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Assessment of Plantain Farmer's Use of Information and Communication Technology in Yenagoa and Ogbia Local Government Areas of Bayelsa State

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Abstract— *The study examined assessment of plantain farmers' use of Information and Communication Technology in Yenagoa and Ogbia Local Government Areas of Bayelsa State. The study was designed to describe the socio-economic characteristics of plantain farmers, examine level of awareness of plantain farmers toward the use of ICT, determine the usefulness of ICT to farmers and identify factors affecting ICT usage by plantain farmers. Five (5) communities were selected from each of the Local Government Areas making a total of ten (10) communities which were Otueke, Otuosega, Oruema, Oberema Abobiri, Swali, Akaba, Fangbe, Onura and Oje and twelve (12) plantain farmers were selected from each community, making a total of one hundred and twenty (120) plantain farmers were selected. Five percent traction was be used to select respondent from each community using purposive sampling technique. The structured questionnaire and interview schedule was used to elicit information from the respondents. The data collected were analyzed using frequency, mean, percentage while hypotheses were tested by the use of simple regression analysis. The results showed that majority of the respondents (41.7%) were between ages 21-30, 28.5% completed only primary education, 41.9% were married and 21.7% indicated farming and self-employed. the hypotheses there was no significant relationship between plantain farmers' socio-economic characteristics and ICT usage except marital status. The result revealed that age (r= 0.041; P <0.05), educational qualification (r=0.010; P <0.05), occupation (r=0.045; P<0.05) and household size (r=0.18; P<0.05), all exhibited positive but insignificant relationship with ICT usages while marital status revealed a positive but significant relationship. The study recommends that Government should make good effort to establish modern ICT facilities in public places, especially schools, where the teachers could have access to learn and facilitate other learners, affordability and accessibility of ICT facilities should be available to plantain farmers by both government and non-government agencies in the country.*

Keywords— *Bayelsa; Plantain farmers; ICT.*

I. INTRODUCTION

Plantain is one of the food crops grown in Nigerian. It is among the foremost sources of carbohydrates in humid tropical Africa and contains 35% at 0.02 to 0.5% fats, 1.2% protein and 0.8% ash. In terms of gross value of production, plantain is one of the important fruit in the developing world. Central of Bank Nigeria (2003) indicates that plantain is one of the major stable foods in Nigeria, it had the highest percentage increase in output over years 1999 to 2003, implying the existence of market potential but increase production in the country.

Plantain is a crop from the genus Musa. Plantain farms in Nigeria are characterized by very low productivity and small scale production. The crucial issue in the Nigerian agriculture is that of low productivity. Farmers' output must therefore be expanded with existing levels of conventional inputs and technology. More than ever, farmers will have to produce more efficiently: That is produce maximal output from a given mix of inputs or use the minimum levels of inputs for a given level of output: Rural people who constitute greater part of the farming population in Nigeria require information and innovative agricultural technologies that have been generated by research in various research institutes and allied institutions. They also need information on supply or source of production equipment and inputs, credit facilities and information for linking input and output at reasonable prices. According to Satter (2007) the need for information in the agricultural sector can become imperative to boost production and productivity, hence the emphasis on the development of Information and Communication Technology (ICT), and its use in boosting agricultural production among farmers (Adejo and Haruna, 2009). The greatest concern facing the world today is the provision of adequate and nutritious food for its teaming population, and ICTs are tools for enhancing people's daily lives whether by increasing access to information relevant to their economic livelihood, better access to other information source; health care, transport, distance learning or in the strengthening of kinship (Obayelu and Ogunlade, 2006). Information and communication Technologies (ICTs) generally refer to an expanding assembly of technologies that are used to handle information and communication (Asenso-Okyere and Mekonnen, 2012).

Modern ICTs provide remarkably powerful and cheap alternative means of dissemination of information (Vernon, 2001). Ali (2009) stated that recent communication tools in the world that can enable a user cross border and have access to encyclopedias, newspaper, bulletins, boards, video, arcades, hyper mails and broadcast stations. Munyua (2007) reported that information and knowledge play central role in rural agriculture development. ICTs importance has been recognized in the development process and that was why ICT access was made target number 8 in the Millennium Development Goal (Asenso-Okyere and Mekonnen, 2012). Information and communication technologies can

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revolutionize Nigeria farming sector and therefore can benefit plantain farmers.

