production. Farmers in the rural area are to benefit from the use of ICT to order to improve cassava production. Balderama (2009) pointed out that, there is a dearth of knowledge and information and new technologies in agriculture that is yet to be exploited especially in most of the developing countries of which Nigeria is included. It is expected that, there should be a flow of knowledge and new information from various research institutes to the farmers. With the explosion in ICTs in the world, there is an expectation that, knowledge producers would be substantially empowered to channel information to farmers. As suggested by Erhabor and Emokaro (2007), that there has to be a tremendous increase in the current cassava output in the country in order to meet increasing the demand both locally and internationally. Therefore, it is highly imperative to determine the level of awareness, accessibility, and relevance of ICTs among cassava farmers in Osun State, Nigeria with the focus in ensuring improved production capacity of farmers in the study area. Based on the above background this study was designed to provide answers to the following research questions:

i) What is the level of awareness of ICT among cassava farmers in the study area?
ii) To what extent does cassava farmers have access

to ICT?
iii) Of what relevance is ICT to cassava production in the study area?

## Objective of the study

The general objective of the study was to determine the awareness, accessibility, and relevance of ICT to cassava production among farmers in Osun State, Nigeria.

## Specific objectives

The specific objectives of the study are to:

i) Determine the personal characteristics of cassava farmers in the study area,
ii) Ascertain the level of awareness of available ICT to cassava farmers,
iii) Ascertain the accessibility of available ICT to the respondents and to determine the relevance of ICT to cassava farmers in the study area.

## Hypotheses of the study

Based on the objectives of the study, the following hypotheses were stated in the null form:

1) There is no significant relationship between selected personal characteristics of the respondents and accessibility to ICT among cassava farmers,
2) There is no significant difference in awareness of ICT and accessibility to ICT among cassava farmers.

## MATERIALS AND METHODS

The study was carried out in Atakunmosa West local Government Area of Osun state, Nigeria. The population for the study comprises of cassava farmers in the study area. A total of 130 cassava farmers were randomly selected from 10 villages based on proportion of the respondents in each village. A structured and validated interview schedule was used to collect relevant information from the sampled respondents. Descriptive statistical tools used in the data analysis include: frequency counts, percentages, mean and standard deviation. Independent sampled t-test and Spearman rho correlation analysis were employed as inferential statistical tools, to test the formulated hypotheses of the study.

## Measurement of variables

There are two major variables that are measured in the study. These are the dependent and independent variables.

### Independent variables

**Age:** Respondents' age was measured in actual years.

**Marital status:** Measured as married = 1, single = 2, divorced/widowed = 3.

**Years of education:** Measured in actual years spent in school.

**Sex:** This was determined as male = 1, female = 2.

**Cosmopoliteness:** This was measured in terms of frequency of making contact with other places apart from their immediate environment. Daily = 5, weekly = 4, monthly = 3, annually = 2 and occasionally = 1.

**Years of cassava farming experience:** This was measured in actual years of planting cassava on the farm.

Other independent variables include:

**Awareness of ICT:** Measured on a 4 point rating scale of Very aware = 3, Aware = 2, Somewhat aware = 1 and Not aware = 0. The cutoff point mean for awareness of ICT is 1.50, any mean ≥ 1.50 is considered to be categorized as high level of awareness but those with mean ≤ 1.50 is categorized as to have low level of awareness.

**Relevance of ICT:** Measured on a 4 point rating scale of Very relevance = 3, Relevance = 2, Fairly relevance = 1 and Not relevance = 0. The cut- off point Mean for relevance of ICT is 1.50. Mean cut off point ≥ 1.50 is categorized as more relevance and less relevance for any mean ≤ 1.50.

### Dependent variable

The dependent variable is the accessibility to ICT. This was measured on a 4 point rating scale Very accessible = 3, Accessible = 2, Fairly accessible = 1, and Not accessible = 0. The mean cut off of accessibility to ICT is 1.5. Any mean greater than 1.50 is considered to be high level of access and vice versa is considered to be low level of access to ICT.

