



Assessment of Information and Communication Technology Utilization by Agro-Processors in Ikono Local Government Area of Akwalbom State, Nigeria

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Authors' contributions

This work was carried out in collaboration between both authors. Author BIE designed the study, wrote the protocol and supervised the work. Author JTE performed the statistical analysis, managed the analyses of the study and edited the manuscript. Both authors read and approved the final manuscript.

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ABSTRACT

This study assessed the Information and Communication Technology (ICT) utilization by agro-processors in Ikono Local Government Area of Akwalbom State, Nigeria. Specifically, it aimed at identifying the socio-economic characteristics of agro-processors; determining the level of awareness of ICT by agro-processors; identifying the ICT devices available, frequency of usage as well as ascertaining the constraints to ICT utilization by agro-processors in the study area. A sample of 107 agro processors from Ikono block in Ikot Ekpene zone was selected using proportionate random sampling technique. Data collection was done with the aid of structured questionnaire. Descriptive statistics such as frequency, percentages, mean scores and ranking were used for the analysis of the data. The results show that majority (65.42%) of the agro processors were between the ages of 21-40 years with a mean age of 38 years. Most (58.88%) of

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them were males and married (45.79%), with family size of 5-8 (38.32%). They were mostly Secondary School Certificate (SSCE) holders who earned between 21,000 – 30,000 naira monthly. They were aware and had access to radio, television, and mobile phones. The result also indicated that high purchasing cost, erratic power supply and non- availability of ICT facilities were major constraints to ICT utilization by agro-processors in the study area. It was concluded that the benefits of ICTs were not fully utilized by agro processors as they were only aware of the conventional forms of ICT devices in the study area. It was therefore recommended that rural areas should be provided with the basic infrastructure such as electricity and good road network so as to bring modern ICT services closer to the people for ease of access. Also, agro processors should be encouraged to upgrade their educational level as well as their competencies in the utilization of ICTs.

Keywords: Information; communication; technologies; agro processors.

1. INTRODUCTION

The agricultural sector is one of the largest sectors in the Nigerian economy contributing about 30% to 40% to the gross domestic product between 2000 and 2010 as well as being a major employer of labour [1]. The sector is dominated by small scale farmers who are rural dwellers and are engaged in agricultural activities mainly at subsistence level and to a lesser extent commercial.

Agricultural extension therefore is saddled with the responsibility of communicating relevant and timely information to rural dwellers on improved agricultural innovation for increased agricultural production and income. To achieve this, in recent times however, the use of information and communication technologies (ICTs) in agriculture has evolved globally, as a means to helping farmers to communicate effectively, overcome the limitations of time and space, empowers farmers by providing information and knowledge, provides income generating and learning opportunities, increases government transparency, efficiency and enables people to express their concerns and to actively participate in decision making processes [2].

ICT is seen as technologies that facilitate communication and the processing and storing of information via electronic means. ICT can be broadly defined as the collection of hardware and software that is used for producing data through devices such as computers, radios, television etc. [3]. [4] opined that ICTs have the potentials to enhance farmers ability to collate the demands; collaborative learning, exchange time sensitive information such as market prices, disease out breaks etc; make extension systems and structure more efficient; engage farmers in assessing own needs; facilitating multi-

stakeholder brain-storming; exploring alternative production technologies, facilitating access to markets and credits, training and demonstration, early warning for disasters and weather forecast.

Obayelu and Oyunlade [5] classified ICTs into three main categories namely; New ICTs comprising computers, satellites, one-on-one connections, wireless phones (mobile), e-mail, the web, internet services, video conferences, CD Roms, Personal computers (PC), distance control system, informational- geographical systems, global positioning systems (GPS), electronic cameras and databases; Old ICTs which include radio, televisions, telephones, telegraphs, audio and video cassettes, films and slides; and Very old ICTs such as newspapers, books, photo albums, posters, theatre, human interactions, market and plays.

Based on this classification, it is likely that what is considered the new ICTs are more sophisticated electronics that require more money for purchase and trainings for operations/usage. They may also be considered newly introduced devices for information sharing especially to the rural processors whereas the old ICTs are those ones that have been in existence for a long time and have been used frequently in such a way that the agro-processors have become used to and have even seen the need to acquire them. As stated by Obayelu et al. [5], both radio and telephone are now operating in Nigeria regardless of the language spoken and do not require literacy, which explains the exceedingly high utilization of both. Obayelu et al. [5] further defined the classification of ICTs as new on the bases of common and inexpensive use and are based on digital communications while the old ICTs have been in common use throughout much of the world for many decades and traditionally have

used analog transmission techniques and the very old ICTs as those that have been in common use for several hundred years.