Given the problem associated with farmers based on assessment of plantain farmer's use of information and communication technology posed the following question, the specific objectives were to

1. describe the socio-economic characteristics of plantain farmers in Bayelsa state,
2. examine level of awareness of plantain farmers towards the use of ICT,
3. determine the usefulness of ICTs to farmers in the study area,
4. ascertain the attitude of plantain farmers towards the use of ICT in the study area and,
5. Identify factors affecting ICT usage by plantain farmers in the study areas.

II. Material and Methods

Two Local Government Areas were selected, Yenagoa and Ogbia Local Government Areas consisting of 29 towns/communities. Five (5) communities were selected randomly from each of the Local Government Areas, making a total of Ten (10) Communities, which were Otueke, Otuosega, Oruema, Oberema, Abobiri, Swali, Akaba, Fangbe, Onura, and Oge. One hundred and Fifty (150) Plantain farmers were selected for the study. A five percent fraction was used to select respondents from each community using purposive sampling technique. According to Mouton (2001), purposive sampling is used to select participants for a particular purposes and knowledge of the population. The choice of respondents is influenced by the category, position, knowledge and experiences of the respondents, particularly those with the ability to respond appropriately.

Socio-Economic Characteristics of the Respondents

Variables	Frequency n = 144		Total Freq	Percentage (%)	Mean
	YENAGOA	OGBIA			
Age					
Below 20 Years	16	4	20	13.89	31.68
20-30 Years	32	28	60	41.67	
31-40 Years	21	7	28	19.44	
41-50 Years	18	18	36	25	
Total	**87**	**57**	**144**	**100**	
Education Attended					
Non formal Education	19	9	28	19.44	
Primary School	37	4	41	28.47	
Secondary School	22	14	36	25	
Tertiary Education	9	30	39	27.09	
Total	**87**	**57**	**144**	**100**	
Marital Status					
Single	23	14	37	25.69	
Married	41	28	69	47.92	
Divorced	7	2	9	6.25	
Widow/Widower	16	13	29	20.14	
Total	**87**	**57**	**144**	**100**	
Household Size					
1-5 Persons	44	14	58	40.27	27.78
6-10 Persons	17	8	25	17.36	
11-15 Persons	14	15	39	27.08	
16 Persons and above	12	10	22	15.29	
Total	**87**	**57**	**144**	**100**	
Farming Experiences					
1-10 Years	27	5	32	22.22	17.95
11-20 Years	31	22	53	36.81	
21-30 Years	19	25	44	30.56	
31Years and above	10	5	15	10.41	
Total	**87**	**57**	**144**	**100**	
Monthly Income (N)					
1,000 -10,000	8	6	14	9.72	25.70
11,000-20,000	37	5	42	29.17	
21,000-30,000	38	30	60	41.67	
31,000 and above	4	24	28	19.44	
Total			144	100	

Field Survey 2017

ICT facilities used by plantain farmers in Yenegoa and Ogbia LGA

The information and communication technologies used by plantain farmers and their corresponding frequencies in the study area are shown in table. The ICT facilities used by plantain farmers include: Radio (97.22%), television (88.19%), print media (50.00%), seminar/workshop (34.03%), handset/telephone (95.14%), social media (30.56%), projector (3.47%), motor (16.67%), and computer/laptop (45.83%).

Information and technology tools accessible to the respondents.