## RESULTS AND DISCUSSION

### Personal profile of the respondents

The mean age of the sampled cassava farmers was 45.3 years. Majority (54.6%) of the respondents falls between 45 to 54 years of age. While 18.5% of the respondents have their ages ranged between 55 years and above and about 27% of the respondents were of age category between < 35 and 44 years as shown in Table 1. This finding implies that, majority of the respondents are in their middle age.

### Sex

Majority (73.8%) of the respondents are male while the remaining (26.2%) are female (Table 1). This finding

**Table 1.** Distribution of respondents according to personal characteristics.

| Variable | Frequency | Percentage | Mean |
|---|---|---|---|
| **Age (year)** | | | |
| < 35 | 19 | 14.6 | |
| 35-44 | 16 | 12.3 | 45.3 years |
| 45-54 | 71 | 54.6 | |
| 55 and above | 24 | 18.5 | |
| | | | |
| **Gender** | | | |
| Male | 96 | 73.8 | |
| Female | 34 | 26.2 | |
| | | | |
| **Marital status** | | | |
| Single | 14 | 10.8 | |
| Married | 106 | 81.5 | |
| Divorce/separated/widowed | 10 | 7.7 | |
| | | | |
| **Years of education (year)** | 26 | 22.0 | |
| 0 | 33 | 25.4 | |
| 1-6 | 50 | 38.5 | |
| 7-12 | 21 | 16.1 | |
| 13 and above | | | |
| | | | |
| **Cosmopoliteness** | | | |
| Daily | 29 | 22.3 | |
| Weekly | 61 | 46.9 | |
| Monthly | 12 | 9.2 | |
| Annually | 4 | 3.1 | |
| Occasionally | 24 | 18.5 | |
| | | | |
| **Years of cassava farming experience** | | | |
| 1-10 | 48 | 36.9 | |
| 11-20 | 44 | 33.8 | 17.7 years |
| 21-30 | 26 | 22.0 | |
| 31 and above | 12 | 9.2 | |

Source: Field survey (2012).

indicates that, cassava producers in the study area are male. This implies that, cassava production is male dominated activities in the study area. Although, the assertion of Olayemi et al. (2012) indicated that, women are known to be more involved in agricultural activities than men in Sub-Saharan Africa (SSA) countries. Despite this fact, the activities of men in agricultural production in Nigeria cannot be underestimated.

**Marital status**

From the same Table 1 it was revealed that, majority (81.5%) of the respondents were married while 10.8% of the respondents were single and low proportion (7.7%) of

the respondents are either divorce/separated or widowed. This implies that, majority of the respondents are considered to be responsible to take any rational decisions in the uptake of any innovation.

**Years of education**

Data reported in Table 1 further revealed that, majority (78.0%) of the respondents are literate while the remaining (22.0%) of the sampled cassava farmers had no formal education. This finding tallies with that of Oyekanmi and Okeleye (2007) that, high percentages of cassava farmers in Southwest zone are literate. This attribute is expected to influence their perception about

**Table 2.** Means scores of awareness and accessibility of ICT among cassava farmers.

| ICT tools | AWARENESS | | | ACCESS | | |
|---|---|---|---|---|---|---|
| | Mean | Rank | Remark | Mean | Rank | Remark |
| Radio | 2.52 | 1 | High | 2.25 | 1 | High |
| Television | 2.39 | 2 | High | 2.13 | 3 | High |
| Internet | 1.07 | 8 | Low | 0.85 | 9 | Low |
| Computer | 1.72 | 6 | High | 1.42 | 6 | Low |
| Software | 0.55 | 12 | Low | 0.61 | 12 | Low |
| Remote sensing | 0.55 | 12 | Low | 0.51 | 13 | Low |
| Video recorder | 1.93 | 5 | High | 1.48 | 5 | Low |
| Audio cassette | 2.12 | 4 | High | 2.12 | 4 | High |
| Mobile telephone | 2.22 | 3 | High | 2.24 | 2 | High |
| Camera | 1.62 | 7 | High | 1.23 | 7 | Low |
| Telex | 0.58 | 11 | Low | 0.48 | 14 | Low |
| Print media | 1.04 | 9 | Low | 1.00 | 8 | Low |
| GIS | 0.68 | 10 | Low | 0.62 | 11 | Low |
| GPS | 0.68 | 10 | Low | 0.67 | 10 | Low |

Source: Field survey (2012).

