Full Length Research Paper

Assessment of Factors Limiting Poultry Production in Benue State, Nigeria: Implications for extension Delivery

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The study assessed factors limiting poultry production in Benue State, Nigeria. Data were collected with the use of structured questionnaire. Ninety respondents were selected using purposive sampling technique. Data were analysed using descriptive statistics such as frequency, percentage, mean scores and inferential statistics such as factor analysis and logit regression model. Results revealed that 57.8% of the respondents were females, 51.1% of the respondents were between 31 and 40 years, 64.4% of the respondents were married, 45.6% of the respondents had an annual income of less than or equal to ₦50000, 57.8% of the respondents had a household size of less than or equal to 5persons, 30.0% were secondary school leavers, and 57.8% had 1-10 years of poultry farming experience. The study also showed that majority (64.2%) of the respondents regularly accessed information through friends/neighbors/relations. The findings further revealed that 86.5% of the farmers adopted vaccination/diseases control and good hygiene technologies respectively. More so, 47.8% of the respondents practiced intensive system of poultry management while 88.6% of the respondents culled sick birds. The major factors limiting poultry production in the study area were lack of technical know-how (0.718), poor means of transportation (0.764), lack of timely information (0.858), inadequate capital (0.428), high cost of feed (0.795), diseases and parasite infestation (0.726) which loaded as technical, labour and input-related constraints. There is a significant relationship between socio-economic characteristics of the respondents and poultry production. The socio economic characteristics are age, sex, household size and income.It was therefore recommended that government should make policies specifically for transformation of the small scale poultry industry. This will assist in reducing the factors limiting poultry production and thereby creating a favourable environment to increase poultry production among small holder poultry farmers.

Keywords: Factors, Limiting, Poultry,production, Extension, delivery

INTRODUCTION

The importance of poultry to the national economy cannot be overemphasized.Poultry production is a very important source of livelihood for most rural communities because it provides ready cash for emergency needs (Food and Agriculture Sector Development Policy, 2002), supplies the fast-growing human population with high quality protein, contributes significantly to food security, poverty alleviation and ecologically sound management of natural resources (Gueye, 2002).The cost of production of cattle, sheep and goat meat is high (Onuekwusi, 2001) and consumer preferences have shifted now for poultry meat (white meat) given the ecological, economic, social and health advantages it has over the other types of meat (red meat). Poultry has become popular industry for the small holders that have great contribution to the economy of the country.The profession has assumed greater importance in improving the employment opportunity and animal food production in Nigeria.

Poultry production is important to the biological, economic and social development needs of the people in any nation (Oladeebo and Ambe-Lamidi, 2007).
However, the contribution of poultry production (meat and eggs) to total livestock output increased from 26% in 1995 to 27% in 1999 with an increase in egg production accounting for about 13% during the period (Ojo, 2003).

The development of the poultry industry has also been described as the fastest means of bridging the protein deficiency gap prevailing in most of the developing countries. The poultry industry, if properly harness can also serve as a source of foreign earnings complementing crude oil which at present constitutes the main source of foreign earnings in Nigeria (Aromolaran*et al.*, 2013). In poultry production small scale poultry production represents one of the few opportunities for saving, investment and security against risks. It accounts for approximately 90% of total poultry production (Branckaert, 1999).

Poultry production in the past was not counted as an important occupation. However, poultry is now the most commercialized (capitalized) of all the Nigerian livestock agriculture. The types of poultry that are commonly reared in Nigeria are chickens, ducks, guinea fowls, turkeys, pigeons and more recently ostriches. Those that are of commercial or economic importance are chicken, guinea fowls and turkeys, amongst which the chickens predominate (Daniel, 2009). In some communities, fowl is used in the past as a means of knowing the time. Nowadays, poultry production has developed and occupies a place of pride among the livestock enterprise due to its rapid monetary turnover (Laseinde, 1994).

Poultry production has long been recognized as one of the quickest ways for a rapid increase in protein supply in the shortest run. Of recent, there has been a recorded improvement in poultry production sub-sector in Nigeria with its share of the Gross Domestic Product (GDP) increasing in absolute terms. Poultry eggs and meat contribution of the Livestock share of the GDP increased from 26% in 1995 to 27% in 1999 (Central Bank of Nigeria, 1999). In 2011 Nigerian hen egg production totaled 636000MT and ranked 19th in the world hen egg production (USDA, 2012).This significant improvement in poultry production has been sustained by availability and use of improved vaccines which curtailed mortality rates in birds, reduction in the tariffs on imported day-old chicks and parent stock and the relative ease of compounding efficient food using easily available local feedstuffs (Afolabi and Ojo, 2000).

