Knowledge Level and Poultry Farmers' Perception on Poultry Management Practices in Niger State, Nigeria

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Abstract

This study was conducted in Niger State, Nigeria to determine the knowledge level and poultry farmers' perception on improved poultry farming practices. Multi-stage sampling technique was employed to sample 120 poultry farmers used in this study. Data collected Data were collected through structured questionnaire complimented with interview schedule and analysed using both descriptive and inferential statistics such as ordinary least square regression. Based on the findings of this study, majority (82.5%) of the respondents were still in their active and productive age (ie, between 21 – 30 years), with mean age of 35 years; less than half (45.8%) of the respondents acquired formal education, with a mean of 6 years of schooling. Majority (66.7%) were small–scale farmers with an average 657 number of birds. Farmers' knowledge level in terms of de–beaking, vaccination, de–worming, feeding and feed formulation, watering, transportation, record keeping, finance management and medication were found to be high based on their mean score values, while knowledge level of culling, waste disposal, egg picking, packaging and marketing, bio–security principles were found to be low. Poultry famers however, perceived all aspects of management practices training received as relevant. The regression analysis revealed R^2 value of 0.876 as cost of medication/vaccine, quantity of feed, depreciation on capital items and access to credit had t–value of -3.395, -11.582, 2.543, and 2.218, respectively and were found to have significant effect on the income of poultry farmers. The respondents' indicated that unavailability of market ($\bar{x}=3.93$), poor power supply ($\bar{x}=3.63$), long distance to poultry farm ($\bar{x}=3.25$) and poor access to credit ($\bar{x}=3.20$) constitute the serious constraints faced by the poultry farmers. It was therefore recommended that training of poultry farmers on different aspect of poultry management practices should be given adequate priority in enhancing increase poultry production.

Keywords: Knowledge level, poultry farmers, perception, management practices

Introduction

The Food and Agricultural Organization (FAO) (2005) stipulated a daily requirement of 65gm to 75gm of total protein which 40% or 36gms should be obtained from animal sources. However, the estimated animal protein consumption of an average adult in Nigeria is about 17gm which indicates a shortfall (FAO, 2015). Poultry offers the greatest opportunity for increasing the quantity and quality of animal protein intake of Nigerians, as poultry meat and eggs account for about 30% of total livestock output of which eggs account for over 80% (Evbuomowan, 2005; Ike, 2011). Commercial poultry farms are well organized in Nigeria with substantial infrastructure on ground. Thus, poultry meat and eggs are capable of providing animal protein in terms of quantity and quality and can slide down the animal protein supply gap in a minimum possible time when compared to other sources of animal. More than 50 billion chickens are reared per annum all over the world as a source of food. This is

attributed to the importance of poultry products in terms of nutritional values such as quality protein, lipids, carbohydrate, vitamins, cholesterols and pigments (FAO, 2015).

Despite this potential of the poultry industry, it is faced by numerous problems in the areas of rearing, housing, disease management, feeding and medication. Research had shown that in Nigeria, poultry supplies about 20% of the total meat needs of the nation. This is grossly inadequate when compared with that in developed countries like United States (FAO, 2015). Research had also pointed out that in most parts of Nigeria; small poultry farms operate in less equipped poultry houses under the care of less competent poultry farmers that are less concerned about recent technologies relevant for the improvement of poultry management skills (Oyeyinka et al. 2011). This is one of the major reasons why most developed countries in the world produce and consume more poultry products than Nigeria.

In the United States for instance, statistics has shown that the estimated average egg consumption is 250 – 300 eggs per head per annum, whereas that for Nigeria is less than 80 eggs per head per annum (Olumide, 2017). A number of challenges are associated with poultry production in Nigeria. For instance, diseases are major constraint in poultry production, thus, the need for farmers to embraced good poultry management practices in terms of feeding and medication to prevent diseases. Many developing countries including Nigeria suffer high mortality in an unprotected flock due diseases and also lack good managerial practices. This has constitutes a serious problem that need to be solved particularly in the study area where the knowledge level on the use of improved poultry farming practices is considered to be poor. It was against this backdrop that this study was conceived to determine knowledge level and poultry farmers' perception of different poultry management practices in Niger State, Nigeria. The study intends to achieve the following objectives which are to: describe the socioeconomic characteristics of the poultry farmers; ascertain the knowledge level of farmers on poultry management practices; examine the perception of poultry farmers on poultry management practices training received; determine the factors affecting the poultry farmers' income from poultry farming; and identify the constraints faced by the poultry farmers in the study area.