ICTs can also play an important role in bringing about sustainable agricultural development when used to document both modern and traditional cultivation practices. Therefore it acts as a bridge between traditional and modern knowledge systems. Odiaka [6] observed that ICTs have been used to build the capacities of farmers through farm radio broadcasts learning programmes. Access to Agricultural information and training allows farmers to learn new techniques in order to raise their productivity and improve farm income. From the explanation so far, ICTs have the capacity to provide enormous agricultural information and its application in agriculture and environmental management would include production information, farm management, harvest and storage management, disease monitoring and control, and market information. Most agricultural products require value addition between the producers and marketers, this value addition is done by the agro-processors. Agro processing therefore involves activities applied to agricultural produce to conserve, preserve, add value and make them usable as food, feed etc. These activities are carried out by people called agro processors. The purpose of the study was to assess the utilization of ICTs by agro processors in Ikono Local Government Area of Akwalbom State, Nigeria. The broad objective of the study was to assess the ICT utilization among agro-processors in Ikono Local Government Area of Akwalbom State, Nigeria and the specific objectives were to:

1. Identify the socio-economic characteristics of agro-processors
2. Determine the level of awareness of ICTs facilities by agro-processors.
3. Identify the ICTs facilities available in the study area
4. Determine the level of utilization of the ICT facilities in the study area.
5. Identify the constraints to ICT use among agro-processors in the study area.

2. MATERIALS AND METHODS

2.1 The Study Area

The study was conducted in Ikono Local Government Area of Akwalbom State. Ikono Local Government Area is bounded on the North by Ini Local Government Area, South by Abak

and Uyo Local Government Area, East by Itu and West by Ikot Ekpene Local Government Area. It is regarded as the cradle of Ibibio nation of Akwalbom State with a total population of 131,904 [7] and a land mass of 407.16 square kilometres. Farming is the predominant occupation of the people and the major crop produced include oil- palm, cassava, yam and banana. The climate is tropical with distinct rainy season (April- October) and dry season (November- March). It has an annual rainfall of between 3000 mm and 4000 mm. The target population for the study was the agro processors in Ikono Local Government Area.

2.2 Sampling Technique

Akwalbom State is organised into six Agricultural zones namely; Uyo, Eket, Oron, Ikot Ekpene, Etinan and Abak. A multi-stage sampling technique was used to purposively select Ikot Ekpene Zone and Ikonolocal government area which is under the zone due to its peculiarity. Three blocks are in Ikono local government area consisting of about 22 villages. 10 villages were randomly selected and simple random sampling technique was used to proportionately select 11 agro processors from each of the 10 villages making a total of 110 agro-processors. Primary data were collected using structured questionnaire administered to the 110 respondents. Only 107 of the questionnaire were successfully retrieved. Data were analysed using descriptive statistics such as frequency, percentages, means and ranking.

3. RESULTS AND DISCUSSION

3.1 Socio-Economic Characteristics

Result on Table 1 shows that 65.42% of the respondents were within the age of 21-40 years. The mean age was 38 years. This aligns with the findings of Salau, Bello and Alanji [8] that has 66% of the respondents also within the age bracket of 21 – 40 years in their study. This indicates that most of the agro processors were in their middle ages and were old enough to take decision on the utilization of ICTs available in the study area.

Majority (58.88%) of the agro processors were male, 45.79% of them were married and 38.32% had family sizes in the range of 5-8 persons as shown in Table 1. These findings agree with Adedoyin et al. [9] and Ekong [10] who reported that males dominated the agricultural workforce

in Nigeria and marriage is a highly cherished value among rural dwellers in Akwalbom State. It further indicates that the agro processors have family responsibilities which might negatively affect their ability to buy or employ the services of the ICTs.

