Analysis of Information and Communication Technology (ICT) Usage in Marketing of Poultry Products in Chikun Local Government Area, Kaduna State, Nigeria

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Abstract

This study analyzed the Information and Communication Technology (ICT) usage in marketing of poultry products in Chikun Local Government Area of Kaduna State, Nigeria.A multi-stage sampling procedure was used to select 80 respondents and the primary data were collected with the aid of questionnaire complemented with interview schedule. Both descriptive and inferential statisticswere used to analyze the data collected. Results show that the mean age of the respondents was 37 years, amajority of the respondents were married(68.4%) and practiced intensive management system (87.3%) while all the respondents were literate acquiring primary (18.7%), secondary (51.3%) and tertiary (30.0%) education.More-so, mobile phone($\bar{X}$= 2.48), radio($\bar{X}$= 2.06)and television($\bar{X}$= 2.05)ranked 1st, 2nd and 3rd, respectively among the various ICT facilities used in marketing poultry products by the respondents.Age (-1.704), income (1.692) and cooperative membership (2.095) were found to influence utilization of ICT in marketing poultry products The major constraints indicated by the respondents wereunavailability of ICT tools (93.7%), poor knowledge skill of the farmers (88.6%) and epileptic power supply (82.3%).It is recommended that better infrastructure such as electricity as well as good and effective network coverage be provided in the study area.

Keywords: *ICT tools, Utilization, Poultry Products, Marketing.*

1. INTRODUCTION

Information and Communication Technology (ICT) is any technology that enables communication and electronic capturing, processing and transmission of information (Ashrafi and Murtaza, 2008).Sanusi and Mshelia (2010)describe ICT as technologies that support the communication and co-operationof "human beings and their organizations" and the "creation and exchange of knowledge".Furthermore, Yu (2010)considers ICT as a range of technologies that allow the gathering, exchange, retrieval, processing, analysis andtransmission of information. In order words, ICT can be described as any tool that facilitates communication, process and transmit information and share knowledge through electronic means. Therefore, ICT refers to a wide range of computerized technologies that include products and services such as desktop computers, laptops, handheld devices, wired or wireless intranet, business productivity software such as text editor and spreadsheet, enterprise software, data storage and security, network security and so on (Apulu and Emmanuel, 2011).More so, Rwashana and Williams (2006) posited that ICT encompasses a range of electronic digital and analogue devices such as radio, television, telephones (fixed and mobile), computers, electronic-based media such as digital text and audio-video recording, and the internet.

However, in Nigeria, most commonly used ICTs include newspaper, radio, television,Internet, Personal Digital Assistants (PDAs), Automated Teller Machines (ATMs), mobile phones and smart cards. Agribusiness usage of ICT ranges from basic technology such as radio and fixed lines to more advanced technology such as e-mail, e-commerce, and information processing systems. Using advanced ICT to improve business processes falls into the category of e-business (United Nations Development Programmes (UNDP), 2007).ICT is relevant in almost all aspect of production. Its major characteristic is the ease of providing information and getting work done. The use of ICT has brought a lot of development and changes in the way people do

business especially in the agricultural sector. It provides a means of exchanging information and communicating effectively, and also enables a more efficient means of disseminating information especially to rural areas. Thus, the importance of ICT cannot be over emphasized.

The major task in agriculture is the transfer of technologies to farmers that involve the use of information and communication technology (ICT) which has been found to have a major impact in the poultry production and marketing(Salau and Saingbe, 2008). Since the 'information age' has improved accessibility to information and communication, poultry industry hastaken advantage of this development to increase productivity and marketing.Poultry refers to domesticated birds such as chicken (domestic fowls), ducks, turkey and geese (Henri-Ukoha*et al.*, 2012). These are managed by individuals, farm families, or agricultural enterprises. Compared to other livestock, poultry is the largest group and estimated to be about 14,000 million in the world (Sanusi and Mshelia, 2010).Poultry is the quickest source of meat and egg, and its production process is less hazardous and arduous in relation to other livestock enterprise (Fawole, 2006).The effect of inadequate animal protein intake as a result of its short supply is felt by large proportion of the country's population especially in the rural areas whose inhabitants constitute over 70% of the Nigerian population and account for over 85% of the poor in the country (Federal Office of Statistics (FOS), 1995; Apulu and Emmanuel, 2011). Poultry production therefore serves as an alternative means of providing adequate protein to its teeming population.