Methodology
This study was conducted Niger State, Nigeria. It is located within latitudes 8°20′ and 11°30′ N and longitudes 38°30′ and 8°20′ E of the equator with a population of about 3,950,249 (National Population Commission (NPC), 2006). However, with 3.4% growth rate (www.nigerstate.gov.ng), the projected population as at the end of 2015 was 5,337,148. The State is bordered to the north by Zamfara State to the North-west by Kebbi state, to the south by Kogi State, to the southwest by Kwara State, while Kaduna State and the Federal Capital Territory border the State at northwest and northeast, respectively. The people living in the study area are mostly Gwari, Hausa and Nupe by tribes. Agriculture is the major occupation of the people with about 85% of the population engaged in farming. The state produces crop like yam, beans, rice, millet, groundnut, maize and sugarcane, and raised animals like; cattle, goat, sheep and poultry.

Multistage sampling technique was adopted in selection of respondents for this study. The first stage involved purposive selection of Agricultural Zone II out of the three zones due to the preponderance of poultry production. The second stage involved random selection of two local government areas (LGAs) (Gurara and Shiroro) from the selected zone. The third stage involved random selection of three communities from each of the LGAs selected. The fourth and last stage involved random selection of twenty poultry farmers from each of the community selected bringing the total number of the respondents to 120. The

data used for this study were collected from primary sources with the aid of structured questionnaire complimented by an interview schedule. Data collected was analysed using descriptive statistics (frequency distribution, percentage and mean) and inferential statistics (ordinary least square (OLS)) as well as attitudinal measuring scale in the form of 4-point Likert type rating scale such as very high (4), high (3), moderate (2) and low (1) where the decision rule was based on mean score value of 2.50, and 5-point Likert rating scale of very relevant (5), relevant (4), undecided (3), not relevant (2) and not very relevant (1) where the decision rule was based on mean score value of 3.0.

Model specification

Ordinary Least Square (OLS) model
Ordinary Least Square (OLS) is a method used in estimating the unknown parameters in a linear regression model that minimizes the sum of squared vertical distances between the observed responses in the data set and the responses forecasted by the linear approximation. The implicit form of the model is expressed as:

$$Y = f (X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9) \quad (1)$$

The general OLS regression model in its explicit form is expressed as:

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + e \quad (2)$$

Where
Y = Income from the poultry farm (₦)
X_1 = Medication drugs and vaccine (₦)
X_2 = Quantity of feed (kg)
X_3 = Labour used (mandays)
X_4 = Capital (₦)
X_5 = Number of birds
X_6 = Access to credit (amount in naira)
X_7 = Access to training (number)
X_8 = Membership of social organization (number)
X_9 = Extension contact (number)
e = Error term
α = Model intercept
β_1–β_9 =coefficients of the independent variables
X_1–X_9 =independent variables, as explained above

Results and Discussion

The result of the socioeconomic characteristics of the respondents presented in Table 1 revealed that majority (93.3%) of the respondents were within the age range of 21 – 50 years, with mean age of 35 years. This implies that most of the respondents are still very active and energetic to carry out poultry farm work. This is in agreement with the findings of Adisa and Akinkunmi (2012) who pointed out that young men and women were more involved in poultry farming. Furthermore, majority (91.7%) of the respondents were male, implying that men dominate the poultry industry in the area. This is in agreement with the findings of Oyeyinka *et al.* (2011) who found that women were highly involved in poultry production for ensuring household food security. More so, less than half (45.6%) of the respondents acquired formal education (primary, secondary and tertiary) with mean of six years in schooling. This implies that literacy level of the respondents was low and the least education attainment was primary education which could affect their knowledge level of poultry management practices. Majority (92.5%) of the respondents had household sizes between 1 – 5 people with mean household size of three people. This implies that the there are few people who constitute the household; hence could reduce the consumption rate and allows income from the poultry business to be diversified or channelled into other productive ventures.

Also, a large proportion (71.7%) of the respondents had been involved in poultry production for 6–10 years with mean experience of 7 years. This implies that majority of the poultry farmers in the study area are experienced in poultry production and expected to have high knowledge level of poultry management practices. Table 1 further shows that, majority (66.7%) of the respondents had between 500–1999 birds with mean of 657 birds meaning that most of the poultry farmers in the study area are small-scale farmers, while majority

(93.3%) of them reared broilers which could be attributed to the fact that consumers preferred poultry meat than egg (Bukunmi and Yusuf, 2014).

Knowledge level on poultry management practices

Distribution of the respondents based on their knowledge level on poultry management practices is presented in Table 2. The data show that the farmers' knowledge level on poultry management practices in term of vaccination, de-worming, feeding regimes/time, watering time, transportation, record keeping, financial management and medication were found to be high, while knowledge levels of culling of sick birds, waste disposal, egg picking, packaging and marketing of poultry produce and bio–security were found to be low. The low knowledge level in some aspect of poultry management practices may be as a result of insufficient awareness about the poultry management practices or lack of resources to invest on them. This is in line with finding of the Jiji and Vijayan (2012) who pointed out that the predominance of medium to low knowledge level of the poultry farmers in their study indicates insufficient awareness of scientific livestock farming.