Table 1. Socio-economic characteristics of respondents

Variable	Frequency	Percentage
Sex		
Female	44	41.12
Male	63	58.88
Ages		
21-20	41	38.32
31-40	29	27.10
41-50	18	16.82
51-60	12	11.22
61-70	7	6.54
Marital status		
Single	40	37.38
Married	49	45.79
Divorced	6	5.61
Widow/widower	12	11.22
Educational level		
FSLC	19	17.76
SSCE	53	49.53
NCE/OND	27	25.23
HND/B.SC	8	7.48
Household size		
1-4	20	18.69
5-8	41	38.32
9-12	31	28.98
Above 12	15	14.02
Monthly income		
1,000-10,000(6 – 60)*	12	11.21
11,000–20,000(66 – 120)*	35	32.71
21,000–30,000(126-180)*	43	40.19
31,000–40,000(186 -240)*	10	9.35
Above40,000(above240)*	7	6.54

*Field survey, 2013, * Dollar equivalent of corresponding naira value*

As regards educational status Table 1 reveals that a greater proportion (49.53%) of the agro processors had secondary school certificate (SSCE) and other forms of educational qualification. This indicates that the agro processors were fairly literate. This suggests that utilization of modern ICTs should be high. As noted by Salau, Bello and Alanji [8], formal education enables farmers to seek for and utilize useful information from both print and electronic media. Also Ozor and Madukwe [11] and Agbamu [12] agree to the fact that education accelerates the rate of adoption of technologies.

Most (40.2%) of the agro processors had monthly income of 21,000 – 30,000 naira per

month. This implies that agro-processing is a worthwhile enterprise for rural dwellers.

3.2 Awareness of ICTs by Agro-Processors

The awareness of different ICT devices by the respondents is shown in Table 2. From the findings, there was significant level of awareness of the old ICT devices such as radio (M=3.00), television (M=2.95) etc. However, the result also reveals that their awareness level of the new ICT devices such as satellite (M=1.97), internet (M=1.83) etc. was low. The result suggests that the agro processors were mostly aware of old ICTs devices, an indication of non-availability of the modern ICTs in the study area. Again, much is needed to be done by Extension workers in relation to ICT education of the respondents if the trend must change in the rural area.

3.3 Availability of ICTs Devices

Entries in Table 3 show the availability of different ICT devices in the study area using their mean score value. The results indicate that the radio (m=2.73) was the most readily available ICTs device accessed by the agro processors closely followed by mobile phone (m=2.72) and Television (m=2.47). The findings agree with Ezeh [13] who also found that these three were the most readily available ICT facilities owned, accessed, and utilized by most of the extension agents. In separate studies conducted by Umoren [14] and Nzewi [15] on ICTs availability and accessibility, they both found out that, even in public schools, there is lack of modern ICTs facilities which according to them is one of the most important obstacles to technology adoption and integration in learning.

3.4 Frequency of use of ICT devices by Agro processors

Table 4 shows the mean scores for the frequency of use of ICTs. It was found that radio was the most (M=2.82) frequently used ICT device followed by mobile phones (M=2.73) and television (M=2.08). The frequency of use of modern ICT devices among agro processors in the study area was low. This may be attributed to non - availability of modern ICTs in the study area. Ekerete and Ekanem [16] revealed that farmers in Akwalbom State regard radio farmers programme of AKADEP as their preferred information source on improved technology.

According to Obayelu et al. [5] the Internet-based communications remain the least effective in majority of the rural areas of Nigeria because the resource thresholds are far higher, typically requiring higher-quality communications, electricity, technology infrastructure, and literacy in a computer-supported language. Mokotjo and Kalusopa [17]; Mtega [18] in their separate studies found that Mobile phones in addition to radio has become popular method for communicating agricultural and market information. Indeed, according to Hassan et al. [19] 'majority of Malaysian agribasedentrepreneurs still rely on traditional electronic media to get their agriculture information'. This is an indication that the old ICTs are still highly utilized compared to the new ICTs. Kiplang'at [20] reported that the impact of ICTs in extension delivery still remained minimal as confirmed by a recent study to determine the diffusion of ICTs in communication of agricultural information among researchers and extension workers in Kenya.

