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ADOPTION OF IMPROVED MANAGEMENT PRACTICES AMONG POULTRY FARMERS IN KATSINA STATE, NIGERIA

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ABSTRACT

The study assessed the adoption of improved management practices among poultry farmers in Katsina state, Nigeria. Data were collectedfrom 99 farmers using questionares through a multi-stage sampling technique. Methods of data analysis used were descriptive statistics and tobit regression. Descriptive statistical analysis shows that 33.3% of the poultry farmers were less than 30 years of age with the mean age of 38.22 years.It can therefore be said that majority of poultry farmers in the study area are youths. Further analysis shows that the poultry farmers were male dominated (80.6%), 82.8% were married and 52.7% of the poultry farmers had tertiary education.Inferential statistics result shows that three of the regressors were associated with the regressant at 1% probability. The age was negatively associated ($P<0.01$). It means that the older farmers are less likely to adopt the poultry management practices. Farm size was positively associated ($P<0.01$). It connotes that as the farm size of the farmer increases the more likelihood they adopt the improved management practices Farmer cooperative membership was negatively associated ($P<0.01$). It implies that being a member of cooperative society decrease the likelihood of adopting the management practices, the study concludes thatthere is high level of adoption of improved management practices among poultry farmers in the study area. It therefore, recommends that young farmers should be given more priority in extension delivery process. The government should sensitize the poultry farmers with incentive and provide the enabling environment which will stimulate them to be more effective and efficient in poultry production.

Keywords: Adoption; Poultry; Management practice; Katsina state; Nigeria

INTRODUCTION

The crucial role being played by poultry industry in meeting the protein requirements of the human diet cannot be overemphasized. Poultry production offers the quickest returns to investment outlays in livestock enterprise by virtue of its short gestation period, high feed conversion ratio. Poultry meat is one of the cheapest, commonest and the best source of animal protein (Ojo, 2002). It contributes about 10% of the national meat

production. Poultry birds and eggs production occupies an important position for improving animal protein consumption for both rural and urban households in Nigeria (Ologbon and Ambali, 2012). Poultry production occupies a place of pride among the livestock enterprises not only because of its rapid monetary turnover but also its social and health wise recognition (Laseinde, 1994). These reasons among others have made the industry a diversewith a variety of business interest such as egg production, hatchery, and poultry equipment business (Amos, 2006). Poultry population was put at 114.3 million, comprising of 82.4 million chickens (11% of which were commercially raised) and the remaining 31.9 million birds included pigeons, ducks, guinea fowls and turkeys (Abdullah *et al.*, 2006).

The production of poultry meat has been bedeviled with enormous problems which retards progress of the sector over the years. Prominent of these problems are production management and other routine management that impose threats and reduce productivity.Nationally, collosal lost had been experienced, for instance, economic losses experiencedby poultry farmers for the year 2009-2011alone amounted to over three billion naira mainly due to infectious bursal disease outbreaks.The decline in poultry products occasioned by increase in incidence of disease, poor hygiene and paucity in routine and management practices of the farmers have been the major concern of the farmers and other stakeholders in the poultry industry. This scenario also results in the poor quality delivery and eventual loss of the poultry resources that create an artificial scarcity and increase the priceof the unit output(Akinyemi *et al.,* 2015)

Over the years poultry farmers had experienced or witnessed great loses as a result of poor poultry management practices and poor access to information. These situations had culminated to the closure of many farms with resultant effect in the layoff of farmemployees and ultimate increase in the unit market price of poultry product. Poultry industry had also witnessed low level of farmer's education. High illiteracy among the farmers has contributed in no small measure to present unsatisfactory performance witnessed in poultry farms. In some cases farmers were incapacitated in the proper use of the technologies thereby making the extension delivery of little or no effect. Consequently, there is bottle neck in farmer's adoption of management practices as a result of mismatched production system being used by the farmers. It is against these backdrops that this research seeks to describe the socioeconomic characteristics of the poultry farmers and to examine the sources of information on the improved management practices.