Perception on poultry management practices

Distribution of the respondents based on their perception about of poultry management practices is presented in Table 3. As shown in Table 3, majority of the respondents in the study area found training on different poultry farming practices to be relevant in enhancing their poultry production. However, training on feeding and feeds formulation ($\bar{x}$ = 4.83), keeping of vital records ($\bar{x}$ = 4.78) and culling ($\bar{X}$ = 4.10) ranked 1st, 2nd and 3rd, respectively among the poultry management practices. This implies that there exist variations in poultry farmers' perception on different poultry management practices training received since they perceived all the training as relevant. It is noteworthy that

in every poultry enterprise, bulk expenses are incurred on feeding alone. Thus, training on how to manage feeding and feed formulation in order to reduce cost will be considered relevant to the poultry farmers. This is in agreement with the finding of Razzaq *et al.* (2011) who reported that poultry farmers in their study area had positive perception on different aspects of poultry management practices training received. Baliyan and Marumo (2016) added that poultry farmers need skills for daily inspection and sanitation of the farm, proper feeding management of resources and keeping records of farm activities.

Factors affecting income of poultry farmers

Result of the ordinary least square (OLS) regression analysis on the factors affecting respondents' income from poultry farming is presented in Table 4. The OLS result revealed R^2 of 0.876 which implies that 87.6% of the factors affecting the poultry farmers' income are explained by the explanatory variable included in the model, while the remaining 12.4% could be due to other variables not included in the model. The model has an F–value of 94.316 which is large and statistically significant at 1% level of probability, implying the goodness of fit of the overall model. Out of the nine variables included in the model, four variables such as cost of medication/vaccine, quantity of feed, depreciation on capital and access to credit were found to be statistically significant at 1% and 5% level of probability, respectively. Cost of medication/vaccines had t-value of -3.395 implying a negatively significant and inverse relationship with income of the poultry farmers at 1% probability level. This means that a unit increase in cost of medication/vaccine will lead to a decrease in income of the poultry farmers and vice versa. Quantity of feeds used in poultry production had t-value of -11.582 implying a negatively significant and inverse relationship with income of the poultry farmers at 1% probability level. This means that a unit increase in

quantity of feeds will lead to a decrease in income of the poultry farmers and vice versa. However, depreciation on capital which is fixed assets in poultry production had t-value of 2.543 implying a positively significant and direct relationship with income of the poultry farmers at 1% probability level. This means that a unit increase in depreciable assets will lead to an increase in income of the poultry farmers and vice versa. This could be due to the fact fixed assets are not consumed in course of poultry production but could be intensively utilized to generate an increased revenue to the poultry farmers. Lastly, amount of credit accessed by the poultry farmers had t-value of 2.218 implying a positively significant and direct relationship with income of the poultry farmers at 5% probability level. This means that a unit increase in amount of credit accessed will lead to an increase in income of the poultry farmers and vice versa. For instance, amount of credit accessed could lead to expansion of the poultry farm resulting to an increased output and income to the poultry farmers.

Constraints to poultry farming
Distribution of respondents based on the perceived constraints faced in poultry farming in the study area is presented in Tables 5. It shows that availability of market ($\bar{x}$ = 3.93), poor power supply ($\bar{x}$ = 3.63), long distance to poultry farm ($\bar{x}$ = 3.25), poor access to credit ($\bar{x}$ = 3.20), inadequate capital ($\bar{x}$ = 3.13), high mortality rate ($\bar{x}$ = 3.20) and pest and diseases ($\bar{x}$ = 3.08) constitute the serious constraints faced by the poultry farmers, while poor road network ($\bar{x}$ = 2.65), lack of skilled labour ($\bar{x}$ = 2.18) and inadequate extension contact ($\bar{x}$ = 1.85) were not a serious constraints to the poultry farmers in the study area. This is in agreement with the finding of Alabi and Isah (2002) who reported that, depending on the season and the weather, poultry farmers faced different problems ranging from institutional to environmental problems. Rani and Subhadra (2009) in their study reported that poultry farming problems include feeding and management which ranked first followed by problem of healthcare, breeding, housing and marking and finance.