The main poultry products marketed in Nigeria are eggs and meat. The chicken meat is usually purchased live and slaughtered before consumption, some are purchased in frozen form implying that it has already been slaughtered and packaged, while others are purchased roasted or grilled (Salau and Saingbe, 2008). Commercial poultry marketing requires the acquisition and services of a cold room or a freezing truck for the transportation of frozen chicken.Marketing of poultry product begins from the pen and poultry houses by farmers who market it themselves, while others distribute to outlets like retailers who in turn sell to the final consumer, which could individual households or food vending outl According to United Nations Developm Programme (UNDP) (2007), Nigeria has highest number of poultry in Africa. It recorded that the poultry industry contribu about 25% of the country's agricultural GDP. poultry industry in Nigeria can take advantage the potentials in the development of ICTs optimum poultry production and marketi (UNDP, 2007). ICT in the poultry sector facilitate knowledge sharing within and amon variety of marketing networks includi researchers, exporters, extension services a farmers. It will enable vital information flows linking rural agricultural communities to internet, both in terms of accessing informati and providing local content.

An effective marketing structure remains the mo important link between production centres a final consumers. Poor marketing strategie inadequate access to market information and ne innovation on marketing poultry product a however limiting the economic potential poultry marketing in Nigeria (Koyenikan, 2011 Consumers of poultry products also encounter th challenges of inadequacy or unavailability o market information of the products, which has impeded their decision on the demand for the poultry products (Akpalu, 2013). Therefore, producers and consumers have not taken the advantage of the vast information provided by research institutionssuch as National Agricultural Extension and Research Liaison Services (NAERLS) in Zaria among others to help them in their decision making.Poultry farmers' progress in whatever they are doing depends largely on the availability and access to accurate and reliable information. Therefore, access to such new information source is a crucial requirement for sustainable agricultural development especially in poultry industry.However, for the advantage of ICT to be adequately exploited there is a need to determine the extent to which poultry farmers have access and utilize information and communication technology at their disposal in the marketing of poultry products.Filling this vacuum would provide a basis for designing and affecting a strategic information dissemination approach specific to the need of poultry farmers.It was

against thisbackground that the study sought to provide answers to the research questions raised, hence the following objectives which are to:

i. describe the socio-economic characteristics of poultry farmers in the study area;
ii. identify ICT commonly used and its level of usage among poultry farmers;
iii. determine the factors influencing ICT utilization by the poultry farmers, and
iv. identify the constraints of ICT utilization by the poultry farmers in the study area.

2. MATERIALS AND METHODS

2.1 Area of study

The study was conducted in Chikun Local Government Area of Kaduna State, Nigeria. Chikun is one of the twenty-three Local Government Areas of Kaduna State which is located on the South-eastern flank of Kaduna main town and its headquarters located in the town of Kujama. The Local Government Area occupies an area of 4,645 km^2 and has a population of 368,250 and projected population growth of 3.3% per annum according to the National Planning Commission (NPC, 2006).About 80 percent of the population are engaged in peasant farming, producing both food and cash crops such as cotton, groundnuts, tobacco, maize, yam, beans, guinea corn, millet, ginger, rice, sugarcane, shea nuts, cowpea, mango, kenaf, cocoyam, cassava, timber, palm kernel, banana, onions, sorghum and potatoes, as well as rearing of animals such as cattle, goat, pigs and poultry(Kaduna State Agricultural Development Project (KADP), 2007).

2.2 Types and sources of data

Primary data was used for this study which was collected with the aid of questionnaire complimented with an interview scheduled.

2.3 Sampling technique

Two – stage sampling technique was used to select the respondents. The first stage involved the purposive sampling of four communities (Kujama, Kakau, Rido and Narayi) due to their pre-dominance in poultry production, while second stage involved random selection of 20 poultry farmers from each of the community giving a total sample size of 80 poultry farmers.

2.4 Method of data analysis

Data collected were analyzed using both descriptive statistic (such as frequency distribution tables, percentages and mean) and the inferential statistics involving the use of logit regression model. Moreso, 3-point Likert type rating scale ofhigh = 3, moderate = 2 and low= 1 was used to measured level of ICT utilization by the respondents. A mean score of 2.0 was determined by adding 3 + 2 + 1 = 6 and dividing it by 3. The decision rule was that mean ($\overline{X}$) score of $\geq$ 2.0 implied high level of utilization, while mean score of< 2.0 implied low level of utilization.

