Relationship between Adoption Level of Improved Management Techniques and Poultry Farmer's Socio-Economic Factors in Igabi Local Government Area of Kaduna State, Nigeria

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***Abstract*:- The study evaluate the relationship between level of adoption of improved management techniques and some selected socio-economic and institutional factors among poultry farmers in Igabi Local Government Area of Kaduna State. Data were collected randomly through the use of well-structured questionnaire and personal oral interview from seventy two (72) poultry farmers. Descriptive statistics such as percentage, frequency table and correlation coefficient were used to analyze the data. The findings indicated that majority (68.06 %) of the respondents were male, while about 76 % of the farmers were between the ages of 20-49 years. About 79 % of the farmers had post primary education with 75 % having 10years and above experience in poultry rearing. usage of improved battery cage (83.33%), use of recommended drugs (76.39%), use of disinfectants (61.11%) and contact with veterinarian (59.72%) were the improved management techniques that were highly adopted by the farmers in the study area but low adoption rate was recorded for grading/candling of eggs (30.56 %), use of incubator for hatching (29.17%) and slaughtering/packaging of the birds (20.83%). Age, source of finance, flock size and contact with extension agents were the four factors that correlated positively with adoption and therefore significantly influenced the adoption of improved management techniques among the farmers in the study area. In view of the findings, the study highlighted the need for government to address the issue of credit availability through an institutionalize frame work aimed at linking farmers to formal sources of credit, if the quantum of poultry production is to keep pace with the protein requirement of the population. The study also recommended that government should engaged extension workers to adequately train poultry farmers to be technically competent to handle modern poultry management techniques.**

***Keywords*: Relationship, Adoption Level, Improved, Management Techniques, Poultry Farmers, Socio – Economic, Factors**

I. INTRODUCTION

Poultry is the term used to designate the species of birds domesticated to produce meat, eggs, feathers, manure and other by-products. Poultry has been recognized as one of the means to address the problems of malnutrition, food insecurity, low income and poverty (Adene, 2004). It is a profitable venture for livelihood improvement, enhancing subsidiary rural family income and financial empowerment (Akinokun, 1976). Poultry farming has now developed into a commercial enterprise involving thousands of birds. Large poultry units have replaced the backyard poultry units while more efficient strains of meat or egg type birds, balanced feed, intensive housing and better poultry equipment came into use by farmers. Nevertheless, commercial poultry farming has not been fully developed in the tropics unlike the temperate regions. The bane of this is attributed to several reasons. The Nigerian poultry industry is less capitalized and it is based on small holdings owned by the peasant farmers. Birds usually perform at a low level and hence, production cost is higher and consequently selling prices of poultry products are higher beyond the reach of average Nigerians. Thus, per capital consumption of poultry products is lower in most tropical countries, thereby giving rise to protein deficiency factors in food in these countries since feed cost represent over 70% of the total cost of poultry production, reduction in feed cost is expected to reduce production cost and hence lower the prices of poultry products within the range that an average Nigerian can afford thereby increasing the per capital consumption of the products.

Animal protein is essential in human nutrition because of its biological significance. Poultry and poultry products such as poultry meat and eggs are important foods for improving nutritional and health status particularly for at risk populations; like children, pregnant women and weaken persons. In realization of the importance of animal protein, the various governments in Nigeria have been pursuing programmes at various levels Federal, State and Local Government to boost mass production of livestock products to ensure the attainment of FAO (Food and Agriculture Organization) recommendation of 35g/input of animal protein per day. Some of these programmes include Farm settlement scheme, Agricultural Development Projects (ADP's) Microcredit scheme for livestock production and lately the United Nation Development Programme (UNDP) with the concern of establishment of poultry production programme at community level in Nigeria. Extension and research are well-organized systems that design and disseminate technological innovations to farmers. Despite all the technological innovation transfer, the wide gap between levels of production

which research contends is attainable and that which farmers achieve suggests a missing link (Oladele, 2002). Much research has been conducted to find solution to improve productivity in agriculture especially poultry production, but in fact, those farmers who are expected to be the end users utilize very few research results. The important element of any innovation transfer is the appropriate adoption of such technology without any hitch.