Media	Frequency			Percentage
	Yenagoa	Ogbia	Total	
Radio	112	32	140	97.22
Television	108	36	127	88.19
Print media, e.g. Newpaper, posters,leaflets, handbills, etc	44	28	72	50.00
Seminar/Workshop	37	12	49	34.03
Handset/Telephone	83	54	137	95.14
Social Media Network: e.g. facebook, whatsup, instragram, etc	25	19	44	30.56
Projector	4	1	5	3.47
Motor Van	18	6	24	16.67
Computer/Laptop with internet and e-mail	49	17	66	45.83

Field Survey 2017

Usefulness of ICT to plantain farmers in the Study Area

The usefulness of ICT to plantain farmers in the study area. Using the decision rule that any variable whose mean value is 2.50 and above depicts that ICT is useful, and any variable whose mean value is below 2.50 is regarded as not useful to the plantain farmers. It is obvious that all the usefulness of ICTs outlined were all effective and relevant and can help in the plantain farming. Hence, the usefulness of ICT in the study area include: promotes social and economic development ($\bar{x}$ = 2.94), provides with useful information that will enhance their agricultural productivity ($\bar{x}$= 2.83), reduces poverty and insecurity ($\bar{x}$= 2.91), and provides essential

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information on the possible channels for selling their products ($\bar{x}$= 2.39).

Usefulness of ICT to plantain farmers

Usefulness of ICT	VU		U		LU		VLU		Mean	Mean
	YEN	OGB	YEN	OGB	YEN	OGB	YEN	OGB		
Promotes social and economic development of plantain farmers.	39	18	21	12	35	11	1	3	2.94	2.94
Provides farmers with useful information that will enhance their productivity.	29	6	41	12	16	33	1	6	2.83	2.83
ICT reduces plantain farmers poverty and insecurity.	39	24	18	6	19	19	11	8	2.91	2.91
Agricultural helpline is a useful source of agric.	26	3	22	16	27	4	12	34	2.35	2.35
Information for Plantain										
Farmers.										
Provides plantain farmers channels for selling their Products	23	5	30	4	25	24	9	24	2.39	2.39

Mean Score: ≥ 2.50 = useful; < 2.50 = not useful
Source: Field Survey, 2018

Level of awareness of plantain farmers towards ICT usage in Ogbia and Yenegoa

The result of the level of awareness of plantain farmers towards ICT usage in the study area. The study observed that exception of one variable, all the outlined variables indicated that the plantain farmers were aware of the ICT usage. This is because they all had mean ($\bar{x}$) value of 2.50 and above. The variables include: numerous ICT facilities as sources of receiving agricultural information related to plantain production ($\bar{x}$ = 3.06), ability to make and receive calls with mobile phones ($\bar{x}$ = 2.83); awareness on the existence and availability of print media like newspaper, posters, leaflets and hand bills ($\bar{x}$ = 2.83); awareness on the existence and availability of seminars and workshops on plantain farming ($\bar{x}$ = 2.37); browsing experience and so can assess Facebook, Whatsapp, Instagram and Togo($\bar{x}$ = 2.08) which indicated not aware.

Constraints to use of ICT by plantain farmers in the Study Area

The constraints to use of ICT by plantain farmers in the study area. The major constraints include: inadequate or poor ICT infrastructure ($\bar{x}$ =2. 65), poor electricity supply ($\bar{x}$ =2. 81), poor network service ($\bar{x}$ =2. 69), no internet coverage in the area ($\bar{x}$ =2. 79), high cost of ICT facilities ($\bar{x}$ =2. 84) and insecurity of the area ($\bar{x}$ =2. 73).

Level of awareness of plantain farmers towards ICT usage in Yenegoa and Ogbia Local Government Area

Level of ICT Awareness	HA		A		LA		NA		Mean
	YEN	OGB	YEN	OGB	YEN	OGB	YEN	OGB	
ICT facilities are sources of receiving agricultural information related to plantain production.	37	21	29	16	17	16	4	4	3.06
Facebook, Whatsapp, Instagram and Google are used for browsing about plantain farming.	13	2	26	4	43	8	5	43	2.08
Plantain farmers make and receive calls with mobile phones.	28	12	31	30	12	10	16	5	2.83
There is existence and availability of print media for plantain farming.	30	9	22	29	27	12	8	7	2.83
There is existence and availability of workshop on plantain farming	19	4	25	22	21	11	22	20	2.37

