ASSESSMENT OF CASSAVA FARMERS' AWARENESS AND UTILISATION OF INFORMATION AND COMMUNICATION TECHNOLOGY IN KOGI STATE, NIGERIA

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Abstract

The study assessed the awareness and utilization of information and communication technologies among cassava farmers in Kogi State, Nigeria. Using multi-stage sampling procedure, a sample of 200 cassava farmers was selected for the study. A well structured questionnaire was used for data collection. Data were analysed using descriptive statistics such as frequency counts, percentages and mean score from Likert scale.It was found that majority (57.5%) of the respondents were male, married (47.5%), and could read and write(87.5%). The mean age of the farmers was 46 years. Most (57.5%) of the respondents were not members of any cassava farmers' association, with average farming experience of 12 years, on the mean farm size of 2.7 hectares with average annual farm income of ₦800,000. Cassava farmers' level of awareness was high (61.68%), while mobile phone was the major (21.5%) type of ICT used by farmers with production output of 400bags per year. Poor rural internet access, poor power supply and inadequate extension service were the constraints that hindered effective use of ICT facilities by cassava farmers. It was therefore, recommended that government should provide adequate and constant power supply to rural areas among others.

Keywords: Cassava, Awareness, Utilization, Information, Technologies

Introduction

Information and Communication Technology (ICT) refers to digital technologies used for the gathering, production, storage, processing, manipulation, management, transmission and reception of information. It is an umbrella term for any communication device or application such as; radio, television, mobile phones, computers, emails, instant message,

e-book readers and networks, hardware and software, satellite systems as well as various other services. ICT is an extension term for Information Technology (IT) which emphasizes the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computers as well as necessary enterprise software, middleware, storage and audio (Ogiagah and Ofule 2020).

In all works of life today, information has played out to be the most fundamental element, especially in developmental processes. Many information communication technologies (ICTs) have been developed, tested and launched around the world, with varying degrees of success recorded. Some of these technologies were born out of the need to help farmers improve their livelihoods through increased agricultural productivity and income, or by reducing risk factor inherent in crop and animal production. ICTs have become the world's most common way of transmitting voice, data and services in the developing world. They provide the most affordable ways for millions of people to access information, markets and finance and governance systems previously unavailable to them. Today's world is widely information-driven where ICTs are increasingly becoming the underlying drivers of social and economic development including agriculture, not only in developed countries but across the globe (Matto, 2018).

In a nutshell, most people living in rural areas of developing countries depend either directly or indirectly on agriculture, making it a significant sector of the economy. Due to the depletion of natural resources required for production, the industry faces significant challenges in increasing production. However, the increased demand for agricultural goods, particularly cassava, also presents chances for farmers to maintain and enhance their standard of living.

Cassava (*Manihot esculenta*) has increasingly gained prominence industrially, economically, and nutritionally, over the years because of the multi-uses of its starch-rich roots (Olaniyi, Adetumbi, and Adereti, 2013). This is also in consonance with the findings of Aboajah *et al.* (2018), that cassava is primarily a product for food such as garri, tapioca and fufu for human consumption. But the crop can be processed into several secondary products for industrial market value. These products include chips, pellets, flour adhesives, alcohol and starch, which are vital raw materials in the livestock feed, alcohol/ethanol, textile, confectionery, wood, food and soft drinks for industries. They are also tradable in the international market.

According to FAO (2023), Africa produces about 203 million tonnes (56%) of the world cassava production, having Nigeria as one of the largest producers in the world, producing over 63 million tons of cassava in 2021. However, small-scale farmers who produce on 0.5 to 5 hectares of land control the majority of this production's outputs (Kwame and Dakwa, 2010). As a result, cassava

farmers need ICTs to optimize production by getting innovations on improved cassava varieties and technologies. This is because, ICT is one of the main driving forces that can bring about development and change in all sectors, agriculture inclusive in this present digital age.

Regrettably, Kogi State, one of the major producers of cassava in Nigeria whose majority of the dwellers is self-employed and depends primarily on agriculture for their survival and sustenance is significantly decreasing in accessing and utilisation of ICT components. Reportedly, over 4.16million metric tonnes of fresh cassava roots, from over 269,270 hectares of cassava farms are produced annually in Kogi State (Kogi ADP, 2024). The major production outputs are from Ankpa, Dekina, Kabba/Bunu and Ijumu LGAs (Kogi ADP, 2024). Currently, Kogi State is the leading cassava producing state in Nigeria with a production of 4 million MT per annum of the nation's total of 58 million MT per annum; and with an average yield of 12 tonnes per hectare (Kogi ADP, 2022). Unfortunately, expected growth rate is lacking especially among the rural farmers despite the multi-usage of cassava produced and its attraction in the global market. There is, therefore, doubt whether cassava farmers in Kogi State know what constitutes ICTs utilisation and how best they could utilise them to improve their cassava productivity. Based on this background, it becomes pertinent to investigate the awareness and utilisation level of ICTs among cassava farmers in Kogi State, Nigeria. The specific objectives were to:

