# Analysis of information and communication technologies (ICTS) use among cassava farmers in Ikom agricultural zone, Cross River State, Nigeria

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## Abstract

*This study analyzed ICT use among cassava farmers in Cross River State, Nigeria. It aimed at ascertaining the level of access to ICT by cassava farmers, determining the level of ICT use for cassava farmers and determining the difference between yields of cassava farmers who use ICT and those who do not. A multi-stage sampling procedure was used. Data obtained were analyzed using descriptive and inferential statistics. Results from the study revealed that radio, mobile phone, television and social media were the most frequently accessed ICT tools in the study area. They had mean scores of $\bar{x}$ = 3.73, $\bar{x}$ = 3.61, $\bar{x}$ = 3.07 and $\bar{x}$ = 3.02, respectively. All other ICTs had a mean score of $\bar{x}$ = < 2.5 which means they were not accessible to farmers. Similarly, the frequently used ICTs in the study area were radio ($\bar{x}$ =3.57), television ($\bar{x}$ =3.50), mobile phone ($\bar{x}$ =3.49) and social media ($\bar{x}$ =3.46). Finally, result comparing the yields of cassava farmers who use ICTs and those who do not reveals that, while there was a 1.33 mean difference in output of famers who use ICT and farmers who do not, the difference was not significant given that the P value = 0.251. This is perhaps due to the inadequate knowledge of use and application to increase output. Based on the findings, the study recommends that farmers be given opportunity through extension agent to learn skills needed on the use of ICT tools for better cassava production.*

**Keywords:** Analysis, Information and Communication Technologies, Cassava farmers

## Introduction

Globally, Information and Communication Technologies (ICTs) tools are very essential in delivering agricultural information to cassava farmers. They play a critical role in decision making towards improving cassava productivity, processing and marketing of cassava products (OmmaniandChizari, 2008). Proper information delivery on cassava production through effective ICT tools to farmers is absolutely imperative to the sustainability, productivity and marketability of agricultural produce. In addition, a well- informed society is more responsive to government policies, willing to adopt innovations, and eager to participate in the nation's rural development programmes. However, despite increase in the use of ICTs in Nigeria, its usage has not been popular in the rural areas where agricultural activities occur most. International Telecommunication Union (ITU 2014) affirms that out of

the 7.6 billion people in the world today, 4.3 billion people are yet to access the internet; about 90 percent of these people live in the developing countries. Arokoyo (2005) observed that given the urgent need for current Agricultural Knowledge and Information System (AKIS) by farmers, the use of conventional communication channels such as farm/home visit, personal letters, and use of farmers' contact, for disseminating agricultural information is counterproductive. This calls for the adoption of ICTs for food crop production for both farmers and frontline extension workers who are well positioned to make use of ICTs to access expert knowledge or other types of information that could be beneficial to agriculture, hence the need for this study. Furthermore, although several studies (Nenna, 2016; Ekanem and Ekerete,2018;Iyere-Freedom and Enwelu, 2023)have been conducted on ICTs and arable crop production in Nigeria and Cross River State in particular, very little has been done on the utilization of Information and Communication Technologies for cassava production which happens to be a major staple crop grown in Cross River state (Ettah and Kuye 2017).Therefore, this study becomes imperative as it tends to focus on the analysis of ICT use among cassava farmers in Cross River state, Nigeria. Consequently, the following objectives were put forward;
1.    To ascertain the level of access to ICT by cassava farmers in Ikom Agricultural Zone
2.    To determine the level of ICT use for cassava production in the study area;
3.    To determine the difference between yields of cassava farmers who use ICTs and those who do not

in the study area.

