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## AVAILABILITY, ACCESS AND UTILIZATION OF ICTS AND ITS TOOLS AMONG POULTRY FARMERS IN YENAGOA, BAYELSA STATE, NIGERIA

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**KALIO, Godfrey Adokiye**

Department of Agriculture, Ignatius Ajuru University of Education, P.M.B. 5047, Ndele Campus, Port Harcourt, Rivers State, Nigeria. **Email:** [ag.kalio@yahoo.com](mailto:ag.kalio@yahoo.com) **Phone:** +234 8033000589

*Received July 23, 2020; Revised September 02, 2020; Accepted September 09, 2020*

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### ABSTRACT

*A descriptive survey was conducted to investigate the availability, access and utilization of ICTs and tools among poultry farmers for improved production in Yenagoa Local Government Area, Bayelsa State, Nigeria. One hundred and ten poultry farmers were purposively selected from eleven communities in the study area. The instrument used for data collection was a structured questionnaire. Data were analyzed using frequencies, percentages and central tendency statistics. Results of the socio-demographic characteristics of the farmers revealed that majority were males, married and literate within the age of 35 – 44 years. The most available/accessible and utilized ICTs and tools based on the ranking order that could enhance productivity of the poultry farmers were: mobile phones, televisions, radios and PCS/laptops. Serious constraints to the availability/access and utilization of these facilities were very poor electricity supply, poor network reception, lack of technical experience in manipulating ICT tools and high cost of ICT tools. However, lack of physical access was reported as a mild constraint by the farmers. Based on the findings the following recommendations were proffered: the education of farmers by extension personnel on the benefits of ICTs and tools, allowing the access and use of the more sophisticated ICTs and tools such as the CCTV cameras for various surveillance activities on the farm, the establishment of Agro-ICT centers for training of farmers to gain knowledge in manipulative skills in ICTs and tools and the provision of constant electricity power supply to ensure effective utilization of ICT tools.*

**Keywords:** ICTs and tools, Availability, Access and utilization, Poultry farmers, Poultry production, Bayelsa State

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### INTRODUCTION

Information and Communication Technologies (ICTs) usually refer to the growing assembly of technologies that are used to handle information and to facilitate communication. These include hardware, software, media for collection, storage, processing, transmission and presentation of information in any format (i.e., voice, data, text and image), computers, the Internet, CD-ROMs, email, telephone, radio, television, video, digital cameras etc. (Asenso-Okyere and Mekonnen, 2012)

Information and Communication Technology (ICT) tools first appeared in the mid-1960s in Nigeria (Ogunsola and Aboyade,

2005) and was defined by Verbeke (2001), as all kinds of electronic systems used for broadcasting, telecommunications and mediated communications. Examples of equipment used in ICT include personal computers, video games, cell phones, internet, electronic payment systems and computer software programmes. Additional ones would include data projector, printers, scanners and interactive teaching boxes. Anyakoha (2005) had outlined ICT and digital technologies to include the use of multimedia personal computers (PCs), laptops and notebooks with a combination of internet connectivity, digital camera / videos connected with PCs and laptops, land area network and wide area networks; world wide web (www), e-

books / e-journals/ e-databases, floppies, CDs and DVDs, cell phones with internet connection, moving pictures, close circuit television (CCTV) camera, computer-mediated video conferencing, virtual reality, telecommunication satellites and the use of interactive televisions and radios. Prominent among these, the computer, a major ICT tool and its applications have brought about drastic changes in farming and animal husbandry resulting in a remarkable increase in production (Sunil, 2018).

Information is a major input required to boost agricultural productivity in the poultry industry. Therefore, ICTs are fundamental to farmers for easier access to inputs and markets (Msoffe *et al.*, 2010). It has been reported that conventional communication channels by agricultural extension agents such as farm/home visit, personal letters, and contact of farmers for disseminating agricultural information have been less effective and this calls for the use of new and emerging information and communication technologies by agricultural information providers for the benefit of farmers (Salus and Sangbe, 2008; Olaniyi, 2013).

One of the strategies intended to bring about improvement in poultry production in Nigeria is the provision of the right information through adequate channels that is available and accessible to the farmers that deserve to use such information (Olaniyi, 2013). Poultry production in Nigeria has undergone remarkable transformations over the years in terms of improved breed, management and technological advancement. For instance, in the pre-independence era, most poultry enterprises were mainly managed around family backyards characterized by low productivity due to the use of outdated technologies. This was gradually improved by the colonial masters from the low output to a better performance through the introduction of various poultry schemes. Hence, the western government changed from the traditional method to the present modern poultry management systems, especially with the introduction of breeds of layer and broiler lines to cope with the increasing demand for egg and meat for consumption by the ever-increasing population of Nigeria (Olaniyi, 2013).

