

SOCIO-ECONOMIC FACTORS INFLUENCING THE UTILIZATION OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTs) AMONG CASSAVA FARMERS IN ABIA STATE, NIGERIA

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ABSTRACT

This study analysed the use of information and communication technologies (ICTs) among cassava farmers in Abia state, Nigeria. A random sampling technique was adopted to select a total of 120 farmers for the study in 2019 using questionnaire and focus group discussion (FGD). Both descriptive (frequency, percentages and 5 point Likert-scale) and inferential statistics (probit regression model) were used in analyzing the data. Major results showed that the socio-economic characteristics of the cassava farmers have a lot of bearing in their utilization of ICTs in the study area. The result on cassava farmers awareness of ICTs in the study area indicated that majority (95.8%) of the farmers were aware of mobile phones, 61.7% were aware of computers, while, 9.2% and 1.7% were aware of internet and e-mail respectively. The result on the level of utilization of ICTs among the cassava farmers was low with a grand mean level of ($\bar{x} = 2.4$). The result of Probit regression analysis on factors influencing cassava farmers' use of ICTs in Abia State, revealed that coefficients of age, marital status, education level, farming experience, farm income and access to credit were positive and significant at varied alpha levels respectively, while, gender, farm size and occupation were negative and significant at 10% alpha level. Major constraints faced by farmers for using ICTs in the study area were, lack of electricity supply, (88.3%), skill gap and illiteracy, (84.2%) and high cost of ICT facilities, (70%). The study concluded that there was low utilization of ICT facilities in the study area by cassava farmers. The study therefore, recommended for regular power supply, ICT facilities should be installed very close to the farmers especially in rural areas to decrease the transaction cost of using ICTs facilities experienced by cassava farmers, Campaign programmes on importance of ICTs and reduction of high cost of ICTs and accessories should be embarked upon in rural areas to enhance people interest and accessibility to ICT facilities and there is need to encourage the formation of cooperative societies among farmers to enhance information on utilization of ICTs in the state.

Keywords: ICTs, Utilization, Cassava Farmers

INTRODUCTION

In all works of life, information has played out to be the most fundamental element, especially in developmental processes. Obviously, the importance of ICTs in development process has been recognized and that was why ICT access was targeted number 8 in the Millennium Development Goal and ICTs provide farmers with direct access to critical information which enhances productivity and agricultural development (Okeke, Nwoye and Kadiri, 2020). Modern information and communication technologies (ICTs) provide remarkably powerful and cheap alternative means of dissemination of information (Ukoha and Nzeakor, 2016). Ekedo (2016) stated that ICTs are recent communication tools in the world that can enable a user cross border and have access to encyclopaedia, newspaper, bulletins, boards, video, arcades, hyper mails, broadcast stations, movies and mail order all at a glance in a global village and it is commonly used 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. Ekedo (2016) classified ICT into conventional ICT (radio, television) and contemporary ICT (telephones, computer/internet). ICTs are foundation of the new global information based economy. They are increasingly becoming the key drivers for socio-economic growth worldwide. In fact, its capacity for immediate and sharing of large volume of information at minimum cost has been documented.

For farmers to be informed on recent advancements in cassava production and processing technologies without an information dissemination system that is fast and easy to operate is impossible, hence the emphasis on the need for information communication technologies use amongst cassava farmers. Given the urgent need for current agricultural knowledge and information system (AKIS) by farmers, the use of conventional communication methods such as farm and home visits and the use of contact farmers for extension information delivery is counterproductive (Agada and Akpan, 2017). This therefore calls for the use of new emerging information and communication technologies by agricultural information providers for the benefit of farmers. Information and communication technology (ICTs) is often viewed as the “wheel” of economic activities since it facilitates the economic growth (World Bank, 2019). Information and Communication Technology (ICT) has become, within a very short, tune, 'One of the basic building blocks of modern society. Cassava plays a fundamental role in the food economy and lives of farmers and major source of income in most rural households.

It is considered to be the most paramount staple, food-security crop in sub-Saharan Africa and mainstay of the rural and increasingly also the urban population (Daniel-Ogbonna, Okoye and Amadi, 2019). This research is necessitated by dearth of information on influence of ICTs utilization among cassava farmers in Abia state, Nigeria.