ICT awareness and utilization. Also, literacy level of cassava farmers could afford them the opportunity of learning new thing and use of research findings.

## Cosmopolitenes

This is an indication of the external orientation of the respondents apart from their immediate environment. Table 1 shows that, about 47.0% of the respondents contact other places apart from their environment on weekly basis; 22.3% of the respondents makes contact with other places on daily basis while 18.5% of the respondents occasionally travel out of their environment, 9.2% of the respondents contact other places on monthly basis and only few (3.1%) contact with other places apart from their immediate environment. Their extent of orientation could affect their exposure to modern and innovative ideas in the modern world.

## Years of cassava farming experience

Another section in Table 1 revealed that, more than one–third (36.9%) of the respondents had their years of cassava farming experience between 1 and 10 years. This followed closely by those with farming experience between 11 and 20 years (33.8%); 21 to 30 years of farming experience (22.0%) and a lower percentage (9.2%) of the respondents had farming experience above 30 years. The mean years of farming experience was 17.7 years. This implied that, the sampled cassava farmers had quite high numbers of years of farming experience in cassava production.

## Awareness of available ICT

Table 2 revealed that, 7 out of the 14 ICT tools were categorized into high level of awareness. These are: radio (Mean = 2.52); television (Mean = 2.49); mobile telephone (GSM) (Mean = 2.22); audio cassette (Mean = 2.12); video recorder (Mean = 1.93); computer (Mean = 1.72) and camera (Mean = 1.62). Other ICTs in the low category of awareness are internet (Mean = 1.07), GIS (Mean = 0.68); Global Positioning System (GPS) (Mean = 0.68); print media (Mean = 1.04), telex (Mean = 0.58), remote sensing (Mean = 0.55) and software (Mean = 0.55). In term of ranking order, radio, television and mobile phone ranked 1st, 2nd, and 3rd, respectively on the awareness scale of ICT (Table 2). Meanwhile, GIS, GPS, telex, software and remote sensing ranked least on the awareness scale of ICT.

The finding of this study shows that, the respondents were aware of both the analogue and digital ICTs (radio, television and GSM) as these are the ICT that are highly aware of by the respondents. This could have been as a result of its availability and knowledge about them.

## Accessibility of ICT

Another part of Table 2 shows the distribution of respondents' response on access to ICT. It was revealed that, 4 out of 14 ICT tools were categorized into high level of accessibility of ICT. Radio (Mean = 2.25); Mobile phone (GSM) (Mean=2.24), television (Mean= 2.14) and audio cassette (Mean=2.12) were categorized as those ICTs that are highly accessible to the sampled cassava farmers. Whereas, others, video recorder (Mean = 1.48); computer (Mean = 1.42);  camera   (Mean = 1.23);  GIS

**Table 3.** Mean score of relevance of various ICT tools to cassava production activities.

| Activity/operation | Means score | Rank | Remark |
|---|---|---|---|
| Cassava stem selection | 1.74 | 1 | High |
| Land selection | 1.56 | 4 | High |
| Access to credit | 1.18 | 8 | Low |
| Land preparation | 1.68 | 2 | High |
| Cassava planting time | 1.55 | 5 | High |
| Input management | 1.55 | 5 | High |
| Fertilizer application | 1.52 | 6 | High |
| Pest management | 1.52 | 6 | High |
| Marketing of produce | 1.66 | 3 | High |
| Transportation of harvested tuber | 1.50 | 7 | Low |
| Processing of cassava tuber | 1.01 | 9 | Low |
| Packaging | 0.89 | 10 | Low |

Source: Field survey, 2012.