Poultry management system in Nigeria is of three types which are intensive, extensive and semi-intensive, they are differentiated on the basis of their flock size, input and output relationship (Sonaiya, 2005). Flock size in intensive production are in thousands, whereas semi-intensive production system flock size range from 50-200 birds and keeping of big flock size is as a result of research development in artificial incubation, nutritional requirement and disease control (Adedeji*et al.*, 2014). Poultry birds mature earlier than most breeds of livestock, they bring economic return within relatively short periods of about 10-12 weeks, poultry eggs and meat play a very important role in bridging the protein gap in Nigeria and they are generally accepted.

Poultry production systems are however influenced by some factors which are; Types of Poultry (Birds), Housing, Socio-economic background of the respondent, Health, disease, Feed source, feeding, Sales and Disposal (Adedeji,et al, 2014).

Statement of the Problem

In 2002 the Federal Government of Nigeria banned the importation of poultry products into the country. This posed a greater pressure and challenge to our local farmers to produce commercially so as to meet the ever-increasing demand of poultry products in our diet. Despite the acknowledged importance of poultry production, Akanni (2007) opined that it is characterized by low production level due to several factors. The result of this is that many of the small-scale poultry farmers are not encouraged to increase their productivity; thereby moving from small-scale production to large scale production which could be detrimental to increase in poultry production. This has resulted in dwindling profits to producers hence many farmers have been forced to fold up.

Studies have been carried out by researchers on major problems associated with raising poultry (Sekoni, 2002; Adebayo and Adeola 2005). Study by Ojo (2003) revealed that, the industry falls short of its aim of self-sufficiency in animal protein production in the country. Zilberman (1985) says that unless an existing technology is fully utilized, benefits from new technology may not be realized thus it is possible to raise output of poultry farmers if new technologies are the targets of farmers.

Although available literature shows that many studies have been done on poultry production, but the attention was more on the economic analysis of poultry farming (e.gUgbome, 2006; Amos, 2006, Bamiro, 2008; Adebiyi, 2000; Ojo, 2003; Adebayo and Adeola, 2005). Some others looked at the profit efficiency in poultry production (Effiong and Onyenweaku, 2006; Oladeebo and Ambe-Lamidi, 2007; Okafor, et. al., 2006). However, little or no known work has been done on the socio economic factors limiting poultry production especially in Benue State. Therefore, this study seeks to fill this research gap by revealing socio economic factors limiting poultry production in Benue State, Nigeria.

Objectives of the Study

The broad objective of the study was to assess factors limiting poultry production in Benue state, Nigeria. The specific objectives were to:
i. describe the socio-economic characteristics of poultry farmers in the study area;

ii. identify sources of information on poultry production in the study area;
iii. ascertain the adoption level of improved poultry innovations by poultry farmers in the study area;
iv. identify the types of poultry production management practices among farmersin the study area; and
v. assess factors limiting poultry production in the study area.
vi. The following hypothesis was empirically stated and tested:
H_{01}: There is no significant relationship between socio-economic characteristics of the respondents and poultry production

METHODOLOGY

The study was carried out in Benue State, Nigeria. It had a population of about 4, 253,641 in 2006. Benue falls within7 ^{0}47 ^{1} ,10^{0}0 E. and Latitude 6 ^{0}25 ^{1}, 8 ^{0}8 ^{1}N . Two local Government Areas were purposively selected from the three agricultural zones in the State based on their involvement in poultry Production. Secondly from each Local Government area two communities were randomly selected. Thirdly, 9 farmers were randomly selected from each of the communities giving a sample size of 90 farmers. Structured Questionnaire was administered to these poultry farmers. The data were analyzed using descriptive statistics such as percentages, mean and inferential statistics,thelogit regression model.