The theory of rate of adoption suggests that the adoption of innovations is best represented by a s-curve on a graph. The theory holds that adoption of an innovation grows slowly and gradually in the beginning. It will then have a period of rapid growth that will taper off and become stable and eventually decline (Rogers, 1995). The theory of perceived attributes is based on the notion that individuals will adopt an innovation if they perceive that the innovation has the following attributes. First, the innovation must have some relative advantage over an existing innovation or the status quo. Second, it is important the innovation be compatible with existing values and practices. Third, the innovation cannot be too complex. Fourth, the innovation must have trial ability. This means the innovation can be tested for a limited time without adoption. Fifth, the innovation must offer observable results (Rogers, 1995). The objective of this study is to evaluate the relationship between level of adoption of improved management techniques and some selected socio-economic and institutional factors among poultry farmers in the study area.

II. MATERIALS AND METHODS

A. Study Area

The study was conducted in Igabi Local Government Area of Kaduna state. Igabi is one of the four local government area which constitute Kaduna metropolitan city, an important commercial and administrative centre in Northern Nigeria and comprises of different sets of people with diversified socio-cultural characteristics. Igabi local government is located in guinea savannah of Nigeria on latitude 10^0 32" N and longitude 7^0 17" E (Otegbeye,2001). The headquarter of Igabi Local Government Area is Turunku. The population of Igabi local government area according to 2006 population census was estimated at 570,000 people (NPC, 2006). Annual rainfall is between 250mm-1000mm and usually begins early May and ends in October and the dry season is between October-April. The major crops produced in the area are cowpea, yam, cassava, maize, millet, guinea corn and cocoyam. Livestock/animals that are reared in the Local Government Area are poultry, cattle, goat and sheep.

B. Sampling Techniques and Frame

Multi stage sampling technique was employed in this study. in the first stage Igabi local government area was purposively selected out of twenty three local government area in Kaduna state because the researcher resides in the area. At the second stage, six (6) villages which include Mando, Sabon Afaka, Rigasa, Sabon-Birin, Rigachikun andTurunku were also purposively selected from the local government area due to existence of poultry farmers in these areas. The final stage was random selection of twelve (12) poultry farmers from each of the six (6) selected villages/settlements. This gave the total number of seventy two (72) respondents

C. Data Collection

Primary data was used for the study. The primary data were obtained from poultry farmers in the study area with aid of well structured questionnaire and personal interview. The questionnaire was designed to collect information on socio-economic characteristics of the farmers, some institutional variables of the farmers, level of adoption of improved poultry management techniques that have been develop and disseminated to poultry farmers.

D. Analytical Tools

The following under listed analytical tools were used to analyze the data generated

a. Descriptive statistic
b. Correlation coefficient analysis

1). Descriptive Statistics: Descriptive statistics such as percentage, frequency distribution, table and mean were used to describe the socio economic characteristics of the farmers and level of adoption of improved management techniques.

2). Correlation Coefficient Analysis: Correlation coefficient analysis was used to evaluate how some selected socio economic and institutional factors influences the level of adoption of improved management techniques among the poultry farmers . The equation used for the correlation coefficient is given as:

$$Y = F (X_1,X_2,X_3,X_4,X_5,X_6, X_7,X_8)$$

Where

Y = Number of poultry Management practices adopted by farmers (Number)

X_1 = Gender (Male = 1, Female = 2)

X_2 = Marital Status (Single = 3, Married = 2, Widow = 3, Divorcee = 4)

X_3 = Age (Years)

X_4 =

Education Level No Formal Educ. = 1
Primary Sch. Ed. = 2
Secondary Sch. Ed. = 3
Post Secondary Sch. Ed. = 4

X_5 = Farming Experience (Years)

X_6 = Source of Finance (Personal saving

= 1, Others = 2)

X_7 = Flock Size (Number)

X_8 = Contact with extension agent (Number)

The hypothetical equation for the correlation was given as

$$r = \frac{\sum XY}{\sqrt{(\sum X^2)\ (\sum Y^2)}}$$

Where

X = $(X_1 – X_8)$ as stated above

Y = Number of Poultry Management adopted by farmers

r = Coefficient of correlation

r can take any value between Y and + 1

if r = 0, there is no relationship between X and Y

r = -1, there is poor correlation between X and Y

r = +1, there is strong correlation between X and Y

III. RESULTS AND DISCUSSIONS

A. *Social-Economic Characteristics of Poultry Farmers in the Study Area.*

1). Gender of Respondents: Table 1 shows that 68.05% of the poultry farmers are male while 31.94% were female. This implies that men dominate the poultry sector in the study area. This is in line with the finding of Aphunu and Akpobasa (2009) in the study of adoption of improved poultry management practices in Ughelli in which males also dominated poultry sector.