3.5 Constraints to ICT used among Agro Processors

As shown in Table 5, there were some constraints to the use of ICTs among agro processors in the study area which ranges from High cost of ICT facilities (M=3.70) to high cost of access (M=2.76). Idrisa, Ogunbameru and Shehu [21] in their study reported lack of electricity and non-availability of the ICT facilities as a leading constraint to effective utilization of ICTs. Melkote and Steeves [22] call it 'Technological Constraints'. Studies conducted in some geopolitical zones of Nigeria by Ezeoba [23], Idoko and Ademu [24], and Fakeye [25] particularly in South-east, North west and South west respectively, show that even in schools where teachers impart knowledge to students and gain knowledge themselves as an effective tool, there is dearth of modern ICT facilities which also affects utilization because, one cannot use what is not available.

According to Hassan [19] agro-entrepreneurs do not know the benefits of using ICT, have no skill in using ICT, lack time to use ICT, have difficulty in using ICT and have no knowledge in using ICT. Also, Mbachu [26] posited that poor funding, management problems, illiteracy and lack of technical know-how, low level of technological penetration, non-viable ICTs policy and weak economy are some of the factors affecting ICT utilization in most African countries.

Table 2. Awareness of Agro-processors of ICTs devices

ICTs awareness level	Mean score	Ranking
Radio	3.00	1
Television	2.95	2
Mobile phone	2.86	3
Laptop	2.12	4
Satellite	1.97	5
Internet	1.83	6
Digital camera	1.81	7
Fixed phone	1.81	7
Smart phone	1.72	8
Tablet	1.29	9

Field Survey 2013

Table 3. Availability of ICT devices in the study area

ICT devices	Mean score	Rank
Radio	2.73	1
Mobile phone	2.72	2
Television	2.47	3
Laptop	1.55	4
Smart phone	1.44	5
Internet	1.22	6
Satellite	1.33	7
Digital camera	1.13	8
Tablet	1.12	9
Fixed phone	1.10	10

Field Survey 2013

Table 4. Usage of ICTs by agro- processors

ICT devices	Mean score	Rank
Radio	2.82	1
Mobile phone	2.73	2
Television	2.08	3
Laptop	1.59	4
Internet	1.39	5
Satellite	1.37	6
Smart phone	1.37	6
Digital camera	1.31	8
Tablet	1.23	9
Fixed phone	1.21	10

Field Survey 2013

Table 5. Constraints to ICT usage by agro-processors

Variable ICT devices	Score mean	Rank
High cost of ICT	3.70	1
Poor electricity service	3.42	2
Non-availability of facilities	3.08	3
Low technical knowhow	2.81	4
High cost of access	2.76	5

Field survey 2013

4. CONCLUSION AND RECOMMENDATIONS

This study examined the utilization of ICTs by agro processors in Akwalbom State. From the results of this study, it was concluded that the main ICT facilities used by agro processors was the radio. It was also the conclusion of this study that few of the agro processors were aware of internet facilities even though not utilized. The main constraint to the utilization ICTs by agro processors included poor infrastructure (e.g electricity) and high cost of ICT facilities which resulted to non-availability of ICTs facilities. Based on the findings of this study, it is recommended that; rural areas should be provided with necessary infrastructure such as electricity and good road network so as to bring modern ICT services closer to the people. Government should make conscious effort at making available some modern ICTs facilities in public places especially schools where the teachers could have access to, learn and be able to impact on the students. This can have a triple down effect on the agro-processors who are the parents of these students. Also, organized farmers associations like All Farmers Association of Nigeria (AFAN), ADPs, Ministry of Agriculture, Ministry of Rural Development etc. should organize seminars, workshops or other enlightenment forum to educate and expose agro-processors to modern ICT usage to drive home the benefits and arouse in them the desire for the facilities. There is also need for the development of ICTs infrastructure, especially in the rural areas to enable agro processors have access and utilize key ICTs like computer and internet.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Central Bank of Nigeria. Social Statistics in Nigeria; 2012. Accessed February 09, 2013. Available: <http://www.cbn.gov.ng>
2. Asian Development Bank. Building e-communication centres for Rural Development. Report of the Regional Workshop. Bali/Indonesia; 2004.
3. Aphunu A, Atoma CN. Extent of use of ICTs by Fish Farmers in Isoko Agricultural Zone of Delta State, Nigeria. *Journal of Agricultural Extension*. 2011;15(1):10-21.
4. CTA. Information and communication technologies transforming agricultural extension? An e-discussion; 2003. 20th Aug – 29th Sept.
5. Obayelu A, Ogunlade I. Analysis of the uses of Information & Communications Technology for gender empowerment & sustainable poverty alleviation in Nigeria. *Int. J. Educ. Develop*. 2006;4:3-5.
6. Odiaka EC. Contribution of Information and Communication Technology (ICT) to rural development in Nigeria. *Globalization and Rural Development in Nigeria*. Publisher Extension Centre, Michael Okpara University of Agriculture, Umudike. 2011;373-383.
7. National Population Commission. Report of 2006 National Census Akwalbom State. Abuja; 2006.
8. Salau ES, Bello D, Alanji JE. Access and use of resources by women agro processors in Central agricultural zone of Nasarawa State, Nigeria. *Journal of Agricultural Extension*. 2013;17(2):156-164.
9. Adedoyin SF, Fapojuwo OE, Torimino D. Educational communication materials in agricultural technology promotion: A survey of extension agents in Ijebu area of Ogun State. *Proceeding of the fifth Annual National Conference of the AESON*; 1999.
10. Ekong EE. Social institutions in Rural Nigeria; An introduction to Rural Sociology. Dove Educational publishers, Uyo Nigeria; 2003.
11. Ozor N, Madukwe MC. Obstacles to the Adoption of Improved rabbit technologies by small scale farmers in Nsukka LGA. *Journal of Agricultural, Food Environmental and Extension*. *Agricultural Science*. 2005;4(1):70-73.
12. Agbamu JU. Essentials of agricultural communication in Nigeria. Malthouse Press Ltd Lagos, Nigeria; 2006.
13. Ezeh AN. Extension agents access and utilization of Information and Communication Technology (ICT) in extension service delivery in South East Nigeria. *Journal of Agricultural Extension and Rural Development*. 2013;5(11):266-276.
14. Umoren G. Information and Communication Technology and curriculum. *Nigerian Journal of Curriculum Studies*. Calabar Chapter. 2006;2(1)57-83.
15. Nzewi U. Information and Communication Technology (ICT) in teaching and learning.

