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AGRICULTURAL INFORMATION SYSTEMS AND COMMUNICATION NETWORKS: THE CASE OF POULTRY FARMERS IN THE FEDERAL CAPITAL TERRITORY ABUJA, NIGERIA

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Abstract

The study examined the Agricultural Information and communication networks among poultry farmers in three (3) area councils of the Federal Capital Territory Abuja, Nigeria. Snow-ball sampling technique was adopted for the study, a total of One hundred and twenty-two (122) respondents were sampled for the study. The main objective was to examine the communication sources and networking available to poultry farmers. Descriptive statistics and inferential statistics were used to analyze the data collected. The study revealed that majority (60%) of the respondents were still in their productive age, male were the majority (81.1%), while 79.3% had one form of education or the other. The study also showed that majority of the respondents (71.3%) had between 901-1100 birds and 56.2% sold their birds directly to the consumers. The study showed that information disseminated via extension agents, radio, poultry farmers associations and feed millers were found to be effective means of networking among poultry farmers. Out of the thirteen independent variables under consideration: Age, Gender, Household size, Educational level, Years of experience, Access to credit, Access to training, Membership of co-operations and access to communication networks were found to be statistically significant and influence the frequency of access to information. All the constraints under consideration affecting access to information were found to be serious constraints in exception of poor market structures and poor transportation. The study concludes that socio-economic and institutional variables significantly and positively influence poultry farmer's access to information and communication networks.

Key Words: *Information system, Communication, Network, Poultry farmers*

Introduction

Communication of information is said to be the process by which people exchange ideas, feelings or impression so that each gains a common understanding of the meaning and intent of the massage. Information channels/systems used by farmers are mass media that include radio, television and newspaper, contact with extension staffs or workers and with other farmers (Olaniyi, 2013; Alder and Bagnol, 2000; Ofuoku, 2010).

Livestock production constitutes an important component of the agricultural

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economy in developing countries like Nigeria. In livestock production, poultry dominates a prominent position in providing animal protein as it accounts for 25% of local meat production in Nigeria (Okunlola and Olofinsawe, 2007; Gueye, 2000; Branckaert, 2000).

Information and communication technology (ICT) is a broad subject which deals with technology and other aspects of managing and processing information, especially in large organizations. It can be considered a sub-discipline of computer. Particularly IT (information technology) is applied and employs the use of electronic computers, storage media, network administration, server maintenance and computer software to secure, convert, store, protect, process, transmit, and retrieve information (Waltham, 1999; Salau and Saingbe 2008; Adams, 1982).

The information or idea is the subject matter that the farmers are expected to get, understand and act upon; the language of the message, it's idea or contents and the presentation of the information to the farmer matters (Okoedo-Okojie and Orhiakhi, 2012). Adekunle and Ogoto (1994) maintained that effective communication is a pre-condition for sustainable technology transfer in agriculture; and the forward-feed- back mechanisms which are essential ingredients in the technology transfer process are only made possible through communication process. Poultry production has a very important impact on our nation's economy. The findings of Okonkwo and Akubuo (2001) revealed that about 10 percent of the Nigerian populations are engaged in poultry production, most on subsistence and small or medium-sized farms, the authors further stressed that presently the industry had been seriously affected by government economy measures. The measure had been very pronounced on poultry production due to high level of sensitivity of the livestock industry to management factor and resultant effect on live and productivity of the birds.

Poultry farmers receive new ideas or improved technology via many sources, some of these sources among others includes through extension agents, mass Medias, opinion leaders, etc. The sharing of these new ideas is being influenced by many factors like types of relevant information being brought to poultry farmers, and their socio-economic status, these may positively or negatively affect their access to information.

The broad objective of the study was to determine the factors influencing access to agricultural information system and communication networks among poultry farmers in Federal Capital Territory Abuja. The specific objective includes to:

- describe the socio-economic characteristics of poultry farmers in the study area,
- examine the communication sources and channels available to poultry farmers in the study area
- determine poultry farmers perception of the communication sources and channels
- determine factors influencing poultry farmers access to information and
- examine the constraints faced by poultry farmer's and their perception of the constraints.