2). Age of Respondents: Table 2 indicates that 31.94 % of the respondents fall within the age group of 30-39 years old, 26.39% fall within 40-49 years old, 23.61% were 50 years and above while 18.06 % are within the age group of 20-29 years old. The result showed that about 60% of the respondents were between the age of 30-50 years which implies that majority of the respondent belong to the young and middle-aged group, that is, working class group that favours the learning of new technologies which in-turn will encourage greater adoption. This age group suggests that the farmers have great energy for agricultural activities and play central role in productive enterprises (Durston, 1996).

3).Educational Status of Respondents: Table 3 shows that 41.67 % of the respondents had post-secondary education, 37.09% have secondary school certificate, 8.77% have no formal education and about 7.02% have primary school education. This implies that 49.12% of the respondent has post secondary school education, 37.50% of the respondent had secondary education, while 11.11% of the respondent had primary education and about 9.72% had no formal education. It is very important to know the level of literate farmers since it variable influences the ability to properly comprehend new techniques and method required to bring about positive changes in knowledge, attitude skills and aspiration of the poultry farmer. This showed that 90.28 % of the farmers had one form of education or the other. This was in total agreement with the study of Olaniyi *et.al.*(2008) that reported that 94.4% of the poultry farmers had one form or the other formal education ranging from adult literacy to tertiary education.

B. *Institutional Variables of the Poultry Farmers in the Study Area.*

4). . Source of Finance to the Poultry Farmers: The result in Table 6 shows that the major source of finance to the farmers was from personal savings (72.22%) which was in agreement with the work of Akanni (2007) that reported that the major source of finance to small scale poultry farmers in South Western Nigeria was from personal savings (60.75 %). Other sources of finance were cooperative society (11.11 %),agricultural development bank (6.94 %), money lender (5.26 %) and commercial bank (4.17%) and. This implies that most of the poultry farmers got their initial capital for their business which will help to be able to withstand any losses that might arise as a result of poor management, mortality or poor sales.

5). Flock Size of Respondents: The result of the number of poultry birds possessed by the farmers is presented in Table 7. The table revealed that 27.78 % of the farmers possessed 200 birds and above, 23.61 % have a range of 100 -149 birds, 20.83 % have 150 -199 birds, 15.28 % have less than 50 - 99 birds and 12.50 % have less than 50 birds.The result implies that most or majority of the farmers in the study area are small scale producers. This result is in agreement the findings of Agwu *et.al.* (2008) that obtained an average flock size of approximately 28 birds in their study which signifies that the farmers are operating at small scale level.

Table 1: Frequency Distribution of the Poultry Farmer in the Study Area based on Gender

Gender	Frequency	Percentage %
Male	49	68.06
Female	23	31.94
Total	72	100

Table 2. Frequency Distribution of the Poultry Farmer in the Study Area based on Age

Age Range	Frequency	Percentage %
20-29	13	18.06
30-39	23	31.94
40-49	19	26.39
50 years and above	17	23.61
Total	72	100

Table 3: Frequency Distribution of Poultry Farmers in the Study Area based on Educational Qualification

Level of Education	Frequency	Percentage %
No formal education	7	9.72
Primary school education	8	11.11
Secondary school Education	27	37.50
Post-Secondary Education	30	41.67
Total	72	100

Table 4. Frequency Distraction of Poultry Farmer in the Study Area based on Marital Status

Marital Status	Frequency	Percentage %
Married	37	51.39
Single	24	33.33
Widow/widower	4	5.56
Divorcee	7	9.72
Total	72	100

Table5. Distribution of Respondents based on Years of Experience in Poultry Farming.

Years of Experience	Frequency	Percentage %
0-9	18	25.00
10- 19	20	27.77
20-29	13	18.06
30-39	10	13.89
40-49	9	12.50
50 years and above	2	2.78
Total	72	100

Table 6. Frequency Distribution of Respondents based on Source of Finance

Source of Finance	Frequency	Percentage %
Personal Savings	52	72.22
Cooperative Society	8	11.11
Money Lender	4	5.56
Commercial Bank	3	4.17
Agricultural Development Bank	5	6.94
Total	72	100

Table7. Frequency Distribution of Respondents Based on Flock Size

Flock Size	Frequency	Percentage %
Below 50	9	12.50
50 – 99	11	15.28
100 -149	17	23.61
150 – 199	15	20.83
200 birds and above	20	27.78
Total	72	100

6. Frequency of Contact with Extension Agent: Table 8 above shows that 12.50% has contact on weekly basis, 15.28% had contact with extension agents on once in two weeks, 18.06 of poultry farmer had contact on monthly basis while 20.83% and 22.22% had contact with extension agent once in two months and once in a year respectively and also 11.11% has never had contact with extension agent. It is evident that dissemination of poultry farm innovation was fair in the study area. This result differs from that of Oyeyinka *et.al*.(2011) that reported low contact between extension agents and the poultry farmers in Afijio local government area of Oyo State, Nigeria.