MATERIALS AND METHODS

The Study Area

This study was conducted in KatsinaState, Nigeria. The state is situated in the North West geo-political zone of Nigeria. Its capital city is Katsina. The State was carved out of Kaduna State in 1987 from the old Kaduna state. The State is bounded to the east by Kano and Jigawa States, to the west by Zamfara State, to the south by Kaduna State and to the north by the Niger Republic. The projected population of the state was put at 7,452,629 in 2014 from the 2006 figure of 5,792,578 at a growth rate of 3.2 percent per annum (NPC, 2006). The State occupies 24,192 square kilometers, and is located on latitude 12°15′N and longitude 7°30′E.Katsina state is inhabited by Hausa, Nupe, Yoruba and Fulani. Major crops grown in the state include groundnut, cotton, millet and guinea corn. The state has large deposits of kaolin and asbestors.

Sampling Procedure and Sampling Size

The population for the study consists of 150 registered poultry farmers in Katsina state. These are sparsely distributed throughout the state.Multi-stage random sampling was used for the study. The first stage involved a purposive selection of Dutsin-Ma zone from the three agricultural zones (Ajiwa, Funtua and Dutsinma). This is because it has the highest number of poultry farmers in the state. Second stage involved a random selection of seven from nine Local Governments in Dutsin-Ma agricultural zone. The last stage involved a simple random selection of 15 farms from each Local Government Area to make a total of 105.

Data Analysis

The data collected were analyzed using descriptive statistics (frequency, percentages and means) and tobit regression analysis. The determinants of poultry management was done using the Tobit regression model. This model is appropriate for this study since the dependent variable is the choice of the farmer on the poultry management technology used. This is expressed as percentage of the optimum dosage; thus the dependent variable must be between 0 limit and continuous level of adoption of poultry management practice.Tobit Regression Model is estimated through the Maximum Likelihood Estimation (MLE) procedure. It is specified as:

$Y_i = \beta_1 X_i + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + e$ …………………………………….. (1)

Where:

$Y_1 =$ Age (years)

$Y_2 =$ Education (years)

$Y_3 =$ Work Experience (years)

$Y_4 =$ Farm Size (hactres)

$Y_5 =$ Farmer Association (yes=1, No= 0)

$Y_6 =$ Income (in Naira)

e = error term

RESULTS AND DISCUSSION

Socio-economic Characteristics

The results revealed that 33.3% of the respondents were less than 30 years of age, while 8.6% were above 50 years of age. The mean age of the farmers was 38.22 years showing that they are in their productive age as defined by FOA (2003).The result was in support of Rahji et al (2014) who discovered that poultry in south west Nigeria was being dominated with the active youth participation.

Table 1 shows that majority (80.6%) of the respondents were males while 19.4% were females. Also, majority of the poultry farmers (82.8%) were married whereas the least about 1.1% were widows. This means that poultry farming in the study area is majorly practiced by married people who needs money to support the family.This was in aggreement with Amos (2006) that most back yard poultry farmers were married people who used the proceed to arguement family income and better their living.

Table 1: Socio-economic Characteristics of the Poultry Farmer (n = 93)

Variables	Frequency	Percentage	Mean
Age (years)			
≤ 30	31	33.3	38.22
31-40	26	28.0	
41-50	28	30.1	
>50	8	8.6	
Sex			
Male	75	80.6	
Female	18	19.4	
Marital Status			
Single	17	16.1	
Married	77	82.8	
Widowed	1	1.1	
Household Size			
1-5	37	39.8	
6-10	30	32.2	8.14
11-15	17	18.3	
16-20	6	6.4	
>20	3	3.3	
Educational Level			
Adult/informal education	11	11.8	
Primary Education	7	7.5	
Secondary Education	26	28.0	
Tertiary Education	49	52.7	
Total	93	100	
Farming Status			
Full Time	61	65.6	
Part Time	32	34.4	
Farming Experience (years)			
1-5	48	51.6	6.27
6-10	38	40.9	
11-15	6	6.5	
>15	1	1.1	
Farm Size			
≤50 birds	22	23.7	108
51-100 birds	33	35.5	
101-150 birds	12	12.9	
151-200 birds	13	14.0	
>200 birds	13	14.0	
Membership of Poultry Association			
Yes	55	50.1	
No	38	40.9	
Monthly Income (₦)			
Less than ₦20,000	34	36.6	₦107,190
₦20,000 - ₦40,000	43	46.2	
₦40,001 - ₦60,000	8	8.6	
Above ₦60,000	8	8.6	

