THE USE OF INFORMATION COMMUNICATION TECHNOLOGY AMONG LIVESTOCK FARMERS IN KWARA STATE

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ABSTRACT
This study was carried out to assess the use of information and communication technology (ICT) among livestock farmers in Kwara State. Primary data were collected with the aid of structured interview schedule using questionnaire. Multi-stage sampling procedure was employed to select One hundred (100) livestock farmers for this study. Data collected were analyzed using frequency count, percentage and mean score. The results show that the livestock farmers were male (100%) with mean age and farming experience of 42 and 12 years respectively. Most used ICTs were radio ($\bar{x}$=1.44) and mobile phones ($\bar{x}$=1.27). The most pressing constraint of the usage of ICTs were high cost of power supply (98.0%) and unstable power supply (98.0%). The study therefore concluded that livestock farmers make use of ICTs, specifically mobile phones and radio were highly used. Therefore, extension services on improved livestock practices targeted to reach larger population of livestock farmers can be best disseminated through radio and mobile phone applications.
Keywords: Radio, Television, DVD, Mobile Phone, Livestock farming.

INTRODUCTION

Agricultural extension describes the services that provide farmers with the access to knowledge and information they need to increase productivity and sustainability of their production systems and improve their quality of production and livelihood. These include dissemination of information, the transfer of knowledge generated by agricultural research and encouragement of farmers to try out new discovery. It has helped countries moved towards meeting food needs, conserving natural resources and developing human and social capital (Network Readiness Index [NRI], 2018). Agricultural extension service delivery all over the world has been concerned with communicating research findings and improved agricultural practices to farmers. In Nigeria, agricultural information comes mainly from research institutions which generate new technologies to address challenges encountered by farmers (NRI, 2018). Thus, it follows that the agricultural research information service centre is the custodian of several information resources including agricultural information providers such as international organizations, non-governmental organizations, and community-based organizations, farmers' magazine, newspapers, posters, leaflets, handbooks, radio, television, videos and the mobile telecommunication systems (Nnadi, Chikaire, Atoma, Egwuonwu and Echetama, 2012). Information and Communication Technology (ICT) has been defined in many ways by various authorities. Adebayo and Adesope (2007) define ICT as the tools and processes used to access, retrieve, store, organize, manipulate, produce and exchange information by electronic and other automated means. All over the world, Information and Communication Technologies (ICTs) have changed the lives of individuals, organizations, and indeed entire nations. In essence, the role of ICTs in poverty eradication can no longer be ignored.

All over the world, Information and Communication Technologies (ICTs) have changed the lives of individuals, organizations, and indeed entire nations. In essence, the role of ICTs in poverty eradication can no longer be ignored. In Nigeria for example, the role of ICTs is recognized in Sustainable Development Goals (SDGs), which emphasized the benefits of new technologies, especially Information and Communication Technologies (ICTs) to fight against poverty. Despite the adoption and input of ICTs to development in the urban areas, rural communities are neglected and deprived of substantial access to ICTs (Kwanghe, Vakuru, Ndahi, Abubakar, Iwar and Eze, 2016). The necessity for increased uptake of improved livestock production methods by farmers has been long recognized as a panacea for a virile livestock subsector in Nigeria (Food and Agriculture Organization, 2017). Inability of farmers to access vital information or poor dissemination with no adequate feedback have been great challenge in the development of agriculture in Nigerians. Odunsi, Wollman, Ambrosone, Hutson, McCann, Tammela, and Qian (2005) defined meat as the edible flesh of those animals which are acceptable for consumption by man. Livestock products like beef, chevron and mutton are major sources of protein in an average Nigerian family. This is necessitated due to its wide acceptability devoid of religious and socio-cultural constraints. The need for protein in the diet of human beings cannot be underestimated as different categories of individuals need protein for growth, development and sustenance, regeneration of ageing and building of worn-out tissues as well as for maintenance. For instance, more than 80% of national production of cattle, sheep, and goat is contributed by subsistence farmers who still rely on traditional production

techniques (Federal ministry of Agriculture and Rural Development, 2010). It is obvious that in order to meet the keen challenge of supplying animal products in the right quantity and quality for an ever-increasing human population, the country's livestock production sub-sector must witness adequate adoption of modern and efficient livestock production techniques.