It is presumed that the poultry industry in Nigeria can take advantage of the potentials of ICTs for optimum poultry production. In spite of this, little is known about the availability/access and utilization of ICT tools by poultry farmers in Yenagoa Local Government Area of Bayelsa State, Nigeria. It is believed that, when farmers are adequately informed and are aware of available tools by which information can be accessed and utilized, it would help to improve productivity in their poultry farms and possibly lead to increase in their financial benefits. Thus, the specific objectives of this study were to: (i) determine the socio-demographic characteristics of poultry farmers in Yenagoa Local Government Area, (ii) estimate the extent of availability and access of ICT tools by poultry farmers, (iii) ascertain the level of utilization of ICT tools by poultry farmers and (iv) evaluate the constraint to the utilization of ICT tools by poultry farmers on improved bird production in Yenagoa Local Government Area.

## MATERIALS AND METHODS

**Research Design:** The survey research design was adopted for the study. According to Nworgu (2006) survey research design enables one to obtain information from respondents who are considered to be representative of the entire population. In the same vein, Gall *et al.* (2007) also stated that survey research method uses questionnaire or interview to collect data from a sample that has been selected to represent a population to which the findings of the data analyzed can be generalized.

**Area of the Study:** The study was conducted in Bayelsa State of Nigeria. Bayelsa State is one of the six states in the South-South geo-political zones of Nigeria. This area was chosen due to the number of poultry farms in the state and concentration of poultry production which could be used for eliciting responses on the instrument for this study.

**Population, Sampling Technique and Duration of Study:** The population of the study comprised of one hundred and ten poultry

farmers purposively selected from eleven communities: Akaba, Azikoro, Fangbem, Igbogene, Okolobiri, Okukukutu, Opolo, Swali, Tombia and Yenege-Ene in Yenagoa Local Government Area of Bayelsa State. The study lasted for three months (i.e. April to June, 2019).

**Description of Research Instrument:** A self-constructed questionnaire titled Poultry Farmers' ICT tool Access and Utilization Questionnaire (PFICTTA and UQ) was used to elicit information from the respondents. The instrument comprised of four sections: Sections A, B, C and D. Section A was designed to ascertain the socio-demographic characteristics of poultry farmers. Section B comprised of a list of ICT tools and extent of availability/access to poultry farmers. Section C comprised of a list of ICT tools and extent of utilization by poultry farmers. Section D comprised of questions that seeks to elicit the constraints to the availability and utilization of ICT tools to poultry farmers in the study area. The Research questions that guided this study were: (i) what is the socio-demographic characteristics of poultry farmers in Yenagoa Local Government Area? (ii) What is the extent of availability and access of ICT tools to poultry farmers in Yenagoa Local Government Area? (iii) What is the level of utilization of ICT tools by poultry farmers in Yenagoa Local government Area? and (iv) what are the constraints to assess and utilize ICT tools by poultry farmers in Yenagoa Local Government Area?

The response of the poultry farmers to the extent of availability/access to ICT tools was determined on a 4-points rating scale of not easy = 1, fairly easy = 2, easy = 3 and very easy = 4. The response of the poultry farmers to the extent of utilization of ICT tools was determined on a 4 - points rating scale of never utilized = 1, rarely utilized = 2, occasionally utilized = 3 and regularly utilized = 4. The response of the poultry farmers to the constraints to the availability, assess and utilization of ICT tools in section D was determined based on extent of its severity as: serious constraints, mild constraints and no constraints.

**Validation of the Instrument:** The face validity of the instrument was carried out by an expert in the Department of Educational Psychology Measurement and Evaluation, Ignatius Ajuru, University of Education who ensured that all the items used, measured what they are supposed to measure. Corrections were made and unclear questions were deleted before using the questionnaire for the study. Cronbach alpha estimate for reliability was adopted in this study. Sixty (60) questionnaires were administered randomly to poultry farmers outside the study area (Rivers State) to determine the internal consistency of the instrument. A reliability coefficient of 0.82 was obtained.

**Method of Data Collection:** The various poultry farms sampled within the study area were visited by the researcher and was assisted by eleven (11) research assistants (hired on an ad-hoc basis) from each of the communities. Copies of the questionnaires were handed over to these research assistants that helped to administer them in their various communities. The questionnaires were retrieved from the respondents by these persons. A percentage retrieval of 81.82 % was achieved. The responses reported by the respondents were further verified through personal interviews to gather genuine reasons for their responses.