- describe the socioeconomic characteristics of cassava farmers;

- ascertain the level of ICTs awareness among cassava farmers;

- identify the types of ICTs utilised by cassava farmers;

- determine the output of cassava farmers according to the categories of ICTs users;

- ascertain the frequency of usage of ICTs among cassava farmers; and

- identify the constraints to the utilisation of ICTs by cassava farmers.

Methodology

The study was conducted in Kogi State, Nigeria. It is located in the middle belt or the north central zone of Nigeria. The state is bounded to the north by River Niger, south by Enugu, Anambra and Delta States, west by Ondo, Ekiti and Kwara States and east by Benue State. The population of the state is put at 4,466,800 million according to the population projection of 2022 and about 75% of the population lives in rural areas (Ibrahim et al., 2018). The major ethnic groups in the state are Ebira, Igala and Okun. Other minority groups include Bassa-Komo, Bassa-Nge, Nupe, Gwari, Kakanda, Oworo, Ogori-Magongo and Eggan. It has 21 local government areas. The major economic

activities of the people are farming, fishing, trading and civil service works. The state experiences two distinct weather seasons; dry and wet season which favours the growth of varieties of both food and cash crops. Cash crops grown in the state include: coffee, cocoa, cashew and oil palm, while food crops like pea nuts, maize, cassava, yam, rice and sorghum among others are also grown.

The state is divided into four Agricultural Development Project (ADP) zones namely; Zones A- Aiyetoro-Gbede, B- Anyigba, C- Koton-Karfe and D- Alloma. The study population comprised all cassava farmers in Kogi State. A multistage sampling procedure was used in selecting a sample size of two hundred (200) cassava farmers for the study. In stage one, one (1) extension block was purposively selected from each zone. In stage two (2), five (5) extension cells were selected from each of the four (4) blocks, giving a total of twenty (20) cells. In stage three (3), ten (10) cassava farmers were selected from each

of the twenty cells, giving a total of two hundred (200) cassava farmers as the sample. A structured questionnaire was used for data collection for the study. Socio-economic characteristics of the cassava farmers, types of ICTs utilized by cassava farmers and output of cassava farmers according to the categories of users of ICTs were analysed using frequency counts, mean and percentages. A 3-point Likert scale with real limits of: index of above 5 ICT tools= high; index of 3-5 tools= moderate; and index of 1-2 tools= low was used to analyse level of ICTs awareness and utilisation among the respondents. A 3-point Likert scale of everyday = 3, twice in a week = 2 and once in a month = 1 was used to analyse the frequency of usage of ICTs to cassava production activities and the constraints to the utilisation of ICTs by the respondents were analysed by mean score through 3-point Likert scale of very severe=3, severe=2 and not severe=1. Mean score of 2.0 was used as the criterion level for acceptance.

Results and Discussion

Socio-economic Characteristics of the Cassava Farmers

Table 1 shows the socio-economic characteristics of the respondents.

Table 1: Socio-economic Characteristics of the Respondents

Age(Years)	Frequency	Percentage (%)	Mode/Mean
21-30	32	16.0	
31-40	35	17.5	
41-50	58	29.0	46years
51-60	45	22.5	
>60	30	15.0	

Total	**200**	**100%**	
Sex			
Male	115	57.5	Male
Female	85	42.5	
Total	**200**	**100%**	
Marital Status			
Single	40	20.0	
Married	95	47,5	Married
Divorced	40	20.0	
Widowed	25	12.5	
Total	**200**	**100 (%)**	
Educational Level			
No formal Education	25	12.5	
Primary School Level	60	30.0	
Secondary Level	90	45.0	Secondary School
Tertiary Level	25	12.5	
Total	**200**	**100**	
Farm Size			
1 - 2ha	105	52.5	3 Hectares
3 - 5ha	60	30.0	
Above 5ha	35	17.5	
Total	**200**	**100**	
Farm Experience (Years)			
1 - 5 years	35	17.5	
6 - 10 years	65	32.5	
Above 10 years	100	50.0	12 years
Total	**200**	**100**	
Annual Farms Income (#)			
100,000 - 500,000	10	5.0	
600,000 – 1,000,000	85	42.5	
Above 1,000,000	105	52.5	800,000
Total	**200**	**100**	
Cassava Farmers Association			
Member	85	42.5	
Not a Member	115	57.5	Not a Member

Source: Field Survey, 2023

Results in Table 1 show that majority (29.0%) of the cassava farmers were in the age bracket of 41-50 years, with the mean age of 46 years. This implies that cassava farmers in the study area were still in their active and productive ages. This agrees with the findings of Ekanem and Ekerete (2018) that a high proportion (33.0%) of the respondents was within the age bracket of 41-50 years. Arif *et al.* (2018) reported that, farmers' ages had positive impact or relationship with their productivity and adoption of technology.