Source: Field survey, 2016

Furthermore, the results revealed that most (52.7%) of the poultry farmers had tertiary education, 28.0% completed secondary education, while 11.8% had adult/ informal education but 7.5% had primary education. This shows that about 88% of the poultry farmers in study area had formal education which implies that the level of education of the poultry farmer will influence their level of adoption to improved management practices. This finding agrees with Ezeibe *et al.,* (2014) who reported that about 98% of the poultry farmersin Enugu State had some form of formal education.

The study indicated that 39.8% of the respondents had a household size of 1-5 people but only a few 3.3% had a household size of 21people and above. Farming status distribution among the poultry farmers in Table 1 shows that majority (65.6%) were full time poultry farmers while 34.4% were part time poultry farmers. This implies that most poultry farmers in the study area adopted improved management practices.

The result on Table 1 further indicated that most (51.6%) of the poultry farmers had 1-5 years of poultry farming experience while 40.9% of the farmers had 6-10 years of experience in poultry farming. This implies that the farming experience of the farmers will influence their rate of adoption of improvedpoultry raising management practices.This result corroborates that of Ojo (2002)that experienced farmers are more productive and usually be in the fore front in embracing new technology.

As shown in Table 1, about 50.1% of the poultry farmers belonged to poultry farmers' association, while 40.9% of the poultry farmers do not belong to poultry farmers' association. The monthly income distribution shows that 46.2% of poultry farmers had monthly income between ₦20,000 to ₦40,000 while about 8.6% had more than ₦60,000 monthly income.This enables the farmers to expand the scope of their farming activities. The above results might be the reason why the production of eggs was very limited in the study area.

Sources of Information on Improved Poultry Management Practices

Results in Table 2 show that a higher percentage (84.9%) of the poultry farmers got their information on improved management practices on poultry production through Radio, 81.7% got the information from Family members/ Friends, 76.3%)of them obtained the information through other sources of information, 64.5% through Poultry Farmers' Association and 63.4% from Extension agents. This implies that the extension agents in the study area have been disseminating adequate information on improved management practices on poultry production. While a very few (38.7%) were informed of the improved poultry management practices through Seminar, few (39.8%) got their information from the Internet. This is an indication that the poultry farmers in the study area have not been using the internet as a source of information on improved management practices in poultry production.Information widen the farmers' horizon and open them to opportunity outside their juridistion.It is the gateway to access the technology and new scientific discovery. The above result unfold the great potential of the poultry farmers and revealed the task ahead of the extension agent in educating the farmers on the use of the internet.

Table 2: Sources of information on improved poultry management practices (n = 93)

Variables	Yes	No
Extension agents	59 (63.4)	34 (36.6)
Radio	79(84.9)	14(15.1)
Television	50(53.8)	43(46.2)
Workshop	40(43.0)	53(57.0)
Seminar	36(38.7)	57(61.3)
Poultry Farmers' Association	60(64.5)	33(35.5)
Internet	37(39.8)	56(60.2)
Family members/ Friends	76(81.7)	17(18.3)
Newspaper	48(51.6)	45(48.4)
Others	71(76.3)	22(23.7)

Source: Field survey, 2016; figures in parentheses are in percentages

Improved Management Practices Adopted by Poultry Farmers

Result in Table 3 revealed that the highest level of adoption of improved poultry management practices among the respondents was on vaccination (mean = 2.71), followed by use of drugs and culling with the mean score of 2.60.Use of improved breeding stock was ranked forth, with a mean score of 2.57, next was brooding operation with the mean score of 2.57, followed by debarking (mean = 4.46), use of disinfectants (mean = 2.42), record keeping (mean = 2.38), mortality management (mean = 2.31), fumigation (mean = 2.20),use of veterinary officers (mean = 1.96) while the least level of adoption of improved poultry management practices was on feed formulation (mean = 1.95).