**Method of Data Analysis:** Data were analyzed using frequencies, percentages and central tendency statistics with the mean established at 2.5 (i.e.  $4 + 3 + 2 + 1 = 10$  divided by 4). Any item having the mean of 2.5 and above was considered as "available /accessed or utilized" while the ones with the mean less than 2.5 was considered as "not available/accessed or not utilized" respectively, for the responses to the question items on Sections B and C (Abbott, 2016).

## RESULTS AND DISCUSSION

**Socio-Demographic Characteristics of Poultry Farmers:** The socio-demographic characteristics of poultry farmers in Yenagoa LGA, Bayelsa State revealed that higher

proportions (74.4 %) of the poultry farmers in the study area were males as against their female (25.6 %) counterparts (Table 1). The result of this study was similar to those of Olaniyi (2013), who earlier reported that males were more involved in poultry farming than females. A high proportion (80.0 %) of the poultry farmers were married, while 20.0 % were single (Table 1). The high percentage of married farmers may be because, by being married, the farmers have more need for money to take care of their families, hence, more motivated to adopt ICT-enabled poultry production that would likely improve their earning from poultry farming. This is corroborated by findings elsewhere that married farmers will embrace innovations which could improve their income, just as there was 21 % probability that married farmers will adopt ICT (Adekoya and Ajayi, 2000; Ayanwale and Adekunle, 2008). Majority (51.1 %) of the poultry farmers fall within the age brackets of 35 – 44 years and were literate (85.6 %) (Table 1) because they can read and write as well as have the basic manipulative skills of operating ICT tools if given adequate orientation. The high level of literacy could not be a surprise because according to Chavula (2014), one prerequisite for ICTs skills acquisition and adoption for agricultural productivity is educated and trained workforce. A greater proportion (52.2 %) of the poultry farmers had family/house hold size of 4 – 6 persons. The family size of poultry farmers reported in this study was lower than 6 – 9 persons reported by Oladeebo and Ambe-Lamidi (2007) for youth poultry farmers in Osun State. The family size in this research may have been lower than that reported by Oladeebo and Ambe-Lamidi (2007) because of location differences. The cited work was conducted in a rural area and according to NPC/ORC (2004), family size in rural Nigeria is higher than in urban areas, such as Yenagoa, in this study. Higher proportion (63.3 %) of the poultry farmers had 6 – 10 years' experience in the poultry farming business. The years of experience reported in this study was in conformity with those reported by Olaniyi (2013). These years of experience, if put to use, will usually enable the farmer obtain better farm

output. According to Nwaru (2004), the higher the farmers' experience, the more knowledge and technological innovations gained by the farmer for use in solving farm challenges, improve output and income. All (100.0 %) the poultry farmers adopted the intensive system of poultry management as opposed to the semi-intensive system (0.0%). Intensive management provides for adequate feeding, better housing and health care and enhanced growth, thus better economic benefits (Kalio and Okafor, 2012). High percentage (34.4 %) of the poultry farmers keep between 901 – 1,200 birds as against raising fewer birds. The farmers may have kept the high number of birds to enjoy economies of scale of production. This is because according to CFI (2020), the number of birds kept influences unit cost (fixed) and efficiency of resources use and, could reduce cost of production per unit. Majority (78.9 %) of the poultry farmers had fair knowledge of ICTs. In this study, most of the farmers were educated (85.60 %) which would have been responsible for their knowledge of ICT. The implication is that the farmers can take advantage of ICT to optimize the productivity of their animals and farm (Olaniyi, 2013).

**Availability and Accessibility of ICTs and Tools to Poultry Farmers:** The order of availability and accessibility of ICTs and tools in decreasing order to poultry farmers were: Mobile Phone > Television > Radio > PCs and Laptops > Flash Drive/Floppies > CDs/DVDs > E-books/E-journals/E-databases > Internet/Website > Digital camera > Close Circuit Television Camera (CCTV camera) (Table 2).

The results obtained in this study were in agreement with the report by Olaniyi (2013), who outlined mobile phones, radio and television as the most accessible ICTs facilities to farmers. The responses obtained from the poultry farmers may be based on the preconception that mobile services through the use of mobile phones have the potential to positively affect sustainable development since it could act as a tool to decrease information gaps and empower individuals (Aker and Mbiti, 2010). It can also empower people by reaching out to those geographically or socially isolated from information (Bhavnani *et al.*, 2008).