C. Level of Adoption of Improved Management Techniques by the Poultry Farmers

Results in Table 9 above shows that poultry farmer have adopted and were using a number of improved management techniques. The adoption level were high for the usage of improved battery cage (83.33%), use of recommended drugs (76.39%), use of disinfectants (61.11%) and contact with veterinarian (59.72%). There were low adoption level for the following improved management techniques namely grading/candling of eggs (30.56 %), use of incubator for hatching (29.17%) and slaughtering/packaging of the birds(20.83%). Therefore the low adoption rate listed above could be attributed to high cost and complexity associated with the use of these technologies.

D. Socio-Economic Characteristic of Farmers Influencing Adoption of Improved Poultry Management Practices.

The correlation analysis result in Table 10 indicates that only four variables (Age, Source of finance, Flock size and Contact with extension agent) significantly influenced adoption of improved management techniques among the poultry farmers in the study area. The significant of the age and contact with extension agents was in agreement with the finding of Aphunu and Akpobasa (2009) in which age and contacts with extension agent were the only two variables that correlate with adoption of poultry management practices. By implication increase in age, source of credit, flock size and contact with extension agent would influence the level of adoption by farmer. The result also shows that gender, marital status, educational level and year of experience had no significant influence on the adoption of improved management techniques. But studies of Agwu (2004), Osuji (1993) shows that educational qualification, farm size and farming experience significantly influenced adoption. However the difference between both results might be the type of technologies studied.

Table 8. Frequency Distribution of Respondents based on Contact with Extension Agent.

Contact with extension Agent	Frequency	Percentage %
Weekly	9	12.50
Once in two weeks	11	15.28
Monthly	13	18.06

Once in two months	15	20.83
Once in a year	16	22.22
Other specify (NIL)	8	11.11
Total	72	100

Table 9: Percentage Distribution Level Based on Level of Adoption of Improved Management Techniques (n-72)

Improved Management Practice	Tried (%)	Adopted (%)	Non Adopted (%)
Egg grading/candling	30.56	30.56	38.88
Use of disinfectant	30.56	61.11	8.33
Use of recommended drugs	23.61	76.39	0.00
Contact with Veterinarian	36.11	59.72	4.17
Use of incubator for hatching	31.94	29.17	38.89
Slaughtering and packaging	26.39	20.83	52.78
Improved battery cage usage	11.11	83.33	5.56

Table 10: Correlation Analysis of Socio-Economic and Institutional Variables influencing Adoption of Improved Management Techniques

Variables	Correlation Coefficient (r)	P value
Gender	0.18	0.22
Marital status	0.31	0.19
Age	0.241	0.08
Educational level	0.09	0.49
Farming experience	-0.06	0.62
Source of finance	0.29*	0.02
Flock size	0.25*	0.08
Contact with extension agent	0.32*	0.02

*Significance at 10%

** Significant at 5%

A. Critical r = 0.17

IV. CONCLUSION

The findings revealed that majority of the poultry farmers in Igabi Local Government Area were male (68.06%). The study also revealed that poultry farmers in the study area have adopted and were using some improved poultry management techniques such as usage of improved battery cage (83.33%), use of recommended drugs (76.39%), use of disinfectants (61.11%) and contact with veterinarian (59.72%) but low adoption rate for grading/candling of eggs (30.56 %), use of incubator for hatching (29.17%) and slaughtering/packaging of the birds(20.83%) were observed among the poultry farmes in the study area. The correlation analysis result revealed that only four variables (age, source of finance, flock size and contact with extension agents) significantly influenced adoption of improved management techniques among the farmers in the study area. The study therefore recommends that government should engaged extension workers to adequately train poultry farmers to be technically competent to handle modern poultry management techniques since contact with extension agents is one of the factors that greatly influenced the decision of the farmers to adopt new technologies and innovations. Government and other stakeholders especially banks should come to the aids of the farmers by providing credit facilities to the farmers to boost their financial capability.

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