Table 3: Distribution of poultry farmers based on level ofadoption of improved management practice (n = 93)

Improved Management Practices	Larger Extent	Lower Extent	Not at all	Mean	Ranking
Improved breeding stock	58(62.4)	30(32.3)	5(5.4)	2.57	4th
Brooding operation	59(63.4)	27(29.0)	7(7.5)	2.56	5th
Vaccination	68(73.1)	23(24.7)	2(2.2)	2.71	1st
Use of disinfectants	52(55.9)	28(30.1)	13(14.0)	2.42	7th
Use of drugs	63(67.7)	23(24.7)	7(7.5)	2.60	2nd
Debeaking	52(55.9)	32(34.4)	9(9.7)	2.46	6th
Culling	62(66.7)	25(26.9)	6(6.5)	2.60	2nd
Record keeping	51(54.8)	26(28.0)	16(17.2)	2.38	8th
Use of Veterinary officers	29(31.2)	31(33.3)	33(35.5)	1.96	11th
Fumigation	39(41.9)	34(36.6)	20(21.5)	2.20	10th
Feed formation	26(28.0)	36(38.7)	31(33.3)	1.95	12th
Mortality management	40(43.0)	42(45.2)	11(11.8)	2.31	9th

Source: Field Survey, 2016; Grand mean = 2.39; figures in parentheses are in percentages,

Comparing their individual means with the grand mean (2.39), it shows that there is high level of adoption of improved management practices invaccination, culling, use of

improved breeding stock, brooding operation, use of disinfectants and record keeping.This finding corroborates the work of Ezeibe*et al.* (2014) who reported that all the poultry farmers in Enugu State were aware of the poultry management practices and majority (85%) of them adopted the practices. Their level of adoption was low in other management practices; this might be due to high cost of money that is involved in employing the service of a Veterinary officer. The result further showed that most of the poultry farmers in the study area still depend on commercial feeds for their production.

Factors Influencing Poultry Management Practices

Results in Table 4indicated that three variables of the study are significant (P<0.01). The age was negatively significant (P<0.01). This implies that increase in age of the farmer will decrease the probability of the farmer adopting new poultry production management technques by marginal effect of 0.0019. This result negates the work of Oyeyinka*etal.* (2011) who reportedthat poultry farmers'age had no influence on their awareness of poultry production practices.

Farm size was positively significant (P<0.01). The finding therefore, connotes that a unit increase in farm size will increase the probability of farmer adopting the improved management techniqes with marginal effect of 0.0024. Logically, it may be possible that due to the fact that the farmers hadenjoyed positive results of the technologiesmay result to their expansion of their farms for a greater yield. The finding is in consonance with Ezeibe*et al.* (2014) who reported that any increase or improvement in farm size will result to increase or higher adoption of the management practices in poultry production.

Farmer association was negatively significant (P<0.01). This means that the more invovolment in farmer association, the decrease the probability of adopting the management practice with marginal effect of 0.1425. This result corroboratedwithOyeyinka*etal.* (2011) who asserted that poultry farmers association had no benefits to the farmers in AfijioLocal Government Area of Oyo state, hence, they were reluctant to be members of the poultry farmers association.