## Materials and methods

This study was carried out in Ikom agricultural zone, Cross River State. The zone comprises of six (6) agricultural blocks namely: Abi, Boki, Etung, Ikom, Obubra and Yakurr. Ikom agricultural zone shares boundary with the Republic of Cameroun to the East, Obanliku and Obudu to the North, Ebonyi State to the West and Biase and Akamkpa to the South, Cross River State Geological Agency (CRSGA 2010). The study population comprise of registered cassava farmers in Ikom agricultural zone. A multi stage sampling procedure was used; stage one entailed the use of purposive sampling to select major cassava producing agricultural blocks in the zone. These blocks are Obubra, Yakurr, Abi and Ikom; Stage two entailed the use of simple random sampling to select five cells out of the eight cells that make up each block, giving a total of 20 cells, with a total of 1900 registered farmers, making up the sample frame for this study. Finally, stage three involved the selection of 10% of the aforementioned registered cassava farming households from each of the selected cells using simple random sampling, giving a total of 190 cassava farmers as the sample size for this study. A well-structured questionnaire was distributed and primary data collected for analysis.

## Results and discussion

### Level of farmer's access to ICT tools for cassava production in the study area

Results on Table 1 reveal the level of farmer's access to ICT tools for cassava production in the study area. Accessibility to any technologies is a vital component for its efficient and effective use by the end users. Results on cassava farmers' access to ICT tools show that radio ($\bar{x}$=3.37), mobile phones ($\bar{x}$ =3.61), television ($\bar{x}$=3.07), social media ($\bar{x}$ =3.02), were the frequently accessed ICT tools (Table 1) and were ranked 1st, 2nd, 3rd, and 4th respectively. All the other ICT tools had a mean score of less than 2.5, which means that they were less accessible to farmers. This agrees with a study carried out by Omotayo, (2015), who asserted that farmers can easily have access to agricultural information provided through radio, television, mobile phone but cannot easily have access to agricultural information provided through projector, email, internet connected computer, cassette recorder etc. This could be as a result of lack of interest in those facilities or the cost of purchasing them.

## Information and Communication Technologies (ICT) tools used by cassava farmers in the study area

Results on Table 2 reveal ICT tools used by cassava farmers in the study area. From the table, the most frequently used ICTs were radio ($\bar{x}$ = 3.57), television ($\bar{x}$ = 3.50), mobile phone ($\bar{x}$ = 3.49) and social media ($\bar{x}$ = 3.46), while least frequently used ICT were multimedia projector ($\bar{x}$ = 1.67), cassette recorder ($\bar{x}$ = 1.63) and digital camera ($\bar{x}$ = 1.60). Reasons for the frequent use of radio, television, mobile phone and social media may be as a result of easy accessibility of these tools. This result is in line with that of Ekanem, (2015), who reported that radio,

social media, television, mobile phone were the most frequently used communication tools.

Levene's test for equation of variances indicates a non-significant result of (p = 0.054), which led to upholding the assumption of equal variances between each group. This is also supported by the closeness of variances of each category. From the test result, the p-value of 0.251 implies that there is no significant difference in the mean output of farmers who use ICTs and their counterparts who do not use ICTs. However, the mean difference was 1.33 showing that there is a N1.33 for every 1kg of cassava yield between farmers who use ICT and farmers who do not. The implication of the result is that most farmers are not maximizing the advantages of using ICT tools for cassava production hence, the adoption and utilization rate of ICTs will be low. Information and Communication Technologies tools play important role in arable crop production. This result is contrary to the work carried out by Sennuga, (2020), to establish the impact of ICTs on agricultural productivity in sub-Saharan countries, where it was revealed that the use of ICT tools increased crop yields as well as the standard of living of arable crop farmers.

## Conclusion

This study was carried out in Ikom Agricultural Zone of Cross River State, Nigeria. Data was analyzed using both descriptive and inferential statistics. The result of the level of access to ICTs reveals that radio, mobile phone, television and social media were the most frequently accessed ICT tools in the study area. They had mean scores of ($\bar{x}$ = 3.73), ($\bar{x}$ = 3.61),(x= 3.07) and ($\bar{x}$ =

3.02) respectively. All other ICTs had a mean score of ($\bar{x}$ = < 2.5) which means they were not accessible to farmers. Similarly, the frequently used ICTs in the study area are radio ($\bar{x}$ =3.57), television ($\bar{x}$ =3.50), mobile phone ($\bar{x}$ =3.49) and social media ($\bar{x}$ =3.46). This implies that radio, television, mobile phone and social media are the frequently used ICT tools in the study area.Finally, result comparing the yields of cassava farmers who use ICTs and those who do not reveals that, there is no significant difference in the mean yield of farmers who use ICTs and their counterparts who do not as P = 0.251.