Objectives

The specific objectives of the study were to:

- i. describe socio-economic characteristics of cassava farmers in Abia State;
- ii. identify types of ICTs available to cassava farmers in the study area;
- iii. assess level of utilization of ICTs by cassava farmers in the study area
- iv. identify problems constraining cassava farmers use of ICTs in Abia State;
- v. determine factors influencing utilization of ICTs by cassava farmers in Abia State;

METHODOLOGY

This study was conducted in Abia State, Nigeria. Multi- Stage random sampling technique was adopted to select 120 cassava farmers for the study. In the first stage, two out of the three agricultural zones in Abia state were randomly selected. In the second stage, three extension blocks were randomly selected from each of the two agricultural zones to give a total of six extension blocks. In the third stage: two extension circles were randomly selected from each of the extension blocks to give a total of twelve extension circles. A list of cassava farmers in the selected circles were compiled with the help of extension agents domiciled in those circles. This list served as the sampling frame. In the fourth and final stage; ten cassava farmers were randomly selected from each of the extension circles, to give one hundred and twenty cassava farmers. Data were collected with the use of questionnaire and Focus Group Discussion (FGD). The data obtained were analyzed using appropriate statistical tools. Objectives i, ii and iv; were analysed using descriptive statistics such as frequencies, percentages and mean. Objective iii; was analysed using mean score drawn from 5-point Likert-type scale graded thus: very high (5); high (4); moderate (3); low (2); and very low (1), a mean score of 3 was used as the benchmark for making decision on ICTs utilization levels of cassava farmers. Mean score higher than 3 was regarded as high level of ICTs use while mean score lower than 3 was regarded as low level of ICTs utilization, and inferential tools such as probit regression model was used to analysed objective v.

RESULTS AND DISCUSSION

Selected Socio-Economic Characteristics of Cassava Farmers

Table 1 revealed that 40.8% of the cassava farmers were within the age bracket of 41-50 years. The mean age of the cassava farmers was 48 years indicating that the cassava farmers were still strong and active and thus capable of withstanding the stress and rigours associated with farming activities. The result showed that 45.0% of the cassava farmers had secondary school education, while 28.3% and 21.7% of them had primary and tertiary education respectively. This result indicates that the cassava farmers were educated. The mean farming experience was 14 years, implying that the farmers had adequate experience in cassava production. Adequate farming experience enhances participation and adoption of improved farming technologies by farmers (Agbarevo, Amadi and Nwokocha, 2019). Majority 51.7% of the cassava farmers had annual farm income of between ₦110,000-₦200,000, 35.0% of them had ₦210,000-₦300,000 while 10.0% of them had above ₦310,000. The mean annual farm income of the cassava farmers was ₦167,000. With higher income level farm households are more likely to access ICT facilities such as smart phones and television. The result shows that 80.0% of the cassava farmers had no access to credit while only 20.0% of them had access to credit. This implied that cassava farmers in the area had low access to credit. The result revealed that majority, 55.0%, of the cassava farmers' belonged to cooperative societies.

Table 1: Distribution of respondents based on selected socio-economic characteristics

Variables	Frequency	Percentage	Mean
Age			48
>30	11	9.2	
31 – 40	35	29.2	
41 – 50	49	40.8	
51 and above	25	20.8	
Level of education			13years
No formal education	6	5.0	
Primary education	34	28.3	
Secondary education	54	45.0	
Tertiary education	26	21.7	
Primary occupation			
Farming	85	70.8	
Trading	8	6.7	

Civil servant	11	9.2	
Artisan	16	13.3	
Farming experience			14 years
1 – 5	10	8.3	
6 – 10	35	29.2	
11 – 15	42	35.0	
16 and above	33	27.5	
Farm income			167,000
10,000-100,000	4	33.0	
110,000-200,000	62	51.7	
210, 000-300,000	42	35.0	
310,000 and above	12	10.0	
Access to credit			
Yes	24	20.0	
No	96	80.0	
Cooperative membership			
Yes	66	55.0	
No	54	45.0	
Total	120	100.00	

Source: Field survey, 2019

Level of Utilization of ICTs by Cassava Farmers

The level of utilization of ICTs by cassava farmers is shown in Table 2. The table shows that although the cassava farmers had high level of utilization of GSM ($\bar{x}=3.3$), WhatsApp ($\bar{x}=3.3$) and radio (3.3), cassava farmers generally had low grand mean level of utilization of ICT facilities ($\bar{x}= 2.1$). This could be attributed to lack of fund to obtain information communication technology devices by farmers in the study area. The more information the farmers have especially from credible sources the higher the level of adoption, utilization and marketing of cassava innovations and products. This findings is in line with the findings of Ekedo (2016).