Table 1 also indicates that 57.5% of the respondents were male cassava farmers, while 42.5% were female cassava farmers, implying that majority of the cassava farmers in Kogi State were males. The much noticed discrepancy in the percentage of male and female cassava farmers as observed could be associated with societal cultural categorization and belief, but it was as a result of the tedious work on the farm. This finding in tandem with that of Abiodun and Damilola (2018), who reported that most of the tedious works on the farm are done by men. Ekanem and Ekerete (2018) also reported that majority (66.0%) of the respondents were males

Table 1 reveals that majority (47.5%) of the cassava farmers were married with only a small proportion (20%) single and 20% divorced or separated, while 12.5% were widowed. This implies that married individuals dominated cassava farming in the study area. This finding is consonance with that of Umar *et al.* (2014) who reported that

most of the farming respondents in his study were married.

Table 1 also shows that 87.5% of the respondents could read and write. Only 12.5% had no formal education. The educational level of the farmers could influence access to ICTs used for cassava production. Farmers who could read and write are expected to have access to information and adopt innovation with its effect on productivity. This finding is in congruence with that of Eze *et al. (*2019) who found that the level of education obtained by farmer increases his farm productivity and enhances his capacity to understand and evaluate new technologies.

Table 1 shows that the average farm size among cassava farmers in the study was 3 hectares. This means that the farm size recorded is an indication that cassava farmers in the study area were still at the subsistence level. This finding is consistence with Ibitoye *et al.* (2015) who found similar farm size among tomato farmers in Kogi State.

Table 1 also shows that most (50.0%) of the respondents had farming experience of 12years, and the mean years spent farming among cassava farmers was also 12 years. This average is long enough for farmers to understand the importance of ICTs to maximize production. This finding is in line with Umar *et al.* (2014) who found that productivity increases with years of experience.

Table 1 shows that majority (52.5%) of the cassava farmers earned above #1,000,000 from cassava production through utilisation of ICTs as tools of information and marketing, while 42.5% and 5% earned less due to lack of ICT tools. The result shows that technologies have the way of improving productivity and marketing standard.

The result in Table 1also shows that majority (57.5%) of the respondents did not belong to any association, while only 42.5% of the respondents belonged to cassava farmers association in the study area.

Awareness of ICTs among Cassava Farmers

Table 2 shows that 61.68% of cassava farmers' level of awareness was high, while 46.5% had no awareness. This result is in line with that of Hassan *et al.* (2019), that in rural Nigeria where most cassava farmers are found, the respondents are aware of ICTs.

Table 2: Level of ICTs Awareness among the Cassava Farmers

Awareness Level	Frequency	Percentage (%)
High	66	61.68
Moderate	33	30.84
Low	8	7.48
No Awareness	93	46.5
Total	**200**	**100.0**

Source: Field Survey, 2023

Utilisation of ICTs among Cassava Farmers

Table 3 shows that 42.48% of cassava farmers' level of ICTs utilisation was combined users, while 32.79% and 24.73% level of ICTs utilisation were contemporary and conventional users respectively. This result is in line with that of Ogiagah and Ofule (2020), that in rural Nigeria where most cassava farmers are found, the farmers are both conventional and contemporary users of ICTs.

Table 3: Level of ICTs Utilization among the Cassava Farmers

Utilization Level	Frequency	Percentage (%)
Conventional User	46	24.73
Contemporary User	61	32.79

Combined User	79	42.48

Source: Field Survey, 2023   * Multiple Responses

Types of ICTs Used by Cassava Farmers

Table 4 shows that 21.5% of cassava farmers used mobile phone, while 20.6% used radio, 19.6% used SMS, 15.0% used social media, 9.3% used internet, 6.5% used television, 2.8% used newspaper and magazine, and 1.9% used poster. It therefore, implies that mobile phone was the major ICTs category used by cassava farmers. This result is in consonance with that of Hassan *et al*. (2019) who reported that in rural Nigeria where most cassava farmers are found, ICTs tools available for use are primarily radio and telephone.