## Recommendations

Based on the findings of the study, the following have been recommended:
1. Farmers should be given opportunity through extension agent to learn skills needed on the use of ICT tools for better cassava production.
2. There is need for increase extension visitation, education, training and contact with farmers to bridge knowledge gap on effective utilization of ICTs.
3. The government should initiate different agricultural technologies transfer programmes by liaising with telecommunication companies to enhance accessibility of ICTs to farmers.

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Table 1: Distribution of farmers according to their access to ICTs

| S/N | ICT Tools | HAC | EAC | AC | NAC | Mean Rank |
|-----|-----------|-----|-----|-----|-----|-----------|
| 1. | Radio | 156 | 24 | 02 | 08 | 3.73** 1st |
| 2. | Mobile P. | 131 | 48 | 07 | 04 | 3.61** 2nd |
| 3. | Television | 76 | 70 | 25 | 19 | 3.07** 3rd |
| 4. | Social Media | 75 | 63 | 32 | 20 | 3.02 4th |
| 5. | Cassette R. | 29 | 46 | 66 | 49 | 2.29 5th |
| 6. | Internet | 30 | 44 | 51 | 65 | 2.21 6th |
| 7. | Computer | 29 | 37 | 50 | 74 | 2.11 7th |
| 8. | Email | 29 | 39 | 43 | 79 | 2.09 8th |
| 9. | Internet C. C | 16 | 18 | 71 | 85 | 1.81 9th |
| 10. | Mult. Proj. | 18 | 24 | 49 | 99 | 1.80 10th |
| 11. | CD Rom | 02 | 24 | 81 | 83 | 1.71 11th |
| 12. | Digital Cam | 05 | 23 | 29 | 133 | 1.47 12th |

n  = 190

Source: Field survey data, 2024.

HAC = Highly accessible, EAC = Easily accessible, AC = Accessible, NAC = Not accessible

Table 2: Distribution of farmers according to their use level of ICTs

| S/N | ICTs | VO | O | NO | NVO | Mean | Rank |
|-----|------|-----|-----|-----|-----|------|------|
| 1. | Radio | 119 | 64 | 04 | 03 | 3.75** | 1st |
| 2. | Television | 108 | 73 | 04 | 05 | 3.50** | 2nd |
| 3. | Mobile P. | 121 | 49 | 12 | 08 | 3.49** | 3rd |
| 4. | Social media | 111 | 61 | 12 | 06 | 3.46** | 4th |
| 5. | Internet | 12 | 29 | 95 | 54 | 2.00 | 5th |
| 6. | CD-ROM | 12 | 23 | 89 | 66 | 1.90 | 6th |
| 7. | Email | 08 | 17 | 102 | 63 | 1.84 | 7th |
| 8. | Internet C. C. | 05 | 18 | 95 | 72 | 1.77 | 8th |
| 9. | Computer | 05 | 23 | 82 | 80 | 1.75 | 9th |
| 10. | Mult. Proj. | 09 | 28 | 44 | 109 | 1.67 | 10th |
| 11. | Cassette R. | 05 | 14 | 76 | 95 | 1.63 | 11th |
| 12. | Digital C. | 0 | 13 | 88 | 89 | 1.60 | 12th |

N=190

Source: Field survey data, 2024.
VO = Very Often, O = Often, NO = Not Often, NVO = Not Very Often

Table 3: T-test analysis of comparison between the yield of farmers who use ICT and those who do not

| Variables | Mean | S.D | Equality of Variances | | t-val. | M.D | P-val |
|-----------|------|-----|------------------------|--------|--------|------|-------|
| | | | F-val. | P-val | | | |
| Farmers Who use ICTs | 15.00 | 5.415 | 3.803 | .054 | -1.154 | -1.33 | 0.251 |
| Farmers Who do not use ICTs | 16.33 | 6.070 | | | -1.154 | -1.33 | |

Source: Field survey data, 2024
SD= Standard deviation
MD= Mean difference