- Curriculum and practice. Curriculum association of Nigeria; 2009.
16. Ekerete BI, Ekanem JT. Preferred communication sources for HIV/AIDS message and Behavioural changed among farmers in Uyo LGA, AKS, Nigeria. *Pro Journal of Agric Science Research*. 2014;2(3):1-9.
 17. Mokotjo W, Kalusopa T. Evaluation of the Agricultural Information Service (AIS) in Lesotho. *International Journal of Information Management*. 2010;30(4):350-356.
 18. Mtega WP. Access to and usage of information among Rural Communities: A Case Study of Kilosa District Morogoro Region in Tanzania; 2012.
 19. Hassan Md S, Hassan MA, Samah BA, Ismail N, Shaffril HAM. Use of Information and Communication Technology (ICT) among Agri – based Entrepreneurs in Malaysia. University Putra Malaysia world conference on agricultural information and IT; 2008.
 20. Kiplang'at J. Does agricultural extension has a new beginning because of ICTs? Reflection on Experience in Sub-Saharan Africa. Key note paper presented at the 6th consultative expert meeting on CTA's observation or ICTs Wageningen; 2003.
 21. Idrisa YL, Ogunbameru BO, Shehu H. Use of ICT among extension workers in Borno State, Nigeria. *Journal of Agricultural Extension*. 2013;17(1):69-77.
 22. Melkote S, Steeves HL. *Communication for development in the Third world. Theory and practice for empowerment* (2nd ed.). Thousand Oaks, CA: Sage; 2001.
 23. Ezeoba KO. Instructional Media. An Assessment of the Availability, Utilization and Production by Nursery School Teachers. *Journal of Applied Literacy and Reading*. 2007;3(Special Edition):33-38.
 24. Idoko JA, Adem A. The Challenges of Information and Communication Technology for Teaching – Learning as perceived by Agricultural Science Teachers in Secondary Schools in Kogi State. *Journal of Educational Innovators*. 2010;3(2):43
 25. Fakeye DO. Assessment of english language teachers' knowledge and use of Information and Communication Technology (ICT) in Ibadan Southwest Local Government of Oyo State. *American-Eurasian Journal of Scientific Research*. 2010;5(4):56-59.
 26. Mbachu D. Changing Technologies and Nigerian Mass Media. In: Akinfeleye RA, Okoye I, (Eds): *Issues on Nigerian Media History: 1950-2000 AD Lagos*. Malthouse. 2003;175.

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