Methodology

The study was conducted in the Federal Capital Territory (FCT), Abuja. FCT has 6 area councils; it is located in the guinea savannah which is favorable for poultry production. Few indigenes engaged in farming, white-collar jobs, and Artisan activities such as tailoring, carpentering, blacksmith, mechanics, electricians and other pithy trades.

The study covered three (3) area councils of the Federal Capital Territory, The three area councils randomly selected were Abuja Municipal, Bwari, and Kuje. The sampling frames for each of the extension blocks and cells were not readily available, as a result snow-ball sampling technique was adopted and with help of the community leaders and extension agents a total of one hundred and twenty-two (122) functional poultry farms were sampled for the study.

The data for the study were collected through the administration of questionnaire. Both descriptive and inferential statistics were used for data analysis, the descriptive statistics used include: frequency counts, percentages and means, multiple regression analysis was used to determine the factors affecting poultry farmer's access to information

Multiple Regressions

The Functional forms or Implicit Forms

Simple Linear Form

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots \beta_n X_n + U \dots (1)$$

Semi-Logarithm Form

$$Y = \log\beta_0 + \beta_1 \log X_1 + \beta_2 \log X_2 + \beta_3 \log X_3 + \dots \beta_n \log X_n + U \dots (2)$$

Double-Logarithm Form

$$\text{Log } Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots \beta_n X_n + U \dots (3)$$

Exponential Form

$$\text{Log } Y = \log\beta_0 + \beta_1 \log X_1 + \beta_2 \log X_2 + \beta_3 \log X_3 + \dots \beta_n \log X_n + U \dots (4)$$

The Explicit Forms where;

Y = Frequency of access to information (Dependent variable)

(Independent variables)

X_1 = Age

X_2 = Gender

X_3 = House-hold size

X_4 = Educational level

X_5 = Years of experience

X_6 = Extension services

X_7 = Sources of credits/loan

X_8 = Sources of extension contact

X_9 = Access to credit

X_{10} = Access to training

X_{11} = Perception of communication network

X_{12} = Membership of cooperative society

X_{13} = Access to communication facilities

β = is the vector of parameters to be estimated
X = The explanatory variables
U = Error term

Results and Discussion

Table 1 showed that a greater proportion of the respondents (90.9%) were within the active age range of 31-50 years, while only 3.3% were above 50 years. This implies that majority of the respondents are still in their active and productive age, this result is in line with that of Agwu and Chah (2007) who pointed out that most of their respondents were in their middle age of between 46-

50 years. Table 1 also indicated that male (81.1 %) dominated the industry in the study area, while 100 % of the respondents in the industry had one form of education or the other, with majority having up to secondary education. this implies that literacy level among the poultry farmers is quite high, this is in agreement with the founding's of Adisa and Akinkunmi (2012) who pointed out that most of their respondents involved in the industry were highly educated.

Table 1: Distribution of Respondents According to their Socio-Economic Characteristics

Socio economic variables	Frequency	Percentage
Age		
21 – 30	7	5.7
31 – 40	73	59.8
41 – 50	38	31.1
51 and above	4	3.3
Sex		
Male	99	81.1
Female	23	18.9
Level of Education		
Primary	11	9.0
Secondary	87	71.3
Tertiary	24	19.7
Types of Birds kept		
Layers only	50	41.0
Broilers only	51	41.8
Cockerel only	2	1.6
Layers / broilers	13	10.7
Layers / broilers / cockerel	6	4.9
Number of Birds Owned		
Less than 4000	15	12.3
501 - 700	19	15.6
701 – 900	8	6.6
901 – 1,100	36	29.5
1101-1,300	30	
Over1,300	14	
Access to Agricultural Information		
Frequently	81	

	Frequency	Percentage
Occasionally		
Rarely	41	33.6
Year of poultry farming experience	-	-
Less than 5 years		
5-10years	20	16.4
11-15years	36	29.5
Above 15 years	16	13.1
	50	41.0

Also Table 1 revealed that 41.8 % and 41.0 % of the respondents reared only broilers and layers respectively. This may not be unconnected with the fact that in FCT majority of the inhabitants are medium income earners who could afford to buy both meat and eggs for their household. This result is however, in disagreement with that of Adisa and Akinkunmi (2012), who claimed that most of their respondents reared layers only. Majority of the respondents (54.1%) reared between 901-1,300 birds and only11.4 % reared above 1,300 birds. This implies that most of the respondents involved in the industry in the study area are small -to -medium scale producers, while larger proportion (66.4%) claimed that they had access to frequent information, this may not be unconnected with the high literacy level of the respondents and other personal characteristics. This agrees with the findings of Röling and Engel (1991), who find that personal characteristics and the husbandry practices of the farmers were major factors influencing their search and access to information from different sources.