(Mean = 0.67); GPS (Mean = 0.62); internet (Mean = 0.85) telex (Mean = 0.45) and print media (Mean = 1.04) were those in low access category. In term of ranking order, radio, mobile phone and television ranked 1st, 2nd, and 3rd, respectively. This indicates that, they are the ICT tools that are highly accessible to the respondents in the study area. The highly accessible ICTs follow the same trend with those in the high awareness category as reported in Table 2. Also, GIS, GPS, software and remote sensing ranked least on the access scale of ICT. Generally, there was low level of access to ICT tools as reported in Table 2. This could probably be as a result of its availability and ease of their operations.

## Relevance of ICT to cassava production

Table 3 shows the mean score of the respondents on the relevance of ICT to cassava production activities in the study area. The areas of relevance of ICT include: cassava stem selection (Mean = 1.74), land preparation (Mean = 1.68), marketing of produce (Mean = 1.66); land selection for cassava (Mean = 1.56), sowing/planting of cassava (Mean = 1.55); fertilizer application (Mean = 1.52) and transportation (Mean = 1.50). ICT claimed to have low relevance to cassava production activities in the area of access to credit (Mean = 1.18), input management (Mean = 1.10), packaging of cassava produce (Mean = 0.89) and processing of cassava (Mean = 1.01). The ranking of relevance of ICT to cassava production revealed that, cassava stem selection, land preparation and marketing of produce ranked 1st, 2nd, and 3rd, respectively. This finding indicates that, ICT is very relevance to cassava production activities especially for both pre planting and post planting operations. The fact that, ICT is relevant to marketing of cassava produce is in line with the findings of Usman et al. (2012) that, marketing information is one of the most relevant ICTs

services which could be offered to farmers in Nigeria.

## Test of hypotheses

The result of Spearman rho correlation analysis in Table 4 established that, negative and significant relationship exists between age (r = -0.434; $P \leq 0.05$), sex (r = -0.169, $P \leq 0.05$), cosmopoliteness (r = -0.276, $P \leq 0.05$) and accessibility of ICT. This implies that, as the sampled farmer's advances in age, the less they have access to ICT, which indicates that, the younger cassava farmers are the ones that have high access to ICT. This may be due to their intrinsic characteristics such as innovative proness. This finding follows the assertions of Oyekanmi and Okeleye (2007) and Abdulwahab and Zulkhairi (2012) that, age is a significant variable moderating effect on the relationship between the behavioral intentions towards user's acceptance of ICT. In terms of sex, this indicates that, male respondents have high access to ICT than their female counterparts as higher proportion of male respondents formed part of the sample size. The negative sign for cosmopoliteness implies that, the more the respondents have external orientation about their immediate environment, the more they have access to ICT. This may probably be due to lack of ICT infrastructure in the rural area. Also, there exist positive and significant relationship between years of education and access to ICT. This implies that, the higher the years of education (r = 0.328, $p \leq 0.05$) the more the respondents have access to ICT tools. The independent sampled t- test was conducted in order to compare the mean score of awareness and access to ICT tools among the respondents. Based on the result of the analysis in Table 5, it could be seen that, 5 out of 14 selected ICT tools shows that, there were significant differences in the mean score of awareness and accessibility of radio (t = 4.56; $P \leq 0.05$), television (t = 5.37, $p \leq 0.05$),

**Table 4.** Summary of Spearman rho correlation analysis establishing relationship between selected personal characteristics of cassava farmers and accessibility to ICT tools.

| Variable | R | p-value | Remark |
|---|---|---|---|
| Age | -0.434** | 0.000 | Significant |
| Sex | -0.169** | 0.050 | Significant |
| Number of years of education | 0.328** | 0.000 | Significant |
| Cosmopoliteness | -0.276** | 0.000 | Significant |

