ASSESSMENT OF COCOYAM FARMERS' ACCESS TO AND USE OF INFORMATION COMMUNICATION TECHNOLOGIES IN JOS SOUTH LOCAL GOVERNMENT AREA OF PLATEAU STATE, NIGERIA

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Abstract

The study assessed levels of access and usage of ICTs among cocoyam farmers in Jos South Local Government Area of Plateau State, Nigeria. The study described the socio-economic characteristics of the respondents; determined ICT gadgets available to cocoyam farmers; assessed the levels of access to ICTs by the respondents and determined the level of usage of ICTs by the cocoyam farmer in the study area. Data were collected from a sample of one hundred and eighteen (118) cocoyam farmers using questionnaires from among the four districts of the study area using purposive sampling technique. Results were analyzed using descriptive statistics such as frequency, percentage and mean score. Data revealed that majority (53.4%) of the respondents were females with an average mean age of 35years and half the population (50.8%) of the respondents were married; majority (95.8%) had a form of formal education. The respondents were small-scale farmers cultivating an average of 3.3 hectares with 7 years of farming experience. The available ICT gadgets in the study area were mobile phones (100%), television (83.1%) and radio (46.6%). Findings further reveal that the respondents had high-level access to mobile phones ($\bar{x}$= 4.08), radio ($\bar{x}$= 3.96), television ($\bar{x}$= 3.25), audio cassette ($\bar{x}$= 3.17) and internet ($\bar{x}$=3.04). It was also discovered that cocoyam farmers had a high level of usage of mobile phones ($\bar{x}$ = 3.86), radio ($\bar{x}$= 3.72), television ($\bar{x}$ = 3.66) and internet ($\bar{x}$= 3.04) in cocoyam farming. The study recommends the government's support in the provision of physical infrastructure such as computer centres which should incorporate or strengthen the use of other ICTs and that farmers should be encouraged to access and use other ICTs.

Keywords: Access, Usage, ICTS, Cocoyam, Farmers

Introduction

Cocoyam is a stem tuber that lines among staple food after cassava, yam and potato. It ranks third in importance among the root and tuber crops cultivated and consumed in Nigeria. It is cultivated in about 30 countries, although the bulk of its production is in Africa (CTA, 2003); with West and Central Africa, notably, Nigeria, Ghana, and Cameroon contributing to over 60% of the total African production (Onyeka, 2014). According to the NRCRI report (2021), Nigeria is one of the leading producers of root crops, and the world's largest producer of cocoyam with an annual production of 5.49 million metric tons, equivalent to 45.9% of world production and 72.2% total output of cocoyam in West Africa. The bulk of cocoyam production is in Southern Nigeria (Enyinnia *et al.*, 2013); however, appreciable cultivation of cocoyam is also carried out in other parts of the country, especially in Plateau State.

Cocoyam comes in several varieties, some varieties are usually cooked and pounded for soup thickening, some are boiled and consumed, and some are used for porridge among a list of recipes. It is processed into

several food products used for industrial and culinary purposes. It is useful in the manufacturing of flakes, and starch, and in the production of face powder, cosmetics, and foods for infants, invalids and convalescing patients. It is also processed into animal feed and the leaves are used as medicinal herbs (Omotayo, 2009). Nutritionally, cocoyam is superior to cassava and yam in the possession of high scores of good quality protein, amino acid, mineral and vitamin content as well as easily digestible starch. It is highly recommended for diabetic patients, the aged, children with allergies and persons with intestine disorders (Okoye & Onyenweaku, 2006).

A study by Falade & Okafor (2013) showed that cocoyam is one of the under-exploited tropical plants with promising values. Of the four major tropical tubers: yam, cassava, cocoyam and potato, cocoyam is the most obscured and is still cultivated far below its potential yield (the Guardian Nigeria, undated). In the past, cocoyam was regarded as a lowly imported crop its cultivation and consumption lie within the less privileged (IITA, undated). However, with the general downturn of the nation's economy and the excavating of the commercial food values, nutritive quality and economic importance of cocoyam, its acceptance has started rising and cocoyam farmers especially women are now producing for sale in high quantities (Falade& Okafor, 2013).