Model Specification

Logistic Regression Model

The logistic regression analytical technique was used in this study for testing the null hypothesis. The logistic regression model is appropriate because the dependent variable is qualitative in nature and will hence measure at two levels as dummy variable. The logistic regression model is a binary choice technique, which allows for prediction of effects of independent variables on the dependent variable. The logistic regression model is chosen as the best approach used for handling binary dependent variable. In estimable form, the model is expressed as;
$$Log\ Y = B_0 + B_1 X_1 + B_2 X_2 + B_3 X_3 + B_4 X_4 + B_5 X_5 -- ------ +B_8 X_8 + u_i$$
The unknown parameters β_i are usually estimated by maximum likelihood. Thus, model is explicitly expressed as:
$$Log\ Y = B_0 + B_1 X_1 + B_2 X_2 + B_3 X_3 + B_4 X_4 + B_5 X_5 -- ------ +B_8 X_8 + u_i$$
Where,
Y = poultry production (number of birds)
X_1 = Age (years)
X_2 = Income (estimated annual income)

X_3 = Marital status (1, if married and 0, others)
X_4 = Religion (1, Christianity and 0, otherwise)
X_5 = Educational level (Number of years spent acquiring formal education).
X_6 = Sex: (1, if male and 0 if female)
X_7 = Household size
β_0 = Constant term
$\beta_{i\ (i\ =\ 1,2.....8)}$ parameters to be estimated
U_i = Independent distributed error term.

RESULTS AND DISCUSSION

Socio-Economic Characteristics of Poultry Farmers

The result of the socio-economic characteristics of poultry farmers in the study area is presented in Table 1. The result on sex distribution of the respondents shows that majority (57.8%) were female while (42.2%) of the respondents were male. This shows that females participated more than males in poultry production in the study area. This agrees with the findings of Moreki (2016) and (Onyangoet.al., (2016) who reported that majority of poultry farmers were females. The high percentage of female participation in poultry production was an indication that most women preferred "indoor business" while at the sametime caring for their family.

The result further showed that the age range of 31-40 years (51.1%) were the most engaged in poultry production in the study area. The age bracket of 41-50 (30.0%) years also had a significant number of poultry farmers in the study while, the age range above 61 years (2.2%) were the lowest producers of poultry in the study area. This implies that small scale poultry farmers are in their prime and active age of production. This is consistent with the findings of Awansia (2015) who reported that the average age of poultry farmers in Nigeria is estimated to be 36 years. The distribution of respondents according to the marital status showed that majority of poultry farmers (64.4%) were married while 18.9% were singles. 13.3% and 3.3% were widows and divorced respectively. This is in line with Oyesola*et al.* (2011) who reported that majority of poultry farmers in Ekiti State were married.

The result also revealed that (30.0%) of poultry famers in the study area had secondary education, 22.5% had tertiary education, 22.6% had primary education while 18.9% of the respondents had no formal education. This implies that most poultry farmers in the study area were educated. This is in line with the findings of Adedeji*et al.* (2013) and Awansia(2013) who observed that most poultry farmers are educated ranging from primary education to tertiary education.

The distribution of respondents according to annual income showed that most (45.6%) poultry farmers in the study area had an annual income of less than or equal to ₦50,000, 18.9% of the respondents had annual income above ₦300,001 while 15.6% of the respondents had annual in the range of ₦50,001-₦100,000. This implies that poultry farmers in the area

Table 1: Socio–Economic Characteristic of Poultry Farmers (n=90)

Socio – economic characteristics	Frequency (f)	Percentage (%)	Mean
Sex			
Male	38	42.2	
Female	52	57.8	
Total	**90**	**100.0**	
Age (years)			
21-30	5	5.6	
31-40	46	51.1	
41-50	27	30.0	42.06
51-60	10	11.1	
Above 61	2	2.2	
Total	**90**	**100.0**	
Marital status			
Married	58	64.4	
Single	17	18.9	
Widows	12	13.3	
Divorced	3	3.3	
Total	**90**	**100.0**	
Household size			
≤ 5	52	57.8	
6-10	36	40.0	5.40
11-15	2	2.2	
Total	**90**	**100.0**	
Level of Education			
Tertiary	23	25.5	
Secondary education	27	30.0	9.16
Primary education	23	25.6	
Non formal education	17	18.9	
Total	**90**	**100.0**	
Annual Income			
≤50,000	41	45.6	
50, 000 – 100, 000	14	15.6	
100,001 – 150, 000	8	8.9	195,900
150, 001 – 200,000	6	6.7	
200,001 – 300,000	4	4.4	
Above 300, 001	17	18.9	
Total	**90**	**100.0**	
Extension Contact			
No	80	88.9	
Yes	10	11.1	
Total	**90**	**100**	
Number of Extension Contacts			
0	80	88.9	
1	6	6.7	
2	2	2.2	
3	2	2.2	
Total	**90**	**100**	
Membership of farm organization			
No	90	100	
Yes	0	0	
Total	**90**	**100**	
Major Occupation			
Civil servant	22	24.4	
Farming	51	61.1	
Teaching	4	4.4	
Students	7	7.8	
Petty trading	2	2.2	
Total	**90**	**100**	
Farming Experience			
≤10	52	57.8	5.06
11-15	34	37.8	
16-20	2	2.2	
Total	**90**	**100**	
No of Birds			
≤50	52	57.8	37.94
51-100	10	11.2	
Above 100	28	31.1	
Total	**90**	**100**	