**-significant at 1% level.

**Table 5.** Comparison between awareness and access to ICT among cassava farmers.

| ICT | N | Mean | S.D | T-value | P-value | Remark |
|---|---|---|---|---|---|---|
| **Radio** | | | | | | |
| Awareness | | 2.52 | 0.662 | 4.564 | 0.000 | S |
| Accessibility | 130 | 2.25 | 0.575 | | | |
| **Television** | | | | | | |
| Awareness | | 2.49 | 0.707 | 5.37 | 0.000 | S |
| Accessibility | 130 | 2.13 | 0.686 | | | |
| **Internet** | | | | | | |
| Awareness | 130 | 1.07 | 1.228 | 1.812 | 0.072 | NS |
| Accessibility | | 0.85 | 1.072 | | | |
| **GIS** | | | | | | |
| Awareness | 130 | 0.68 | 0.996 | 0.18 | 0.858 | NS |
| Accessibility | | 0.67 | 0.856 | | | |
| **Computer** | | | | | | |
| Awareness | 130 | 1.72 | 1.100 | 3.00 | 0.003 | S |
| Accessibility | | 1.42 | 0.971 | | | |
| **Software** | | | | | | |
| Awareness | 130 | 0.55 | 0.965 | -0.82 | 0.373 | NS |
| Accessibility | | 0.61 | 0.831 | | | |
| **Remote sensing** | | | | | | |
| Awareness | 130 | 0.55 | 0.989 | 0.73 | 0.469 | |
| Accessibility | | 0.51 | 0.809 | | | NS |
| **Video recorder** | | | | | | |
| Awareness | 130 | 1.93 | 0.950 | 4.86 | 0.000 | S |
| Accessibility | | 1.48 | 1.006 | | | |
| **Audio cassette** | | | | | | |
| Awareness | 130 | 2.12 | 0.863 | 0.10 | 0.919 | NS |
| Accessibility | | 2.12 | 0.794 | | | |
| **Mobile phone (GSM)** | | | | | | |
| Awareness | 130 | 2.22 | 0.838 | -0.20 | 0.842 | NS |
| Accessibility | | 2.24 | 0.657 | | | |

**Table 5.** Contd.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Camera** | | | | | | |
| Awareness | 130 | 1.62 | 1170 | 3.86 | 0.000 | S |
| Accessibility | | 1.23 | 0.911 | | | |
| **Telex** | | | | | | |
| Awareness | 130 | 0.58 | 0.870 | 1.76 | 0.081 | NS |
| Accessibility | | 0.48 | 0.788 | | | |
| **Print media** | | | | | | |
| Awareness | 130 | 1.04 | 1.137 | 0.52 | 0.598 | NS |
| Accessibility | | 1.00 | 1.064 | | | |

S- Significant at 5% NS- Not Significant at 5%.

computer (t = 3.00, P ≤ 0.05), video recorder (t = 4.86, P≤0.05), camera (t = 3.86; p ≤ 0.05). The hypothesis was therefore rejected. Conversely, there was no significant differences in mean scores of awareness and access of internet, GPS, GIS, software, remote sensing, audio cassette, GSM, telex and print media. The mean score of awareness and access are almost the same for those ICT tools that are not significant. This implies that, awareness of those ICT tools does not make difference from its access. The hypothesis was therefore accepted.

## CONCLUSIONS AND RECOMMENDATION

The study assessed the awareness, accessibility and relevance of ICT among cassava farmers in Atakunmosa Local Government Area of Osun State, Nigeria. Generally, 7 out of 14 of the selected ICT tools were categorized into high level of awareness. These are radio, television, video recorder, audio cassette, Mobile telephone (GSM), computer and camera. Meanwhile, radio and television, audio cassette and Mobile telephone (GSM) were ICT tools categorized into high level of access. These ICT tools were also rated as highly relevance to cassava production activities in the area of cassava stem selection, land selection, land preparation, time of planting of cassava stem, fertilizer application and marketing of cassava produce. Also, there were significant differences in mean scores of awareness and accessibility of various selected ICT tools.

Based on the findings of this study, it was suggested that, the use of radio, television and Mobile phone(GSM) to disseminate relevant agricultural information to cassava farmers in the study area should be considered by the extension institution in Nigeria. Both governmental and Non governmental agencies need to promote the awareness and access to digital ICT tools especially GPS, GIS, software, remote sensing for use among cassava farmers for improved cassava production in

the study area.

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