Agriculture, an enormous sector and a key activity for Nigeria's economy after oil, contributes about 30% of the total gross domestic product (GDP). Nevertheless, agricultural activities provide a livelihood for over 70% of the Nigerian population who engage in the agricultural sector predominantly at a subsistence level, whereas the wealth generated by oil reaches a restricted share of people (www.fao.org.>nigeria-at-a-glance 2021). Despite the large contributions agriculture makes to the Nigerian economy, it is lagging in many aspects and this is characterized by unreliable and delayed information to farmers, poor connectivity and disintegration of the market, small farmlands, non-adoption or less adoption of improved technologies among others. The development and timely dissemination of adequate, efficient, tailored and better-personalized information and technology specific to different agro-climatic zones, size of farms, soil and crop type, and related pests and diseases to the farmers is deficient in Nigeria.

Furthermore, the available information and technology are not appropriately accessed and aptly utilized by farmers especially those who operate at a subsistence level. It has become so imperative to explore different means to keep farmers updated with recent relevant information and technology about agriculture, weather, new crop varieties; new ways of increasing production and quality control to aid ameliorate the challenges faced by the Nigerian farmer. Accordingly, ICTs as tools that aid in communication between people using electronic means for capturing, processing, storing and disseminating information as well as services and applications that consist in the management of information facilitate communication quickly and easily (Pade *et al*., 2005; Jayita *et al*., 2017). ICTs as noted by Nwajinka (2004) are requisite technologies in developing Nations like Nigeria used for development in all sectors of agriculture. This is because ICT is one of the main driving forces that can bring about development and change in this digital era. In the words of Emenari (2004) great transformation in the lives of people especially in developing countries depends on innovative ICTs.

ICTs however, play a significant role in social and economic development in developing

countries (Quaye *et al*., 2010). In fact, ICTs are what rural dwellers need to climb to the heights developed continents had reached. In agriculture, ICT is mainly to disseminate agricultural-related information to farmers and to trade their produce (Olatokun, 2007; Onasanya *et al*., 2011). Through ICT, farmers can be updated with recent information about agriculture, weather, pests and diseases, new varieties of crops, planting techniques, and new ways to increase production and quality control, ICT is essentially to disseminate information (Nwajinka, 2004). ICT helps empower rural people by providing better access to natural resources, improving agricultural techniques and bringing about effective production.

The utilization of ICT is commonly applied to embrace a multitude of media including telephone, television, video, telex, voice information systems and fax as well as those requiring the use of personal computers fitted with a modem or supply technologies that facilitate communication processing and transmission of information by electronic means ranging from radio, television, telephone (fixed or mobile) and internet (Warren, 2001; Omotayo, 2005). ICT is fundamental in boosting farmers' ability to feed the nation sustainably, the role of ICT to enhance food security and support rural livelihoods cannot be overstated. This study, however, is to evaluate the level of access and usage of ICTs among cocoyam farmers in Jos South LGA, Plateau State, Nigeria. Specifically, the study will describe the socio-economic characteristics of the respondents; determine ICT gadgets available to Cocoyam Farmers in the study area; assessed the level of access to ICTs by the respondents, and determine the level of usage of ICTs by the cocoyam farmer in the study area.

Methodology

The study was conducted in Jos South Local Government Area (LGA), Plateau State, Nigeria. Jos South LGA has four (4) districts namely: Du, Gyel, Kuru and Vwang. It has an estimated population of about 306,716 (National Population Commission (NPC), 2006) and is located between latitudes 9^{o} 30^{1} to 10^{o} N and longitude 8^{o} 3^{1}E. The major ethnic group in the LGA is Berom besides other minor settlers like the Hausas, Yorubas, and Igbos among others. The main occupation of the inhabitants is agriculture and they also engage in petty trading, hunting, mining and brewery of local drinks. Common crops grown in the area include 'acha', potato, millet, sorghum, maize, and cocoyam among others. Cattle, small ruminant rearing, piggery and poultry farming are worthwhile businesses in the area.

The study comprised all cocoyam farmers in the study area. Purposive random sampling techniques were used to select thirty (30) cocoyam farmers from each of the four (4) districts in the LGA making a total of hundred and twenty (120) respondents selected for the study. Data were collected using a structured questionnaire, which was carefully designed based on the specific objectives. Out of one hundred and twenty (120) copies of the questionnaire administered, one hundred and eighteen (118) were found analyzable due to wrong filling.