Tables 2 showed that 34.4% of the respondents received major information on medical/diseases which ranked 1st, as this is one of the major challenges to poultry farmers in the Study area; 28.0% of the poultry farmers received information on hybrid stocks which ranked 2nd while 19.7% of the farmers obtained major information on feeds and feeding stuff which ranked 3rd this implies that farmers received information on different management aspects depending on their area of interest, priority and the problems they faced.

Table 2: Distribution of Respondents According to Major Type of Management Information Received.

Management information	Frequency	Percentage	Rank
Information on hybrid	78	28.0	2nd
Information on feeds	55	19.7	3rd
Information on medical services	96	34.4	1st
Information on Marketing	29	10.4	4th
Information on ICT usage/application	8	2.9	6th
All of the above	13	4.7	5th

Tables 3: Distribution of respondents according to sources of information and perceived effectiveness of the information systems

Sources of Information	Very Effective	Effective	Fairly effective	Not effective	Sum	Mean	Remarks
			Perception				
Radio	4(3.3)	110(90.2)	1(0.8)	7(5.7)	355	2.9	Effective
Television	1(0.8)	18(14.8)	9(7.4)	94(77.0)	170	1.35	Not Effective
Extension Agents	67(54.9)	28(23.0)	28(23.0)	27(22.1)	435	3.56	Effective
Family/Friends	16(13.1)	18(14.8)	9(7.4)	79(64.8)	215	1.76	Not Effective
Other Farmers	16(13.1)	19(15.6)	8(6.6)	79(64.8)	216	1.77	Not Effective
Veterinary Officers	10(8.2)	25(20.5)	84(68.9)	3(2.5)	286	2.34	Effective
Poultry Association	-	89(73.7)	5(4.1)	28(23.0)	305	2.50	Effective

*Figures in parenthesis are percentages

Table 3 showed that information disseminated via extension agents, radio, poultry associations and feed millers were found to be effective. While information disseminated via television, family/friends and other farmers were not perceived as effective by the poultry farmers in the study areas, such they are rarely used as source of information, Hence information to poultry farmers should always be channeled through the information sources perceived by them as important and effective. This is consistent with the findings of FAO (2000), who pointed out that mass media help the extension agents to reach large number of farmers simultaneously, since there was little opportunity for the farmers to interact among themselves.

Table 4: Factors affecting Poultry Farmer's access to Agricultural Information and Networking

Variables	Linear	Semi-log	Double-log	Exponential
Constants	29985.008 (14.756)	11.523 (84.597)	5.019 (6.292)	-1849975.201 (-6.765)
Age	11.933 (2.669)***	7.657E-6 (3.887)***	0.166 (3.262)***	38828.113 (2.229)**
Gender	71.859 (11.582)***	3.502 (7.269)***	0.869 (9.081)***	366724.411 (11.164)***
Household Size	12.820 (3.907)***	2.912E-5 (7.509)***	-0.049 (-1.132)	-30209.260 (-2.017)*
Educational Level	6.161 (4.522)***	2.381E-5 (2.355)**	0.072 (1.765)	18328.718 (3.313)***
Years of Experience	13.275 (1.955)*	45.838 (6.706)***	-0.004 (-0.025)	73347.367 (2.492)**
Extension Services	1.854 (0.014)	16.804 (2.472)**	0.034 (0.567)	16277.388 (0.795)
Sources of Credits/loans	-2.808 (-0.354)	3.054E-5 (1.998)*	0.037 (1.116)	1722.285 (0.152)
Sources of extension Contacts	-0.174 (-0137)	4.494E-6 (0.966)	0.009 (0.472)	-3498.991 (-0.512)
Access o Credit	13.356 (6.154)***	13.35E-2 (2.876)***	0.088 (1.86)	2245.980 (1.480)
Access to Training	27.678 (2.257)**	3.463E-4 (1.865)	0.034 (0.908)	4679.343 (1.960)*
Perception of communication network	1.456 (0.003)	-2.344E-4 (-0.564)	0.021 (0.023)	-1343.904 (-1.432)
Membership of Cooperatives	12.678 (2.257)**	-0.004 (-0.074)	-0.342 (-1.48)	-2839.432 (-2.323)**
Access to Communication network	6.567 (3.089)***	-5.433E-3 (-0.332)	1.24 (1.90)*	-1124.748 (-1.676)
R^2	0.927	0.784	0.390	0.590
Adjusted R^2	0.898	0.728	0.276	0.577
F-value	88.933	63.474	36.001	42.655