**Table 1: Socio-demographic characteristics of poultry farmers in Yenagoa LGA, Bayelsa State, Nigeria**

Questions	Response	Number of Respondents	Percentage
<b>Sex</b>	Male	67	74.4
	Female	23	25.6
	Total	90	100
<b>Marital status</b>	Married	72	80.0
	Single	18	20.0
	Total	90	100
<b>Age</b>	< 24 years	4	4.4
	25 – 34 years	15	16.7
	35 – 44 years	46	51.1
	> 45 years	25	27.8
	Total	90	100
<b>Educational status</b>	Illiterate	13	14.4
	Literate	77	85.6
	Total	90	100
<b>Family/House hold size</b>	≤ 3	5	5.6
	4 – 6	47	52.2
	7 – 9	28	31.1
	> 9	10	11.1
	Total	90	100
<b>Years of Experience in Poultry business</b>	≤ 5 years	15	16.7
	6 - 10 years	57	63.3
	11– 15 years	23	25.6
	>16 years	10	11.1
	Total	90	100
<b>System of Management</b>	Intensive	90	100.0
	Semi – intensive	0	0.0
	Total	90	100
<b>Capacity of farm (Number of birds raised)</b>	≤ 300	10	11.1
	301 – 600	12	13.3
	601 – 900	15	16.7
	901 – 1,200	31	34.4
	>1,200	22	24.4
	Total	90	100
<b>Knowledge in ICT</b>	No knowledge	3	3.3
	Fair Knowledge	71	78.9
	Good Knowledge	11	12.2
	Very Good Knowledge	5	5.6
	Total	90	100

**Table 2: ICTs and tools available/accessible to poultry farmers in Yenagoa LGA, Bayelsa State, Nigeria**

S/No	Available ICTs and tools	4	3	2	1	ΣF	N	$\bar{X}$	Decision	Rank
1	PCs and Laptops	164	105	10	9	288	90	3.20	A/A	4th
2	Mobile Phone	220	90	4	3	317	90	3.52	A/A	1st
3	Digital camera	20	12	100	31	163	90	1.81	NA/A	9th

4	Internet/Website	20	15	102	29	166	90	1.84	NA/A	8th
5	CDs/DVDs	40	15	110	20	185	90	2.06	NA/A	6th
6	Flash Drive/Floppies	48	21	100	21	190	90	2.11	NA/A	5th
7	Television	208	63	14	10	295	90	3.28	A/A	2 <sup>nd</sup>
8	Radio	192	72	20	8	292	90	3.24	A/A	3 <sup>rd</sup>
9	Close Circuit Television Camera (CCTV camera)	28	24	68	41	161	90	1.79	NA/A	10 <sup>th</sup>
10	E-books/E-journals /E-databases	28	30	88	27	173	90	1.92	NA/A	7 <sup>th</sup>

Not easily available/accessible = 1; fairly available/accessible = 2; easily available/accessible = 3 and very much easily available/accessible = 4; A/A = available/accessible; NA/A = not easily available/accessible

Furthermore, not only will more people have access to information through this process, its availability and accessibility is around the clock (ITU, 2016). Similarly, the higher trend of domestic and personal use of mobile phones also indicated that farmers may share farm knowledge and experience with their family, fellow farmers and friend's circles and that this strong communication within this close circle will give them a sense of security in terms of farm knowledge exchange and access to required information (Khan *et al.*, 2019). The use of mobile phones, radios and televisions have been reported as one promising area to do agricultural extension to reach large number of farmers and their communities (Asenso-Okyere and Mekonnen, 2012).

**Utilization of ICTs and Tools by Poultry Farmers:** The ICTs and tools utilized by poultry farmers in Yenagoa Local Government Area of Bayelsa State in decreasing order of values were: Mobile Phone > Radio > PCs and Laptops > Television > Flash Drive/Floppies > Internet/Website > CDs/DVDs > Digital camera > E-books/E-journals/E-databases > Close Circuit Television Camera (CCTV camera) (Table 3).

The results obtained in this study were in agreement with the report by Olaniyi (2013), who outlined mobile phones; radio and television as the most utilized ICTs facilities by Poultry farmers in Afijio Local Government Area of Oyo State, Nigeria. This implied that mobile phones, radio, PCs and Laptops and television are the most often used ICT tools by the poultry farmers.

This may be due to different advantages attached to these ICTs facilities which others may not have. This is because these tools facilitate personal interactions, enhances language use, literacy clarity and avoids time wastage. Similarly, Greenberg (2005) enumerated the strength of mobile telephones as a communication tool that is language and literacy independent and the use of telephone can aid proper time management by avoiding the risk of traveling long distances. Furthermore, Moemeka (1990) had earlier stated the potential in the use of television as an ICTs and tool, describing it as having a greater advantage over the radio because of its audio and visual qualities. Therefore, the utilization of these ICT tools has the potentials for effective information dissemination that can increase productivity in poultry farms.