The data were analyzed using frequencies, percentages, and the mean. Data determining the availability of ICT gadgets in the study area were analyzed using frequencies and percentages. Data on the level of access to ICTs was collected by asking farmers to rate their level of access to available ICT devices on a 5-point Likert-type scale of highly accessed = 5, moderately accessed = 3, barely accessed = 2, and not accessed = 1. The values were added to yield 15, which was then

divided by 5 to yield a mean score of 3. Variables with a mean score of 3 or higher were considered accessed, while variables with a mean score of less than 3 were considered not accessed. Finally, the data determined the farmers' level of use of ICT devices. This was accomplished by asking farmers to rate the frequency with which they used available ICT gadgets on a 5-point Likert scale of very often = 5, often = 4, moderate = 3, rarely = 2, and never used = 1. The values were added to yield 15, which was then divided by 5 to yield a mean score of 3. Any variable with a mean score of 3 or higher was considered highly used by farmers, whereas variables with a mean score of less than 3 were considered lowly / not used.

RESULTS AND DISCUSSION

Socio-economic Characteristics of Respondents

Table 1 revealed that more than half (53.4%) of the respondents were females while about 46.6% were males. This denotes that cocoyam in the study area is mostly grown by women in the study area to be economically strong to feed members of their households. This corresponds with Tokula & Ekwe (2009) which is generally grown by both men and women but in some areas, it is grown mostly by women in study areas. Entries in Table 1 specified the mean age of the respondents as 35 years. This indicated that cocoyam farming is dominated by active young people who were middle-aged, energetic and in their productive age group in the study area. This suggested that as youths the use of ICTs in their production might be high hence higher cocoyam production is imminent. This finding agrees with Munya (2001) that young people partake more in ICT in agricultural technology. The result in Table 1 also showed that a higher population (50.8%) of the respondents was married. This proposes that married people were more involved in cocoyam production in the study area. This is in line with Nto *et al*. (2014) who reiterated that married people are responsible and diversify their sources of income in other to generate income from their main profession

Data in Table 1 revealed that a greater number (51.7%) of the respondents had secondary education, about 24.6% had tertiary education and 19.5% had primary education and about 4.2% had non-formal education. This result entails that the respondents were literate enough and can accept and access new technologies that will improve cocoyam production. Education is essential in attitudinal change and could enhance the reception and dissemination of new information and technologies. The average farming experience of the respondents was 7 years (Table 1). This suggests that the respondents have been into cocoyam farming for a long period thus, had acquired enough experience in cocoyam farming. This could be an added advantage that will help improve methods used in cocoyam production. The finding coincides with the study of Hardaker *et al.* (2004) who reported that farmers with many years of farming experience are more willing to change towards accepting currently recommended techniques. A high population (43.2%) of the respondents had a farm size of 6-10 hectares, 35.6% had below 1-5 hectares, 12.7%) had between 11 and 15 hectares while 8.5% had from 16 to 20 hectares (Table 1). However, the average farm size in the study area was approximately 8 hectares. This supports that a high population of the respondents was small-scale farmers. This result concurs with the study of Meyfroidt (2017) that small-scale farmers are those that cultivate farmland not more than 10 hectares.

Table 1: Socio-economic Characteristics of the Respondents (n = 118)

Parameters	Frequency	Percentage	Mean
Sex			
Male	55	46.6	
Female	63	53.4	
Age (Years)			
≤ 30	49	41.6	
31-45	45	38.2	34.6
46-60	21	17.8	
61-75	3	2.5	
Marital Status			
Single	48	40.7	
Married	60	50.8	
Divorce	4	3.4	
Widow	6	5.1	
Level of Educational			
Primary Education	23	19.5	
Secondary Education	61	51.7	
Tertiary Education	29	24.6	
Non-Formal Education	5	4.2	
Farming Experience (Years)			
≤ 5	35	29.7	
6-10	50	42.3	7.0
11-15	21	17.8	
16- above	12	10.2	
Farm Size (Hectares)			
≤ 5	83	70.4	
6-10	31	26.3	
11-15	3	2.5	3.3
16-above	1	0.9	