Conclusion and Recommendations
Based on the empirical evidence emanating from the study, it could be concluded that the poultry farmers were young and actively into poultry production, although male were the dominant gender against the *a priori* expectation that poultry farming is inclined towards feminine. They are small–scale poultry farmers with a small household size. The knowledge level of the farmers on improved poultry management practices was found to be high in de–beaking, feeding, vaccination, deworming, watering, transportation and record keeping. Cost of medication /vaccine, quantity of feed, depreciation on capital terms and access to credit were found to positively and significantly influence poultry production, while availability of market, poor power supply and high mortality rate among others constitute the serious constraints faced by the poultry farmers. Based on the findings of this study, the following recommendations are made.

1. Training on different aspect of poultry management practices should be given a top most priority that will enlighten and educated on the importance of poultry management practices. This can be achieved through periodic organization of workshops by the extension agents in collaboration with the relevant stakeholders.
2. Government at various level and other relevant stakeholders should assist in the provision of basic amenities and rural infrastructure especially provision of electricity and good road network that will help to enhance poultry productivity.
3. The rural farmers should initiate a process in form of cooperative

through which poultry famer can easily market their produce, since marketing was identified as one of the serious constraints.

4. More so, financial institution should assist to provide flexible and low interest rate credit to the poultry farmers in order improve their poultry production.

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Table 1: Distribution of the respondents based on socioeconomic characteristics

Variables	Frequency	Percentage	Mean
Age (years)			
< 21	8	6.7	
21 – 30	55	45.8	35
31 – 40	44	36.7	
41 – 50	13	10.8	
Sex			
Male	110	91.7	
Female	10	8.3	
Educational level			
No formal	65	54.2	
Primary	14	11.7	
Secondary	24	20.0	6
Tertiary	4	3.3	
Quranic	13	10.8	
Household Size			
1 – 5	111	92.5	
6 – 10	9	7.3	3
Experience (years)			
1 – 5	4	3.3	
6 – 10	86	71.7	
11 – 15	24	20.0	7
16 – 20	3	2.5	
> 20	3	2.5	
Number of birds			
< 500	37	30.8	
500 – 999	50	41.7	657
1000 – 1999	30	25.0	
> 1999	3	2.5	
Types of birds reared			
Broilers	112	93.3	
Layers	8	6.7	

Table 2: Perception on knowledge level of poultry management practices

Management practices	Weighted Sum	Weighted Mean	Remarks
Vaccination	356	2.97	High
De-worming	326	2.72	High
Culling of sick birds	263	2.19	Low
Feeding regimes / time	345	2.88	High
Watering time	360	3.00	High
Transportation	360	3.00	High
Waste disposing	286	2.38	Low
Egg picking	246	2.05	Low
Record keeping	353	2.94	High
Financial management	350	2.92	High
Packaging & marketing of produce	251	2.09	Low
Medication	350	2.92	High
Bio-security practices	257	2.14	Low
Principle of husbandry	275	2.29	Low

Table 3: Respondents' Perceptions on Poultry Management Practices Training Received

Training received	Weighted sum	Mean	Remarks
Vaccination	435	3.63	Relevant
Deworming	478	3.98	Relevant
De-beaking	469	3.90	Relevant
Culling	492	4.10	Relevant
Feeding and feed formulation	580	4.83	Relevant
Disease/parasites prevention	435	3.63	Relevant
Keeping of vital records	573	4.78	Relevant

Table 4: Regression Estimates of Factors Affecting Income from Poultry Farms

Variables	Coefficient	Standard Error	t - test
Constant	16892.532	37372.858	0.452
Cost of medication/vaccine (X_1)	-1.861	0.548	-3.395***
Quantity of feed (X_2)	-700.517	60.483	-11.582***
Labour usage (X_3)	-22.828	15.711	-1.453
Capital depreciation (X_4)	7.063	2.777	2.543***
Number of birds (X_5)	-138.075	130.877	-1.055
Access to credit (X_6)	0.702	0.316	2.218**
Access to training (X_7)	-4.218	9.696	-0.435
Cooperative (X_8)	-2.808	7.932	-0.354
Extension contact (X_9)	-0.174	1.270	-0.137
R^2	0.876		
Adjusted R^2	0.855		
F – value	94.316		

***significant at 1% and **significant at 5% level of probability

Table 5: Perceived Constraints Faced by the Respondents in Poultry Management

Constraints	Weighted sum	Weighted mean	Remarks
Unavailability of market	472	3.93	Serious
Poor power supply	436	3.63	Serious
Long distance to poultry farm	390	3.25	Serious
Mortality rate	377	3.11	Serious
Lack of skilled labour	262	2.18	Not serious
Pest and disease	370	3.08	Serious
Poor road network	318	2.65	Not serious
Inadequate capital	375	3.13	Serious
Poor access to credit	384	3.20	Serious
Inadequate extension contact	223	1.85	Not serious