Table 4: Factors influencing the extent of poultry management practice

Variable	Marginal Effect	Standard Error	t-ratio	P>t
Constant	0.8069	0.1840*	4.38	0.000
Age	-0.0019	0.0006*	-3.15	0.002
Education	-0.0165	0.0121	-1.37	0.175
Work Experience	-0.0004	0.0024	-0.16	0.869
Farm Size	0.0024	0.0005*	5.25	0.000
Farmer Association	-0.1425	0.0492*	-2.90	0.005
Income	0.0049	0.00039	1.25	0.021

Source: Field Survey 2015; *significant

Constraints to the Adoption of Improved Poultry Management Practices

Results in Table 5shows the major constraints encountered by the farmers in the management of poultry farms. Most (55.9%) of the poultry farmers had problem in purchasing healthy day old chicks and 46.2% had problem of inadequate capitals. This

implies that with low access to capital, it will be difficult for farmers to afford the cost of improved management practices in poultry production. Also, inadequacy of water supply (58.1%), Labor supply (54.8%) and high cost of drugs/vaccination (52.7%) were the most severe constraints encountered, while theft (57.6%), poor weather condition (46.2%) and poor extension visit (39.8%) were the less severe constraints in the management of poultry enterprises. The results attestto the fact that poultry farmers face myriad of problems which inhibit their mode of operation. Some of these problems can be solved through the intervention of government. The results is in consonance with Oyeyinka et al (2001) that most farmers face problems that seem to be unsummontable because they lack awarenes of such problem.

Table 5: Constraints to the adoption of improved management practices in poultry production

Variables	Highly Severe	Severe	Not severe	Mean	Ranking
Purchase of healthy day old chicks	52(55.9)	32(34.4)	9(9.7)	2.26	1st
Inadequate capital	43(46.2)	40(43.0)	10(10.8)	2.23	2nd
Disease and pest attack	26(28.0)	45(48.4)	22(23.7)	2.13	8th
High cost of drugs/Vaccination	29(31.2)	49(52.7)	15(16.1)	2.17	3rd
Inadequate of water supply	18(19.4)	54(58.1)	21(22.6)	2.08	11th
High cost of feed	41(44.1)	41(44.1)	11(11.8)	2.17	3rd
Labor supply	16(17.2)	51(54.8)	26(28.0)	2.13	8th
Marketing problems	40(43.0)	36(38.7)	17(18.3)	2.17	3rd
High mortality rate	17(18.3)	43(46.2)	33(35.5)	2.15	6th
Poor extension visit	16(17.2)	40(43.0)	37(39.8)	2.04	13th
Lack of credit facilities	42(45.2)	30(32.3)	21(22.6)	2.15	6th
Inadequate Veterinary Services	23(24.7)	43(46.2)	27(29.0)	2.13	8th
Poor weather condition	11(11.8)	39(41.9)	43(46.2)	2.08	11th
Theft	7(7.6)	32(34.8)	53(57.6)	1.89	14th

Source: Field Survey, 2016; Figures in Parentheses are Percentages

CONCLUSION

This study examined the adoption of improved management practices among poultry farmers in Katsina State, Nigeria. From the findings of the study, it can be concluded that there is high level of adoption of improved management practices among poultry producers in the study area and this have a noticeable effect on their production. Poultry farming in the study area was dominated by male, and they were in their active productive ages and can make effective use of improved management practices for poultry production. The findings also revealed that higher percentage of the poultry farmers got their information on improved poultry management practices from radio, family members/ friends, poultry farmers' association and extension agents. Problem in purchasing healthy day old chicks, inadequate capitals, inadequate water supply, labor supply and high cost of drugs/vaccination were the most severe constraints encountered in the adoption of improved management practices. Nevertheless, age, farm size and farmer association were

variables that were statistically significant in the adoption of improved management practices.

Poultry farmersshould be given more priority to the extension delivery process thereby having access to proper sensitization on the importance of improved poultry management practices. Government should embark on policies that will stimulate the farmers to expand their farm size, such policies include among others the provision of incentives and encouragements towards poultry farming. Farmers should be encouraged by the government to form a more viable association by farmers.

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