The Nigeria livestock farmers are faced by a lot of problems such as inadequate grazing area, poor quality of feed and difficulty in integrating new technologies. They are also being left behind in terms of use of information and communication technology in developing and sustaining their agricultural production. Small scale livestock farmers which dominate the land scape of developing countries need to improve farming through acquiring adequate knowledge and accurate information. Also, the vision of the public agricultural extension system in Nigeria is that there should be a media sub unit within agricultural sub programs equipped with modern communication facilities for effective communication both within the organization and to link research institute. It is obvious that extension has a crucial role to play in this regard with the aid of new and improved ICTs (Bolarinwa, 2014). Hence the need to ensuring access to adequate and accurate agricultural information through relevant ICT to livestock farmers. Studies in Kwara State have indicated the level of farmers' ICTs utilization in different areas of agricultural enterprises like crop farming (Farayola, Gbadamosi, Alalade and Baba-Yusuf, 2020), fish farming (Omotesho, Akinrinde, Adenike, and Awoyemi, 2019) but few on livestock farming. However, the existing literature have indicated that farmers in Kwara state were highly aware of the use of ICTs through the extension agents but there is under-utilization of the essential tools for agricultural purpose (Omotesho *et al*., 2019). The findings from this study expected to contribute to the body of knowledge and help intervention program that is aiming at improving ICT usage among livestock farmers in Kwara State. The main objective this study was to examine the use of information communication technology [ICT] among livestock farmers in Kwara State. The specific objectives of the study were to;

1. Describe the socioeconomic characteristics of livestock farmers,
2. examine of use of ICT among livestock farmers; and
3. examine the constraints hindering the use of ICT among livestock farmers in the study area.

METHODOLOGY

This study was carried out in Kwara State Nigeria. Kwara is located within the North Central geopolitical zone. Agriculture is the main source of the economy. The average temperature ranges between 27^{o}C and 35^{o}C with a mean annual rainfall of 1,000-1,500mm. It has two main seasons- wet and dry. The wet season is between early April and late October while the dry season is between November and late March. The natural vegetation cover consists of rainforest in the South and Guinea Savannah to the North. The climatic condition, soil type, topography and vegetation cover in the state support the cultivation of several crops of economic importance like maize, cassava, vegetables, millet, rice, yam cowpea and sorghum. The State is also suitable for raising livestock; it is positioned in the forested savanna and enjoys reasonable dry and wet seasons, with heavier rain falling in August and September (Kwara State Agricultural Development Project, 2010). The State is an inland water state naturally blessed with large volumes of water where fishermen provide food for an estimated population of about 168.8 million (World Bank 2012). Based on ecological characteristics, cultural practices and project administrative convenience, the state is categorized into four zones by Kwara state Agricultural Development Project (KWADP, 2010).

Figure 1: Map of Kwara state showing the study area

The sampling procedure employed was multi-stage random sampling technique. The First stage involved purposive selection of two (2) local government areas out of the 16 local governments in Kwara state based on the registered livestock farmers list with the state ADP. The second stage involved random selection four (2) communities from the selected local government areas, due to the high concentration of pastoral farmers. The final stage involved random selection of twenty-five (25) livestock farmers from each community, to arrive to a sample size of 100 for the study. Data used in this study were obtained from primary sources. Information was collected with the aid of structured interview schedule. Data were analysed using descriptive and inferential statistics. Use of ICT was measured on 3 point Likert-type scale as 3= highly useful, 2= moderately useful, 1= not useful. Descriptive statistics such as frequency, percentages, mean was be used to present and discuss the socio economic characteristics livestock farmers, and constraints faced by livestock farmers using ICT, and the level of ICT usage in the study area.

RESULTS AND DISCUSSIONS

Socioeconomic characteristics

The result in Table 1 indicated that majority (100.0%) of the livestock farmers were male. This implies that gender sensitivity of livestock productions inclined towards men such that more men were involved in livestock production. The result indicated that the livestock farmers had an average age of 42years. This shows that most of the livestock farmers are still within their active age. The result in Table 1 shows that 38.0 % of the respondents have no formal education while 23% have Arabic education. The observation is in line with that of Onoja and Achike, (2012) that individuals with educational attainments are usually being faster adopters of innovations. The results also indicated that 25.0% of the livestock farmers have 7-9 household size, the average household mean was 7 persons which implies that livestock farmers have large household in case the need for labour utilization within the livestock enterprise. The result in Table 1 showed that 35.0% have spent between 11-15 years in livestock farming, with an average farming experience of 12 years which implies that the livestock farmers in the study area have vast experience in enterprise. The result also shows that 70.0% of the livestock farmers were members of a cooperative society, which implies that most of the livestock belong to cooperative societies in the study area.