***Significant at 1%; **Significant at 5%; *Significant at 10%

Result from Table 4 shows that the Linear functional form was the lead equation that best fit the model and it was used for further discussion. It has an R^2 value of 0.927. This implies that 92.7% of the frequency of access to information is explained by the independent variables (X_1-X_{13}) included in the model, while the remaining 7.3% is error of the non inclusion of some explanatory variables. The model has an f-value of 88.933 which is large and statistically significant at 1% level. This indicates that the explanatory variables adequately

explained the dependent variable Y. Out of the thirteen independent variables Age, Gender, Household size, Educational level, Years of experience, Access to credit, Access to training, Membership of co-operations, and access to communication networks were found to be statistically significant and positively affect frequency of access to information. This implies that a unit increase in Age of respondents, difference in Gender, increase in household sizes, increase in Educational level, increase in years of experience, access to credit, access to training, increase participation in cooperative activities, and access to communication network, will lead to a successive increase in the frequency of access to information. This agrees with the findings of Rolls *et al.* (1999), who find that personal and institutional characteristics of the farmers were major factors influencing their access and search for information from different sources.

Table 5 revealed that the respondents perceived all the constraints under consideration to be important constraints in exception of poor marketing structure and poor road net works. This is a clear indication that the poultry farmers in the study area are facing serious and severe constraints hindering their potentialities, these constraints directly or indirectly limit their access to useful information and production resources. This finding is in line with that of Kursat *et al.* (2008), who reported that dairy farmers faced severe constraints, among which finance, poor infrastructural facilities and price instability were very critical.

Table 5: Distribution of Respondents According Constraints faced in Poultry production and their perception of the constraints

Constraints	Perception				Sum	Mean	Remarks
	Very Important	Important	Often important	Not important			
Cost of accessing information	30(324.6)	87(71.3)	5(4.1)	-	391	3.20	Important
Poor infrastructural facilities	98(80.3)	15(12.3)	9(7.4)		455	3.72	Important
Poor market structures	14 (11.5)	2(1.6)	88(72.1)	18(14.8)	256	2.09	Not important
Cultural beliefs	83(68.0)	-	39(32.0)	-	410	3.36	Important
Illiteracy	109(89.3)	13(10.7)	-	-	475	3.89	Important
Unstable power supply	100(82.0)	9(7.4)	13(10.7)	-	453	3.71	Important
Poor transportation	1(0.8)	1(0.8)	94(77.0)	26(21.3)	221	1.81	Not important
Price instability	18(14.8)	87(71.3)	3(2.5)	14(11.5)	353	2.89	Important

*Figure in parenthesis are percentages

Conclusion

From the findings of this study, it can be concluded that socio-economic and institutional variables significantly and positively influence poultry farmer's access to information and communication networks in the study areas, also poultry farmers were faced with serious constraints; these consequently affect their access to useful information and consequently their productivity.

Recommendations

Based on the findings of this study, the following recommendations are proffered:

1. Provision of infrastructural facilities by the government and other Nongovernmental organizations should be encouraged since the farmers perceive poor infrastructural facilities as a serious problem.

2. Dissemination of information through mass media especially through radio should be encouraged since the farmers perceive radio as an effective means of communication.

3. There should be favorable government policies in stabilizing the price of poultry products to encourage the farmers to produce more.

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