Table 2: Distribution of Cassava Farmers According to their Level of Utilization of ICTs

Utilization of ICTS	Very high	High	Moderate	Low	Very low	Total	Mean
Computer	3(15)	29(116)	61(183)	20(40)	7(7)	341	2.8
GSM	19(9s5)	43(172)	57(171)	1(2)	0(0)	311	3.3
Internet	0(0)	10(40)	87(261)	23(46)	0(0)	347	2.9
E-mail	0(0)	0(0)	19(57)	71(142)	30(30)	229	1.9
Social networks							
Face book	3(15)	38(152)	67(201)	12(24)	-(0)	392	2.6
WhatsApp	9(45)	34(140)	57(171)	18(36)	2(2)	394	3.2
Skype	0(0)	0(0)	7(21)	85(170)	28(28)	219	1.8
Twitter	0(0)	0(0)	2(6)	74(148)	44(44)	198	1.6
Instagram	0(0)	0(0)	9(27)	62(124)	49(49)	200	1.7
Radio	45(225)	15(60)	10(30)	25(50)	25(25)	390	3.3
Television	17(85)	13(52)	40(120)	47(94)	3(3)	297	2.4
Fax	0(0)	0(0)	45(135)	16(32)	59(59)	226	1.8
Newspaper magazine	0(0)	0(0)	56(168)	10(20)	54(54)	242	2.0
Research bulletin	10(50)	7(28)	0(0)	48(96)	55(55)	229	1.9
	12(60)	9(36)	10(30)	34(68)	55(55)	249	2.1
Grand mean							2.1

Source: Field survey, 2019

Socio-Economic Factors Influencing Farmers Use of ICTs

The Probit regression estimates of the factors influencing cassava farmer's utilization of ICTs are presented in Table 3. The result revealed that there was significant relationship between use of ICTs and some socio-economic characteristics of cassava farmers at varied alpha levels. The result indicated that age, marital status, education level, farm income and access to credit

had positive influence on use of ICTs while gender, farming experience, farm size and occupation had negative influence on access to ICTs.

The coefficient of gender (-0.129) was significant at 10% alpha level and negatively signed. This implies that female cassava farmers had better chance of using ICTs than male farmers. This is because females are more involved in food production and processing than the male farmers.. The coefficient of age (0.067) was positive and significant at 1% alpha level. This implied that an increase in age leads to an increase in the probability of using of ICTs among cassava farmers in study area. Although, it is expected that younger farmers will be more ICT compliant, the result still make sense, it could be that older farmers have made significant investment and earn higher income and thus could better afford to buy and use ICTs.

Educational level had a positive coefficient (0.098) that was significant at 5% alpha level. The positive sign of the variable implied that the more educated cassava farmers are the ones that use ICT facilities more. This result is in consonance with the findings of Osondu and Ijioma (2015) that the higher the level of education, the higher the level of use of ICTs. Coefficient of marital status (0.311) was positive and significant at 1% level of probability. This implied that married cassava farmers had high probability of using ICTs in the study area. The coefficient of farm size (0.126) was positive and significant at 10% alpha level. Primary occupation posted a negatively signed coefficient (-0.90) significant at 10% level alpha. This implied that cassava farmers whose primary occupations were farming had relatively lower probability of using ICTs compared to other farmers.

The coefficient of farm income (0.177) was positively signed and significant at 5% level of probability. Farming experience had a positively signed coefficient (0.036) that was significant at 1% alpha level. Access to credit had a positively signed coefficient (0.464) that was significant at 1% alpha level. This implies that increase in cassava farmers' access to credit leads to increase in the probability of using ICTs among cassava farmers in the study area. Cassava farmers with increased access to credit facilities are more likely to increase their production base and use ICTs. Following the argument that poor households experience difficulties trying to sustain immediate family needs, increased volume of credit helps to better the financial capacity of such households. These findings agree with the report of Ohaka and Akpomi (2018) and Nenna (2016) that easy access to credit facilities increases farmers' utilization of new technologies.

Table 3: Probit Regression Estimates of Factors that Influenced Farmers Utilization of ICTs in Abia State, Nigeria

Parameter	Estimate	Std Error	Z -value	Sig
Gender	-.129	.074	-1.740*	.082
Age	.067	.006	11.779***	.000
Education level	.098	.040	2.468**	.014
Marital status	.311	.049	6.336***	.000
Household size	.020	.019	1.052	.293
Farm Size	.126	.072	1.743*	.081
Distance to city (Km)	.015	.031	.480	.631
Primary occupation	-.090	.039	-2.288*	.022
Farm Income	.177	.065	2.711**	.007
Non-farm Income	-.025	.059	-.426	.670
Farming Experience	.036	.006	6.014***	.000
Access to credit	.464	.100	4.657***	.000
Cooperative Membership	.139	.147	.944	.345
Intercept	-5.492	.526	-10.432***	.000
Chi-Square			8504.290***	.000