2.5 Model specification

2.5.1 Logit regression analysis

Logit regression was used to determine the factors influencing utilization of ICT by the poultry farmers as used by Henri-Ukoha*et al.* (2012).Logit is a binary discrete choice regression model used to describe a data generation process that has two possible outcomes. The dependent variable Y is a discrete random variable, not a continuous random variable. This is because it can take only two values: Y = 1; Y = 0. The independent variables which is the vector of observable factors can be denoted X_i. However, the general logit regression model is explicitly expressed as shown in equation (1):

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \ldots\ldots \beta_9 X_9 + e \quad (1)$$

Where,
Y = utilization of ICT by the poultry farmers (ICT utilization = 1, Otherwise = 0)
X_1 = Age (Years).
X_2 = Gender (male = 1, female = 0)
X_3=Marital status (married = 1, single = 0)
X_4 = Level of education (years spent in school)
X_5 = Farming experience (years)
X_6 = Flock size (number of birds)
X_7 = Household size (number)
X_8 = Income of farmer (naira)
X_9 = Membership of cooperative (member =1, not member = 0)
α = Constant
$\beta_1 - \beta_9$ = Regression coefficients of the independent variables
$X_1 - X_9$ = Independent variables
e = error term

3. RESULTS AND DISCUSSION

3.1 Socio-economic Characteristics of the Respondents

The socio-economic characteristics of the respondents described include age, gender, marital status, education, farming experience, household size and cooperative membership. The result of these variables are presented in Table 1 which revealed thatthe majority (92.5%) of the respondents were within the age range of 21 – 50 years with a mean age of 37 years implying that poultry farming in the area was dominat young people within the productive work This is in agreement with the findings of U Ukohaet *al.* (2012) who posited that young p in poultry product marketing are more open use of information and communi technology.About 51.3% of the respondents female implying that female were more marketing of poultry products, while 68.8% respondents were married hence derived source of livelihood from poultry pro marketing.

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

Variables	Frequency	Percentages	Mean
Age (years)			
21 – 30	27	33.8	
31 – 40	26	32.5	37
41 – 50	21	26.2	
> 50	6	7.5	
Gender			
Male	39	49.7	
Female	41	51.3	
Marital Status			
Single	23	28.7	
Married	55	68.8	
Divorced	2	2.5	
Educational Status			
Primary	15	18.8	
Secondary	41	51.2	
Tertiary	24	30.0	
Farming Experience			
≤ 5	46	57.5	4.5
6 – 10	24	30.0	
> 10	10	12.5	
Household Size			
≤ 5	61	76.3	4
6 – 10	16	20.0	
> 10	3	3.7	
Cooperative			
Not member	56	70.0	
Member	24	30.0	
Total	180	100	

More so, the majority (51.2%) of the respondents' attained secondary education, 30.0% had tertiary education while 18.8% had primary education. This implies that all respondents in the study area were educated and are expected to adopt the use of ICT easily in the marketing of their poultry product. This finding is in line with Ayanwuyi*et al.*(2012) who posited that all the farmers in his study area were literate with different educational background. In addition, the majority (57.5%) the respondents had farming experience of le than five years implying that they were still developing stage of using ICT in the marketing o poultry product. Also, a majority (76.3%) of the respondents had household size of less than five with mean household size of 4 people implying small household size. This study is in contrast with the assertion of Nwaru (2004) who reported

and higher farming experience help the farmers gain more knowledge and technological ideas on how to tackle farm production problems. The majority (70.0%) of the respondents do not belong to any cooperative organization implying that most of the respondents in the study area have not taken advantage of the benefits that cooperative organizations provides, which could include latest practice in the marketing of poultry product.

3.2 ICT Tools Usage in Marketing of Poultry Products

Table 2 revealed the commonly used ICT by the respondents in marketing of poultry products in the study area. The majority (65.0%) of the respondents informed the use of mobile phones in reaching their customers concerning availability of poultry products and other related information. 45.0% indicated the use of radio to disseminate information, 29.1% indicated the use television, 19.0% indicated the use of computer, while about 16.5% of the respondents indicated the use of the internet to market their poultry products. This implies that mobile phones, Radio and television were the most commonly used ICT tools in the marketing of poultry product, though mobile phones was more accessible and had advantage over other forms of ICT tools. They are vital in providing information on the operation and efficiency of poultry marketing in Nigeria. Thus, ICT usage ensures ready flow of reliable information required to market products successfully.This finding is in line with UNDP (2007) which reported that ICTs usage in agribusiness encompasses basic technologies such as radio and telephone lines to more advanced technologies like email, e-commerce and information processing systems.

Table 2: Distribution of respondents based on the forms of ICT used in marketing

Variables	Frequency*	Percentage
Mobile phone	52	65.0
Television	23	29.1
Internet	13	16.5
Radio	34	45.0
Computer	15	19.0

*multiple response

Level of ICT usage

In terms of level of utilization of the ICT tools, Table 3 revealed that mobile phones ($\bar{I}$= 2.48), television ($\bar{I}$= 2.06) and radio ($\bar{I}$= 2.05)had high level of utilization in marketing of poultry products and ranked 1st, 2nd and 3rd, respectively. However, computer ($\bar{I}$= 1.67) and internet ($\bar{I}$= 1.63) had low level of utilization in the study area.The finding is in accordance with that of Greenberg (2005) who enumerated the strength of telephone as a communication tool, and the use of telephone can aid proper time management by avoiding the risk of travelling long distance.