Mean Score: ≥ 2.50 = aware; < 2.50 = not aware
Source: Field Survey, 2018

Factors affecting ICT usage by plantain farmers in Yenegoa and Ogbia LGA

Level of ICT Awareness	HA		A		LA		NA		Mean
	YEN	OGB	YEN	OGB	YEN	OGB	YEN	OGB	
Inadequate or poor ICT Infrastructure	22	17	31	10	28	11	6	19	2.65
Low level standard of education	5	2	7	3	41	20	34	32	1.71
Poor electricity supply	32	14	22	20	25	13	8	10	2.81
Poor network service	28	10	22	17	31	21	6	9	2.69
No internet coverage	37	22	21	6	19	8	10	21	2.79
Inaccessibility to spare parts	9	3	5	-	35	18	38	31	1.65
High cost of ICT facilities	33	14	35	11	11	20	8	11	2.84
Lack of knowledge about the importance of ICT to plantain Farming	9	1	13	-	41	31	24	25	1.89
lack of adequate training	32	20	17	4	35	25	3	8	1.78
Insecurity	30	18	21	12	22	17	14	10	2.73

Mean Score: ≥ 2.50 = constraint; < 2.50 = not constraint
Source: Field Survey, 2018

Socio-Economic Characteristics and usefulness of ICT in the study area Hypotheses 1:

The relationship between socioeconomic characteristics of the plantain farmers and use of ICT in the study area.

From the analysis, it is evident that socio-economic characteristics of the respondents significantly influence the usefulness of ICT to the plantain farmers in the study area in

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terms of their age, education, household size, farming experience and monthly income.

III. Discussion

The socio economic characteristics of the respondents are contained. 20 respondents (representing 13.9%) indicated that they are below 20 years of age; 60 respondents (representing 41.7%) indicated that they are between 21 and 30 years; 28 respondents (representing 19.4 %) indicated that they are between 31and 40 years; 36 respondents (representing 25.0%) indicated that they are between 51 and 60 years. No respondent fall within the age bracket of 51-60 years

For education attended, the table above, 28 respondents (representing 19.4 %) indicated that they did not attend any formal education but gain the farming knowledge and skills through parents, friends or associates; 41 respondents representing (28.5%) indicated that they completed Primary Education; 36 respondents (representing 25.0%) indicated that they had secondary education; while 39 respondents (representing 27.1%) indicated that they had tertiary education.

As shown on the table above, 37 respondents (representing 25.7 %) indicated that they are single; 69 respondents representing (47.9%) indicated that they are married; 9 respondents (representing 6.3%) indicated that they are divorced; while 29 (respondents representing 20.1%) indicated that they are widow.

As shown on the table above, 39 respondents (representing 27.1 %) indicated that they are farmers; 33 respondents (representing 22.9%) indicated that they are traders; 32 respondents (representing 22.2%) indicated that they are company workers/civil servants; 39 respondents (representing 27.1 %) indicated that they are self-employed; while 1 respondent (representing 0.7%) indicated being a student.

58 respondents (representing 40.3 %) indicated that their family size fall within 1-5 household size; 25 respondents (representing 17.4%) indicated 6-10 household size; 39 respondents (representing 27.1%) indicated 11-15 household size and 22 respondents (representing 15.2 %) indicated 16 and above household size.

ICT facilities used by plantain farmers in Yenegoa and Ogbia LGA

The information and communication technologies in the study area are contained in The ICT facilities in the study area include: Radio (97.2%), television (88.2%), print media (50.0%), seminar/workshop (34.0%), handset/telephone (95.1%), social media (30.6%), projector (3.47%), motor (16.7%), computer/laptop (45.8%).

Usefulness of ICT to plantain farmers in the Study Area

The analyses of the usefulness of ICT to plantain farmers in the study area. Using the decision rule that any variable whose mean value is 2.50 and above depicts that ICT is useful, and any variable whose mean value is below 2.50 is regarded as not useful to the plantain farmers. It is obvious that all the usefulness of ICTs outlined were all effective and relevant and can help in the plantain farming. Hence, the usefulness of ICT in the study area include: brings social and economic development (= 2.9), provides with useful information that will enhance their agricultural productivity (= 2.8), reduces poverty and insecurity (= 2.9), and provides essential information on the possible channels for selling their products (= 3.0).

