

Assessment of the Relevance of Information and Communication Technology (ICT) on Cassava production in Isoko North Local Government Area, Delta State, Nigeria

Tibi, K.N¹; and Oyem, A.²

Correspondent Author, Delta State Polytechnic P.M.B. 5, Ozoro, Delta State, Nigeria, Email: tkentus@gmail.com¹

Delta State Polytechnic P.M.B. 5, Ozoro, Delta State, Nigeria²

ABSTRACT

Information and communication technologies (ICTs) are new technologies that cannot be ignored in Africa especially for the development of the agricultural sector. This is because, ICT is one of the main driving forces that can bring about development and change in this present digital age. ICTs are those technologies that facilitate communication and the processing and transmission of information by electronic means for the benefits of its users. The study determined the relevance of information and communication technology (ICT) tools on cassava production in Isoko North Local Government Area of Delta State, Nigeria. A Sample size of 130 cassava farmers was randomly selected from the Local Government Area. Data was analyzed with frequency, mean, standard deviation, spearman correlation and independent sampled t-test. The result showed that, the mean age of the respondents was 45.3 years and the average years of experience in farming was 17.7 years. Radio, mobile phone (GSM), television, video recorder, audio cassette, and photographic camera were used. Spearman correlation analysis revealed that there was significant relationship between the usage of ICT tools and the farmers' socio-economic characteristics such as age, sex, marital status, and years of experience. The result of the independent sampled t-test showed that the use of radio, mobile phone (GSM), television, video recorder, audio cassette, and photographic camera were significantly relevant to cassava production in the study area. It was therefore recommended that there should be concentration of effort on agricultural information delivery through these ICT facilities in the study area.

Key Words: *Information Usage Cassava Communication Technology Tools Farmers*

1. 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 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 ICT is? 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 (Arokoyo, 2005). 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.

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 Khodaei (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.

2. STATEMENT OF PROBLEM

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 agricultural 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 usage/ accessibility and impact of ICTs on Agricultural Development 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 are the available ICT tools to farmers in the study area?

- ii) To what extent do the farmers have access to ICT?
- iii) Of what relevance is ICT to cassava production in the study area?

3. OBJECTIVE OF THE STUDY

The main objective of the study is to determine the relevance of ICT on cassava production in Isoko North Local Government Area. The Specific objectives are to:

- i) describe the socio-economic characteristics of farmers in the study area,
- ii) ascertain the ICT tools available for the farmers' use
- iii) examine the relevance of ICT tools to the farmers

4. HYPOTHESES OF THE STUDY

The following hypotheses are stated for the study:

- i. There is no significant relationship between the socio-economic characteristics of the respondents and usage of ICT.
- ii. There is no significant relevance of ICT tools on cassava production in Isoko North Local Government Area

5. MATERIALS AND METHODS

The study was carried out to determine the role of ICT on Agricultural Development in Isoko North Local Government Area of Delta State. Delta State is located on Southern Nigeria. Isoko North Local Government Area is one of the 25 Local Government Areas in Delta State. Isoko North LGA has its headquarters at Ozoro, and is one of the major oil producing areas of the state. The area comprises thirty seven (37) villages and is located between latitude 60 51'N to 60 161'N and longitude 60 71'E to 60 121'E. It was created in 1991 when the defunct Isoko LGA was split into the North and South. It occupies an area of about 12,000km² with the area mainly on land and a small riverine terrain (Balderama, 2009). According to the 2006 population census figure, it has a population of about 200,792 people with a land mass of 380km². It is divided into eight major towns namely, Ozoro, Emevor, Owhe, Iyede, Ofagbe, Ellu, Oyede and Okpe-Isoko. As the name implies, the people are Isoko and their occupation includes peasant farming, palm produce processing, fishing and petty trading (Arokoyo, 2005). The sample constitute of 130 farmers use for the study. Ten villages were randomly selected from the study area then thirteen (13) farmers were randomly selected from each of the villages in the study area making a sample size of 130. A structured questionnaire was used to collect relevant information from the respondents.

Descriptive statistical such as frequency distribution, percentages, mean and standard deviation were used for analysis. Independent sampled t-test and Spearman correlation analysis were employed as inferential statistical tools, to test the formulated hypotheses of the study. 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.

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

Availability of ICT tools: measured on a 4 point rating scale of Most available = 3, Available =2, Somewhat available =1 and Not available = 0.The cutoff point mean for availability of ICT is 1.50,any $\text{mean} \geq 1.50$ is considered to be categorized as high level of availability but those with $\text{mean} \leq 1.50$ is categorized as to have low level of availability.