Table 3: Distribution of respondents based on their level of ICT usage

ICTs	Sum Weight	Mean Score	Ranking	Decision
Mobile phone usage	196	2.48	1st	High level of utilization
Television usage	163	2.06	2nd	High level of utilization
Internet usage	129	1.63	5th	Low level of utilization
Radio usage	162	2.05	3rd	High level of utilization
Computer usage	132	1.67	4th	Low level of utilization

$\bar{I}$= mean score

3.3 Factors influencing ICT utilization by the respondents

The result of the logit regression analysis on the factors that influences utilization of ICT in marketing of poultry products in the study area is presented in Table 4. It revealed that age (-1.704), income (1.669) and cooperative (2.095) were the significant factors that influence ICT utilization at 10% and 5% level of probability. From the analysis, age is negatively significant at 10% level of probability implying that an increase in age of the respondents will decreases the utilization of ICT. This means that the older the farmer the lower his adoption of ICT in marketing of poultry products in the study area. Income is positively significant at 10% level of probability implying that an increase in income of the respondent will increase theutilization of ICT by the respondents in marketing of poultry product in the study ar This is because farmer tends to purchase tools th will improve their productivity if the resources a available. More so, cooperative membership the respondents is positively significant at 5 level of probability implying that an increase membership of cooperative will increase th utilization of ICT by the respondents in marketin of poultry product in the study area. Therefor being a member of a cooperative influences th utilization of ICT in the marketing of poultr product because they are to benefit fro numerous opportunities abound in cooperativ societies. The finding is in line with work o Kapurubandara and Lawson (2006) who reporte that adoption of ICT in agri-businesses in developing country is impeded by farmers' socia – economic and institutional factors.

Table 4: Regression coefficients of factors influencing ICT utilization

Variable	Coefficient	Standard error	z – value
Constant	2.00893546	1.57758535	1.273
Age	-0.6412052	0.03763219	-1.704*
Gender	0.34494183	0.59546513	0.579
Marital status	0.78967540	0.68201997	1.158
Education	-0.11107823	0.08313517	-1.336
Farming experience	-0.02952872	0.092394558	-0.320
Flock size	-0.00085822	0.00175629	-0.489
Household size	0.15983092	0.12522561	1.276
Income	0.334176D-05	0.201102D-05	1.662*
Co-operative	1.40837855	0.67233893	2.095**

3.4 Constraints of ICT Utilization by the Respondents

Results of constraints associated with utilization of ICT in marketing of poultry products are presented in Table 5. The majority (93.7%) of the respondents indicated unavailability of ICT tools when needed as the major constraint faced in the marketing of their poultry product, 88.6% indicated knowledge skill of farm managers as constraints in the use of ICT in marketing poultry products, while 87.3% indicated the knowledge skill of customers to utilize ICT. These ranked 1st, 2nd and 3rd, respectively among the constraints identified.

Table 5: Distribution of respondents based on the constraints of ICT utilization

Constraints	Frequency*	Percentage	Ranking
Unavailability of ICT tools when needed	74	93.7	1st
Knowledge skill of farm managers	70	88.6	2nd
Knowledge skill of customers	69	87.3	3rd
Epileptic power supply	65	82.3	4th
High cost of purchasing ICT tool	63	79.7	5th
Inaccessibility to customers	56	70.9	6th

* multiple response

Other constraints include epileptic power supply (82.3%), high cost of purchasing ICT tools (79.7%) and inaccessibility to customers (70.9%). This finding is in agreement with the work of Greenberg (2005) who stated that high cost of communication gadgets and lack of skills are the major barriers to wide utilization of internet-based communication. Also, Fawole (2006) observed that access to information and communication technology is a major factor influencing its utilization.

4. CONCLUSION AND RECOMMENDATIONS

There is high level of ICT utilization by the respondents in marketing of poultry products in the study area particularly with the use of mobile phones. However, socio-economic variables like age, income and membership of cooperation were found to significantly influence utilization of ICT in the study area, while major constraints indicated by the respondents were unavailability of ICT tools, knowledge skill of farm managers and that of customers. Therefore, for policy formulation, there is need for more sensitization of poultry farmers on the important of utilizing various ICT tools for marketing of their products and these tools should be readily available to poultry farmers to access. They should also be encouraged to join cooperative societies as it will enhance their ease access to ICT tools, skills and knowledge.

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