Table 4: Types of ICTs Used by Cassava Farmers

Types	Frequency	Percentage (%)
Radio	22	20.6
Television	7	6.5
Mobile Phone	23	21.5
SMS	21	19.6
Internet	10	9.3
Newspaper	3	2.8
Magazine	3	2.8
Poster	2	1.9
Social Media	16	15.0
Total	**107**	**100**

Source: Field Survey, 2023

Output of Cassava Farmers According to the Types of ICTs Used

Table 5 shows that the farmers with mobile phone tool had output of 400 bags, followed by radio tool with 250 bags and SMS output generated was 150 bags. Internet, newspaper, magazine and social media generated output of 50 bags, while television and poster generated output of 25 bags respectively. This result is in conformity with that of Matto (2018) who said that ICTs is one of the main driving forces that can bring about improvement in agricultural output. In fact, ICTs are what rural cassava farmers need to obtain maximum output needed in their cassava farming.

Table 5: Cassava Farmers' Output Based on Type of ICTs Used

Items	Output of cassava farmers per year(in bags)
Radio	250
Television	25
Mobile Phone	400
SMS	150
Internet	50
Newspaper	50
Magazine	50
Poster	25
Social Media	50

Source: Field Survey, 2023

Frequency of Usage of ICT Tools among Cassava Farmers

Table 6 shows that mobile phone had mean score of 2.74, followed by SMS (M= 2.56), radio (M=2.36), and television (M=2.20). It therefore implies that the ICT tools commonly utilised by cassava farmers in Kogi State, especially those in rural areas are mobile phone, SMS, radio and television. This result contradicts that of Matto (2018) who reported that there are many innovative ICT tools used globally today to improve agricultural development, but in Nigeria particularly in the rural area, frequency of usage of ICTs is very poor; very few ICT tools like radio, telephone, SMS, and social media are maximally used.

Table 6: Frequency of Usage of ICTs tools among Cassava Farmers

ICT Tool	Everyday	Twice in a week	Once in a month	Mean Score
Radio	56	33	18	2.36
Television	27	74	6	2.20
Mobile phone	88	10	9	2.74
SMS	65	37	5	2.56
Internet	4	3	100	1.10
Newspaper	3	48	56	1.50
Magazine	3	67	37	1.68
Poster	2	93	12	1.89
Social media	7	25	75	1.36

Source: Field Survey, 2023

Constraints to the Utilisation of ICTs among farmers

Table 7 shows that poor rural internet access with the mean score of 2.58 was the greatest constraint, followed by power failure (M=2.51), and inadequate extension service (M=2.14). The enhancement of production can be brought about by improving capacity in terms of enhancing access to information, as the recent development in the field of agriculture can be readily obtained through effective and efficient use of ICT facilities. This result is in harmony with that of Aboajah *et al.* (2018) who reported the various serious limitations to the utilisation of ICTs among farmers in Nigeria, particularly in the rural area despite the world-wide ICTs benefits in all sectors including agriculture. Similarly, Olaniyi and Ismaila (2016) also reported that majority of farmers suffered great limitations in the utilisation of ICTs such as lack of power supply, high cost of telephone services, lack of internet services to access global information on agricultural improvement and many more.

Table 7: Constraints to the Utilization of ICTs among Farmers

Constraints	VS	S	NS	MS
Time constraint	60	66	74	1.93
Illiteracy	24	102	74	1.75
Inadequate extension service	84	59	57	2.14
Poor rural internet access	135	45	20	2.58
Power failure	116	69	15	2.51
Low income	21	38	141	1.4
Subscription internet cost	15	27	158	1.29
Cost of charges on calls	54	47	99	1.78
Complexity in the use of ICTs	3	30	167	1.18

Source: Field Survey, 2023

Conclusion and Recommendations

Few ICT tools like radio, mobile phone, SMS and Social media were what cassava farmers, especially those in the rural areas were aware of and utilised. Evidences showed that many factors constrained cassava farmers in the level of awareness and utilization of ICT tools. Some of the limitations identified included poor rural internet access, poor power supply, inadequate extension services, cost on call charges and illiteracy. The

enhancement of production can be realized by improving capacity in terms of enhancing access to information, as the recent development in the field of agriculture can be readily obtained through effective and efficient use of ICT facilities. It is therefore, recommended that the use of radio, mobile phone and multimedia to disseminate relevant agricultural information to cassava farmers in the study area should be considered by extension bodies. Government should provide adequate and constant power supply to the rural areas, as well as mounting radio programmes on cassava production.

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