ICT Gadgets available to Cocoyam Farmers in Jos South LGA, Plateau State

ICT gadgets available to cocoyam farmers in the study include mobile phones (100.0%), Television (83.1%), Radio (46.6%), Video machine (28.8%), internet (22.9%), computer (6.8%), and Official e-mail address (4.2%) (Table 2). This implies that the available ICT gadgets in the study area were mostly under the low ICT category. According to Ozo and Madukwe (2009**),** ICTs in agriculture are classified into two broad groups low and high categories. Equipment and mechanisms such as projectors, copying machines, telephones,

radio and television sets are examples of low ICTs devices (Hardware) used with the aid of transparencies, radio and television programmes. software such as films, slides, tapes, pictures,

Table 2: ICT Gadgets available to Cocoyam Farmers in Jos South LGA, Plateau State

Gadgets	Frequency*	Percentage	Ranking
Radio	55	46.6	3
Mobile phone (GSM)	118	100.0	1
Television	98	83.1	2
Internet	27	22.9	5
Computer	8	6.8	6
Video machine	34	28.8	4
Audio cassette	18	15.3	7
Telephone (Landline)	-	-	
Printers	-	-	
Internet website	-	-	
Camera	3	2.5	9
Official e-mail address	5	4.2	8
CD ROM	-	-	
Scanner	-	-	

Multiple Responses*

Level of Access to ICTs by Cocoyam Farmers in Jos South LGA, Plateau State

The result in Table 3 reveals that level of access to Mobile phones ($\bar{x}$= 4.08), Radio ($\bar{x}$= 3.96), Television ($\bar{x}$ = 3.25), Audio cassette ($\bar{x}$ = 3.17) and Internet ($\bar{x}$= 3.04) was high while the level of access to computers ($\bar{x}$= 2.91), information kiosk ($\bar{x}$= 2.56), video machine ($\bar{x}$= 2.21) and Official e-mail address ($\bar{x}$= 2.09) was low. This suggests generally high-level access to available ICT devices in the study area. The findings support the assertion of Gbughemobi *et al.* (2021) that 95% of farmers had access to conventional ICTs such as Radio, Television and Mobile phones.

Table 3: Level of Access to ICTs by Cocoyam Farmers in Jos South LGA, Plateau State

Level of Access	Mean score	Standard Deviation	Rank
Mobile phone	4.08	1.139	1
Radio	3.96	1.150	2
Television	3.25	0.131	3
Audio cassette	3.17	1.088	4
Internet	3.04	1.278	5
Computer	2.91	1.365	6
Information kiosk	2.86	1.322	7
Video machine	2.21	0.735	8
Official e-mail address	2.09	1.877	9

Cut–off Mean ($\bar{x}$=3.00)

Level of Usage of ICTs by Cocoyam Farmers in Jos South LGA, Plateau State

Entries in Table 4 depicts the level of usage of ICT devices like Mobile Phone ($\bar{x}$=3.86), Radio ($\bar{x}$= 3.72), Television ($\bar{x}$=3.66) and internet ($\bar{x}$=3.04) had high-level usage, while computer ($\bar{x}$=2.72), video machine ($\bar{x}$= 2.66) and e-mail ($\bar{x}$=1.47) commanded low-level usage among the respondents. This indicates that cocoyam farmers in the study area were accustomed to certain ICT tools and possibly used them in agro-communication links and services. This result is in harmony with United Nations (2010) that the use of cell phones can strengthen horizontal and vertical communication or relationship by enabling reliable and rapid communication. However, Ekeanya *et al.* (2018) reported that the main users of ICTs especially computers, the internet and email are young males and that women are marginal users. This concurs with the finding in (Table 1) that more (53. 4%) women were into cocoyam production in the study area

Table 4: Level of Usage of ICT by Cocoyam Farmers in Jos South LGA, Plateau State

Level of Usage	Mean Score	Standard Deviation	Rank
Mobile phone	3.86	1.109	1
Radio	3.72	1.267	2
Television	3.66	1.109	3
Internet	3.04	1.175	4
Computer	2.72	0.944	6
Information kiosk	2.77	0.841	5
Video machine	2.66	1.278	7
Official e-mail address	1.47	1.365	8

Cut–off Mean ($\bar{x}$ =2.5)

CONCLUSION

Majority of the respondents were females, young, married, had formal education and were mainly small-scale farmers with relatively few years of farming experience. The findings of the study indicated high-level access and usage of conventional ICT devices (mobile phone, radio, television and internet) available in the study area. The study recommends government support in the provision of physical infrastructure such as computer centres which should incorporate or strengthen the use of other ICTs and that farmers should be encouraged to access and use other ICTs.

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