Source: Field Survey, 2019

***= Significant at 1% alpha level

**= Significant at 5% alpha level

*= Significant at 10% alpha level

Constraints of Cassava Farmers Use of ICTS

Constraints to use of ICT facilities among the cassava farmers were presented in Table 4. The table shows that cassava farmers experienced serious constraints in the use of ICTs in the study area, and these were constraints inadequate electricity (88.3%), skill gap and illiteracy (84.2%), high cost of ICT facilities (70%), inadequate or poor ICT infrastructure (59.2%), high tariff charge (50.0%), inappropriate local content (45%), inadequate and weak ICT policies/non implementation (30%) and weak institutional and poor collaboration (27.5%). The implication is that the more the constraints the more difficult the farmers have in obtaining and using ICTs facilities which as a result affect the level of cassava production in the study area. According to Okeke *et al.*, (2019) and Osondu and Ijeoma (2015) the farmers are constrained to obtain information from various sources of information.

Table 4 Problems Constraining Cassava Farmers Use of ICTs in Abia State, Nigeria

Constraints	*Frequency	Percentage
Inadequate or poor ICT infrastructure	71	59.2
High cost of ICT facilities	84	70
Inadequate and/or weak ICT policies/non implementation	36	30.0
Weak institutional and poor collaboration	33	27.5
High Tariff charge	60	50.0
Inappropriate local content	54	45
Skill gap and illiteracy	101	84.2
Inadequate electricity supply	106	88.3

Source: Field survey, 2019

***Multiple responses recorded**

CONCLUSION

The study analysed cassava farmers' access to ICT facilities in Abia State, Nigeria. The result indicated that there was low access to ICT facilities in the study area. The study also showed that gender, age, household size, primary occupation, distance to city, access to credit, farm size, farm income, farming experience and farm income were significant and influenced both access to ICTs among cassava farmers in Abia state. Therefore, it is recommended that both government and non-government agencies involved in agricultural development should facilitate access and use of ICT accessories among farmers in the rural area for improved cassava productivity, and enhance farmers' interest and accessibility to ICT facilities. More importantly, regular power supply should be made available in the rural areas for farmers to be able to access ICT facilities in the area.

REFERENCES

- Agada, M.O and Akpan, C.O. (2017). Access and Use of Information and Communication Technology among Cassava Farmers in Obudu, Cross River State, Nigeria. *International Journal of Innovative Research and Development*. ISSN 2278 – 0211 (Online)/ November, 2017
- Agbarevo, M.N. B, Amadi, P.E and Nwokocha, N,I (2019) Effect of Selected Socioeconomic Characteristics of Farmers on Adoption of Improved Cassava Varieties in Cross River State, Nigeria. *Journal of Agricultural Economics, Extension and Science*. Vol.5 No 1. April 2019. ISSN 2545-5176. Pp. 67-78.
- Daniel-Ogbonna, C, Okoye, A and Amadi, P (2019) Effect of Commercialization on the welfare of Cassava Cooperative Farmers in Abia State, Nigeria. *Journal of Community and Communication Research* ISSN:2635-3318. Vol.6,,No1. June, 2019.Pp.1-6
- Ekedo, T.O, Ifenkwe, G.E and Unamma, R.P.A (2016) Comparative Evaluation of Information and Technology Communication (ICTs) Utilization among Cassava Farmers in South-Eastern, Nigeria. *National Root Crops Research Institute Annual Report, 2016*. Pp. 138-142
- Nenna, M.G. (2016). Assessment of information communication technologies (ICTs) among cassava farmers in Anambra State, Nigeria. *British Journal of Research*, 3(2), 2394 – 3718.
- Ohaka, N.C. & Akpomi, M.E. (2018). Information Communication Technology (ICT): A Potential tool for problem solving in business education programme. *International Journal of Innovative Information Systems and Technology Research*. 6(4), 9 – 17.
- Okeke, M. N., Nwoye, I. I and Kadiri, A. O (2020) Assessment of Information and Communication Technology (ICT) Utilization among Rural Women Rice Farmers in Ayamelum Local Government Area of Anambra State, Nigeria. *International Journal of Agriculture Innovations and Research* Volume 8, Issue 5, ISSN (Online) 2319-1473 Copyright © 2020 IJAIR
- Osondu C. K. and Ijioma J. C. (2015). Access and Use of information and Communication Technologies (ICTs) by rural Women Farmers in Anambra State, Nigeria. *Journal of Global Economics, Management and Business Research*. 3(4):189-197.
- Ukoha, J.O and Nzeakor, F.C (2016) Evaluation of Agricultural Information Source Use in the Adoption of a New Variety by Cocoa Farmers in Abia State, Nigeria. *Journal of Community and Communication Research* Vol. 1 No.1, June 2016. Pp.88-93
- World Bank's e-sourcebook ICT in agriculture – connecting smallholder farmers to knowledge, networks and institutions (2019)