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 $\text{mean} \leq 1.50$.

6. RESULTS AND DISCUSSION

6.1 Socio-economic characteristics 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. Majority (73.8%) of the respondents are females while the remaining (26.2%) are males (Table 1). This finding indicates that, cassava producers in the study area are females This implies that, cassava production is female dominated activities in the study area .and this is in agreement with the assertion of Olayemi et al. (2012) that, women are known to be more involved in agricultural activities than men in Sub-Saharan Africa (SSA) countries. Table 1 also showed that more than one-third (36.9%) of the respondents had their years of 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. The study further show that the automated farming system of cassava production was not used in the study area rather the farmers employed the traditional farming system (table 1) in producing their cassava. The reason given by the farmers for not using automated farming system was that the machines were not affordable and accessible to them.

Table 1: Socio-economic characteristics of respondents

Variable	Frequency	Percentage
Age(year)		
<35	19	14.8
35-44	16	12.3
45-54	71	54.6
55 and above	24	18.5
Gender		
Male	34	27.2
Female	96	73.8
Marital status		
Single	14	10.8
Married	106	81.5
Divorce/separated/widow	10	7.7
Years' experience of cassava production		
1-10	48	36.9

11-20	44	33.8
21-30	26	20.0
31and above	12	9.3

Farming system

Automated (use machines)	-	-
Traditional (use crude tools)	130	100

Source: Survey Data 2017

6.2 Availability and usage of ICT tools

From Table 2 below radio, mobile phone and television rank highest on the availability scale of ICT. The finding of this study shows that, the respondents were aware of both the analogue and digital ICTs (radio, television and mobile phone)

Table 2: Mean Availability and usage of ICT tools

ICT TOOLS	Mean	Rank
Radio	2.82	1
Television	2.32	3
Mobile phone	2.74	2
Photographic camera	1.97	4
Video recorder	1.53	6
Audio cassette	1.76	5

Source: Survey Data 2017

6.3 Relevance of ICT to cassava production

Table 3 below shows the ranking of relevance of ICT to cassava production. The result revealed that land preparation, planting, fertilizer application and marketing of produce ranked 1st, 2nd, 3rd, and 4th 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 Usmanetal. (2012) that marketing information is one of the most relevant ICTs services which could be offered to farmers in Nigeria.

Table 3: Mean score of relevance of ICT tools

Activities	Mean score	Rank
Land preparation	1.86	1
Planting	1.74	2
Fertilizer application	1.67	3
Weed control	1.58	5
Pest control	1.56	7
Harvesting	1.52	8
Transportation of tuber	1.57	6
Marketing	1.66	4
Processing and packaging	1.53	7

Source: Survey Data 2017

7. CONCLUSIONS AND RECOMMENDATIONS

The study determined the relevance of ICT on cassava production in Isoko North Local

Government Area of Delta State, Nigeria. The ICT tools available were radio, mobile telephone (GSM) television, video recorder, audio cassette, computer and camera. Meanwhile, radio, television, audio cassette and Mobile telephone (GSM) were ICT tools categorized into high level of access. These ICT tools were also seen to have impacted greatly on cassava production in land selection, land preparation, time of planting, fertilizer application and marketing of produce. Also, there were significant differences in mean scores of availability and usage of the ICT tools. The study also showed that the automated farming system of cassava production was not used in the study area rather the farmers employed the traditional farming system in cassava production. Therefore, the usage of ICT tools such as mobile phone, radio, television, video camera, photographic camera among others are very important to agricultural production as relevant agricultural information can be disseminated to farmers. This will boost food production and is a useful tool in solving the problem of food security situation.

The study recommended as follows:


- i. Based on the findings of this study, it is recommended that there should be more concentration of effort on agricultural information delivery through these ICT facilities in the study area.
- ii. Radio, television, Mobile phone (GSM) and other ICT tools should be provided for the farmers freely or at subsidized rate to enable the farmers have easy access to the ICT tools.
- iii. The farmers should be trained on the usage of ICT and they should be made to understand the relevance of ICT tools in agricultural production.
- iv. Farmers should endeavour to make judicious use of the ICT tools in order to get reliable information on new innovation that will help them increase their production and income
- v. The government should encourage the farmers to use automated farming by providing the machines at subsidized rate so that the farmers can have easy access to these automated machines that will help to increase their agricultural production.

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