Table 1: Socioeconomic characteristics of livestock farmers

Variables	Frequency	Percentages	Mean
Gender			
Male	100	100.0	
Age (years)			
21-30	9	9.0	
31-40	31	31.0	42.0
41-50	33	33.0	
51-60	19	19.0	
Above 60	8	8.0	
Level of education			
No formal education	38	38.0	
Primary education	17	17.0	
Secondary education	10	10.0	
Tertiary	12	12.0	
Arabic	23	23.0	
Household size			
1-3	13	13.0	
4-6	24	24.0	
7-9	26	26.0	7.0
10-12	25	25.0	
Above 12	12	12.0	
Monthly income			
Below 20,000	11	11.0	
20,000-40,000	35	35.0	41,000.0
41,000-60,000	23	23.0	
61,000-80,000	17	17.0	
Above 80,000	14	14.0	
Years of experience in Livestock farming (years)			
Below 5	12	12.0	
6-10	24	24.0	
11-15	35	35.0	12.0
16-20	9	9.0	
Above 20	20	20.0	
Membership of Cooperative			
Member	70	70.0	
Non-member	30	30.0	

Source: Field survey, 2020

The use of ICTs in the study area

Table 2 shows that livestock farmers' perception on the usefulness of ICT rated radio ($\bar{x}$=1.44) and mobile phone ($\bar{x}$=1.27) as first and second as useful ICT tools for livestock farming respectively. Similar results have been reported among crop farmers' perception of high relevance of radio and mobile phone to crop farming in Kwara state (Farayola *et al*., 2020). Results in Table 2 further rated newspaper ($\bar{x}$=1.17), DVD ($\bar{x}$=1.06) and television ($\bar{x}$=1.02) as third, fourth and fifth positions of livestock farmers' perception on the usefulness of ICT. These show that newspaper, television and DVD were useful ICT tools in accessing relevant information for livestock production in the study area. This finding is also in line with Agwu and Chah (2007) who asserted that ICTs when available to farmers improve the amount and quality on information either indirectly through producers, associations, extension workers and the like or through broadcast radio information and mobile phone messaging. Some the reasons for wide range of radio and mobile phone acceptance could be that the devices are portable, cheap, ease of use and accessibility couple with their multitasking capabilities makes it the most useful information technology today (Komolafe, Adesiji, Abogunrin and Akinnifesi. 2018). Even the ill-educated can use it, at least to receive calls. Radios have unique qualities, and its mention in this study might even refer to radios embedded in mobile telephones. Radios are portable and can operate on batteries.

Table 2: Use of ICT among livestock farmers in the study area

ICT	Mean	Standard deviation	Rank
Radio	1.44	0.73	1st
Phones	1.27	0.51	2nd
Newspapers	1.17	0.38	3rd
DVD	1.06	0.24	4th
Television	1.02	0.14	5th
Computer	1.01	0.10	6th
Camera	1.01	0.10	7th
Web publishing	1.01	0.10	8th
Multimedia	1.01	0.10	9th
Handbill and fliers	1.01	0.10	10th
Cinema	1.00	0.00	11th
Fax	1.00	0.00	12th

Source: Field Survey 2020

Constraints hindering the use of ICT in agricultural extension service delivery

Results presented in Table 3 revealed that 98% of the respondents indicated that unstable power supply, high cost of alternative power supply, and poor funding of extension agent were the severe constraints hindering the use of ICT in agricultural extension service delivery. Furthermore, 97.0% indicated high cost of service rate while 84.0% indicated limited access to computer as constraints hindering the use of ICT in agricultural extension service delivery. These findings imply that unstable power supply, high cost of alternative power supply, poor funding of extension agent, high cost of service rate and limited access to computer were the main constraints to hindering the use of ICT in agricultural extension service delivery in the study area. These findings also almost agreed with the findings of Akinola (2010) which stated that lack of infrastructural facilities especially electricity is a factor militating against the effective use of ICTs by farmers.

Table 3: Constraints hindering the use of ICT among livestock farmers

Constraints	Highly severe (%)	Moderately severe (%)	Not severe (%)	Mean
Unstable power supply	98.0	2.0	0	2.9
High cost of alternative power supply	98.0	2.0	0	2.9
Poor funding of extension agent	98.0	2.0	0	2.9
High cost of service rate	97.0	3.0	0	2.9
Limited access to computer	84.0	16.0	0	2.8

Source: Field Survey 2020

CONCLUSIONS AND RECOMMENDATIONS

Based on the major findings, radio, mobile phone, newspaper, DVD and television were the commonly used ICTs applied by farmers in accessing livestock information. The leading constraints to use of ICTs are unstable power supply, high cost of alternative power supply, and poor funding of extension agents. This study therefore recommends that concern government agencies in the supply of electricity should improve on services of power supply to farming communities. An agricultural programme could be initiated by federal or state government for alternative power supply to the farmers in Nigeria. This will go a long way improve that ability to apply ICT gadgets for livestock farming. Also, funds should be made available and accessible by government to the livestock farmers. This will help that farmer to access and apply ICT gadgets for livestock production in the study area.