Level of awareness of plantain farmers towards ICT usage in Ogbia and Yenegoa

The level of awareness of plantain farmers towards ICT usage in the study area. The study observed that all the outlined variables indicated that the plantain farmers are aware of the ICT usage. This is because they all had mean () value of 2.50 and above. The variables include: aware of the ICT tools (= 3.1), aware that ICT facilities provides an opportunity to the farmers to communicate directly with customers (= 2.8) and aware that ICT enhances agricultural productivity (= 2.8).

Constraints to use of ICT by plantain farmers in the Study Area

The constraints to use of ICT by plantain farmers in the study area. Using the decision rule that variables whose mean () value is 2.50 and above implied that it is a major constraint to usage of ICT facilities by plantain farmers in the study area. And any variable whose mean value is below 2.5 showed that it is a less constraint. The major constraints include: inadequate or poor ICT infrastructure (=2. 7), poor electricity supply(=2. 8), poor network service (=2. 7), no internet coverage in the area(=2. 8), high cost of ICT facilities (=2. 8)and insecurity of the area (=2. 7).

Constraints affecting the use of ICT and the usage of ICT in the study area

The relationship between the constraints affecting the use ICT and the age of ICT by the plantain farmers.From the regression tables above, the model summary result indicated that there is a strong and positive correlation between usage of ICT and the ICT constraints in Ogbia, Yenegoa Local Government Area, Bayelsa State. This is evidenced on the value of the co-efficient of the correlation (R) which is 0.896. This value indicates that the strength of the relationship between the variables under study is about 89.6%. The co-efficient of determination (R^2) showed a value of 0.803 which indicates that about 80.3%. On testing the fitness of the model, the F- computed (16.29) is significant at the level 0.016.

IV. Conclusion and Recommendations

Conclusion

This study was carried out to empirically assess the plaintain farmers' use of information and communication technology (ICT) in Yenegoa and Ogbia Local Government Areas of Bayelsa State. The study found that radio, television, print media and telephone/handset were the most readily available ICTs device accessed by the respondents. The result also showed that access to some ICT tools like social media network, projector, media van, seminar/workshop and computer/laptop was low. The implication is that most of the ICT tools are not popular in the study area. The study also

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identified some usefulness of ICT to plantain farmers in the study area to include social and economic development in your locality, provides farmers with useful information that will enhance their agricultural productivity, reduce poverty and insecurity in the study area and provide rural farmers essential information on the possible channels for selling their products. It also found that the plantain farmers are you aware of ICT tools like mobile phone, internet, television, etc; has provided an opportunity to the farmers to communicate directly with market customers; and that ICT enhances agricultural productivity.

The study further found that the constraints affecting plantain farmers in the study include inadequate or poor ICT infrastructure; poor electricity supply; poor network service; no internet coverage in the area; high cost of ICT facilities and telecommunication; and insecurity.

The hypotheses tested revealed that the socio economic characteristics of the in terms of age, education, occupation and household size has a significant relationship with the plantain farmers use of ICT; and that constraints affecting the plantain farmers usage of ICT facilities has significant impact on the plantain farmers.

Recommendations

Based on the findings from the study, the following recommendations were established:

1. Government should make conscious effort to establish modern ICT facilities in public places especially schools where the teachers could have access to, learn and facilitate other learners.
2. Affordability and accessibility of ICT facilities should be made possible to plantain farmers by both government and nongovernmental agencies in the country.
3. The government and nongovernmental agencies should provide better skill acquisition centres and extension agents to train the plantain farmers on the use of ICT facilities for maximum plantain out and utilization.
4. Extension agents should also be empowered to create more awareness on the use of ICT among the farming communities, to identify the barriers preventing farmers to use new information sources and to educate them on the use of modern ICT as the sources of agricultural information.
5. There is need for the development of infrastructural facilities like good road and electricity in rural areas order to bring modern ICT services closer to the people and enable the plantain farmers have access and utilize such ICT facilities like computer and internet.
6. Organized farmers associations such as All Farmers Association of Nigeria (AFAN), Agricultural Development Program (ADP), Ministry of Agriculture, Ministry of Rural Development, among others should organize seminars, workshops, symposiums or other enlightenment forum to educate and expose plantain farmers to modern ICT usage to drive home the benefits and arouse in them the desire for the facilities.

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