**Constraint to the Availability and Accessibility and Utilization of ICTs and Tools by Poultry Farmers:** The constraints to the availability/access and use of these facilities by poultry farmers in Yenagoa, Bayelsa State were: inconsistent electricity supply (66.7 %), poor network reception (61.1 %), lack of technical experience in manipulating ICT tools (54.4 %) and high cost of ICT tools (51.1 %) (Table 4). However, lack of physical access (53.3 %) was reported to be a mild constraint by the farmers. The findings of this study were in agreement with those of Olaniyi (2013), who outlined inadequate technical knowhow, poor power supply, high cost of ICTs infrastructure, lack of physical access to some of the ICT facilities and poor network connectivity as constraints to the availability /access and use of ICT tools.

**Table 3: ICTs and tools utilization by poultry farmers in Yenagoa LGA, Bayelsa State, Nigeria**

S/No	Available ICTs and tools	4	3	2	1	ΣF	N	$\bar{X}$	Decision	Rank
1	PCs and Laptops	164	90	18	10	282	90	3.13	U	3 <sup>rd</sup>
2	Mobile Phone	176	96	16	6	294	90	3.27	U	1 <sup>st</sup>
3	Digital camera	44	27	90	25	186	90	2.06	NU	8 <sup>th</sup>
4	Internet/Website	52	36	80	25	193	90	2.14	NU	6 <sup>th</sup>
5	CDs/DVDs	48	39	82	24	193	90	2.14	NU	6 <sup>th</sup>
6	Flash Drive/Floppies	56	36	90	19	201	90	2.23	NU	5 <sup>th</sup>
7	Television	120	105	28	11	264	90	2.93	U	4 <sup>th</sup>
8	Radio	140	129	12	7	288	90	3.20	U	2 <sup>nd</sup>
9	Close Circuit Television Camera (CCTV camera)	32	27	92	27	178	90	1.98	NU	10 <sup>th</sup>
10	E-books/E-journals /E-databases	60	36	70	18	184	90	2.04	NU	9 <sup>th</sup>

Never utilized = 1, rarely utilized = 2, occasionally utilized = 3 and regularly utilized = 4; U = utilized; NU = not utilized

**Table 4: Constraints to availability/access and utilization of ICTs and tools by poultry farmers in Yenagoa LGA, Bayelsa State, Nigeria**

S/No	Constraints	Extent of severity of the constraints		
		Serious	Mild	Not
1	Lack of technical experience in manipulating ICT tools	49(54.4)	27(30.0)	14(15.6)
2	Inconsistent electricity supply	60(66.7)	25(27.8)	5(5.6)
3	High cost of ICT tools	46(51.1)	29(32.2)	15(16.7)
4	Poor network reception	55(61.1)	30(33.3)	5(5.6)
5	Lack of physical access	23(25.6)	48(53.3)	19(21.1)

Values in bracket are percentages

Furthermore, Greenberg (2005) stated that high cost of communication gadgets and lack of skilled manpower was the major barriers to the wide use of internet-based communication. Furthermore, Albert (2014) outlined the major constraints in the use of ICT tools to include low level of education among farmers, lack of financial resources and low computer literacy.

**Conclusion:** This study has specified some level of availability, accessibility and utilization of ICTs and tools by poultry farmers in Bayelsa State, Nigeria. The use of these facilities is aimed at improving their poultry production systems. Mobile phone, radio, PCs and laptops and television were reported to be the most frequently utilized ICTs and tools by poultry farmers in Bayelsa State. However, the serious constraints to the availability/access and use of these facilities as expressed by the poultry farmers were inconsistent electricity supply,

poor network reception, lack of technical experience in manipulating ICT tools and high cost of ICT tools. However, lack of physical access was reported as a mild constraint by the farmers. Based on the findings of this study the following recommendations are proffered: (i) extension agents should educate poultry farmers on the benefits ICTs and tools, (ii) the access and use of the more sophisticated ICTs and tools, for instance, the CCTV cameras should be encouraged to be used in poultry farms, as it can play a key role in surveillance to monitor livestock behaviour, poultry attendants on poor management operations and theft that can result to huge financial losses, (iii) Ministry of Agriculture and non-governmental organizations (NGOs) should establish Agro-ICT centers for training of farmers to gain knowledge in manipulative skills in ICTs and tools and (iv) the provision of constant

electricity power supply to ensure effective utilization of ICT tools.

### ACKNOWLEDGEMENTS

I appreciate the assistance of Mr. Opubo Nathan during data collection, and the anonymous peer reviewers that added much value to this study.

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