REFERENCES

Adebayo, E. L., and Adesope, O.M. (2007). Awareness, Access and Usage of Information and Communications Technologies between Female Researchers and Extensionists. International Journal of Education and Development using ICT, 3(1), 85 – 93.

Agwu, A. E., and Chah, E. E. (2007). Access and Use of Information Communication

Technologies by Women Staff of Public Extension Service in the North Central Zone of Nigeria. *Agricultural Information Worldwide*, *6*, 18-24.

Akinola, M. (2010). Measuring the pulse of an organization: Integrating physiological measures into the organizational scholar's toolbox. *Research in Organizational Behavior*, 30: 203- 223.

Bolarinwa, J.B. (20I4). Role of Extension Services and Public Relations in Nigerian Fisheries

Industry. *International Journal of Agricultural Research* 9(7):325-330

Farayola, C. O. Gbadamosi, F. Y. Alalade, O. A. and Baba-Yusuf, K. (2020). Analysis of the Usage of Information Communication Technologies (ICT) in Accessing Agricultural Information by Smallholder Farmers in Kwara State, Nigeria. *American Journal of Sciences and Engineering Research,* 3(2), 39-44.

Food and Agriculture Organization of the United Nations (FAO) (2017). Improving Methods for Estimating Livestock Production and Productivity. Technical Report Series GO-23-2017. http://www.fao.org/3/ca6439en/ca6439en.pdf

Federal Ministry of Agriculture and Rural Development (F. M. A. R. D). (2010). National Agricultural Investment Plan 2011–2014 The federal capital, Abuja.

Kwanghe A. V., Vakuru, C. T., Ndahi, M. D., Abubakar, A., Iwar, V. N. and Eze, E. (2016). A review on proper hygience and effective management of livestock in Nigeria's Gross Domestic product (GDP). *CBA Review,* 1(11), 24

Kwara State Agricultural Development Project, KSADP (2014): Kwara State Annual Report on agricultural Development project for 2014

Kabir, K. H. (2015). Attitude and Level of Knowledge of Farmers on ICT based Farming. European Academic Research, 2(10), 13177-13196.

Komolafe, S. E. Adesiji, G. B., Abogunrin, O. O. and Akinnifesi, A. I. (2018). Assessment of the use of mobile phone as an information communication channel among fish farmers in Lagos State, Nigeria. *Bulletin of the Institute of Tropical Agriculture, Kyushu University,* 41:57-66. https://doi.org/10.11189/bita.41.57

Nnadi, F. N., Chikaire, J., Atoma, C. N., Egwuonwu, H. A., andEchetama, J. A. (2012). ICT for Agriculture Knowledge Management in Nigeria: Lessons and Strategies for Improvement. *Science Journal of Agricultural Research and Management,* sjarm-192:8 https://doi.org/10.7237/sjarm/192

Network Readiness Index N.RI (2018): A review on Information Communication Technology (ICT) usage in Agriculture in Developing countries.

Onoja, A and Achike, A. I. (2012). Econometric analysis of credit and farm resource technical efficiencies" determinants in cassava farms in Kogi State, Nigeria: a diagnostic and Stochastic Frontier Approach. In *A Conference Paper presented at the 14 th Annual Conference of the African Econometric Society based in South Africa, Abuja*.

Omotesho, K., Akinrinde, F. A., Adenike, A. J., and Awoyemi, A. O. (2019). Analysis of the Use of Information Communication Technologies in Fish Farming In Kwara State, Nigeria. *Journal of Agribusiness and Rural Development*, *54*(4), 327–334.

Oluwatousin, F. M. and Ojo, O. S. (2017). ICT-Based Market Information Services Utilization by Small scale Farmers in Southwest Nigeria. *Rep Opinion*, 9(2), 82-89

Odunsi, K., Wollman, R. M., Ambrosone, C. B., Hutson, A., McCann, S. E., Tammela, J., and Qian, F. (2005). Detection of epithelial ovarian cancer using 1H-NMR-based metabonomics. *International journal of cancer*, *113*(5), 782-788.

World Bank (2012). *Information and communications for development 2012: Maximizing mobile*. World Bank Publications