Source: Field survey, 2018

had low income level which could affect their level of poultry production.The results on major occupation of the respondents revealed that majority (61.1%) were farmers, 24.4% were civil servants, 4.4% were teachers, 7.8% were students while 2.2% of the respondents were petty traders. This shows that poultry farmers in the study area were productively engaged in one form of occupation or the other.

The results on household size of the respondents indicated that majority (57.8%) of the respondents had a household size of less than or equal to five (5) family members while 40.0% had a household size of 6-10 persons. This suggests that family members may be used in poultry production activities if properly utilized in the study area. This agrees withAwansia(2015),Kughur*et al.* (2014), Ezeh et al.(2012) who pointed out that majority of the poultry farmers in Nigeria have household sizes ranging from 6-10 people.

The result further showed that majority (57.8%) of poultry farmers in the study area had less than or equal to 50 birds, 11.2% of the respondents had 51-100 birds while 31.3% of the respondents had above 100 birds. This implies that majority of poultry farmers in the study area are small-scale poultry farmers. The distribution of respondents according to farming experience shows that majority (57.8%) of the respondents had farming experience less than or equal to 10 years, 37.8% of the respondents had farming experience between 10-15 years while 2.2% of the respondents had farming experience between 16-20 years. This implies that most poultry farmers in the study area have been involved in poultry farming for a relatively short period of time. This result corresponds withAwansia(2015), Bello et al.(2011) who stressed that most poultry farmers have farming experience of 1-10 years.

With respect to number of extension visit, the result shows that majority (88.9%) of the respondents were not visited by extension agents while 11.1% of the respondents were visited by extension agents in the study area. This indicates that poultry farmers in the study area were rarely visited by extension agents in a year. This may affect their access to information and supply of farming inputs. This result agrees with Ochieng*et al.* (2013) who asserted that extension visits to poultry farmers in Nigeria has been low.The result shows that all (100%) of the respondents do not belong to any farming organization. This shows that there is less interaction with other poultry farmers in the area. This result disagrees with Adedeji*et al.* (2014) who observed that majority of farmers belong to poultry associations.

Sources of Information on Poultry Production

The result on the sources of information on poultry management practices in the study area is presented in Table 2. The result revealed that majority (88.9%) of the respondents never had contact with extension agents, majority (62.2%) of the respondents sometimes accessed information through contact farmers, most (46.7%) of the respondents sometimes get information through opinion leaders, majority (64.2%) of the respondents regularly accessed information through Friends/Neighbors/Relations. This can be attributed to the fact that farmers meet with their friends/neighbors and relations mostly in the evening after the day's work and contact farmers live together with the other farmers in the same vicinity therefore, information sharing is easier. This is in line with the findings of Kughur*et al.* (2014) who pointed out that the sources of information on poultry management available to farmers include contact with extension agents, other farmers, friends and relatives. The result also agrees with Bamberry*et al.*, (1997) who reported that farmers prefer to obtain information and learn from people.

The result further shows that some (48.9%) of the respondent regularly accessed information through radio, (45.6%) of the respondent sometimes have information through Television. This result is consistent with Ramchandani (2004), Jiriko et al.,(2016) who found that radio and television provide means for dissemination of agricultural information and appealing messages.

The result also shows that majority (73.3%) of the respondents never have information through extension bulletin/newsletter, majority (76.7%) of the respondents never got information through poster, majority (85.6%) of the respondents never accessed information through handbills, majority (61.1%) of the respondents never had information through telephone. This implies that farmers need more information from these sources. This agrees with Mgbada (2006) who found that access to adequate information is very vital to increased agricultural productivity.The result also shows that majority (46.7%) of the respondents never had information through internet. This implies that there is a need to exploit interactive role of internet and internet facility for extension works. This finding agrees with Kenny (2002) who reported that despite the importance of internet technology there are a lot of obstacle to the users especially network.

Table 2: Sources of Information on Poultry Production (n = 90)

Sources	Frequency (f)	Percentage (%)	Mean (x)
Extension agents			
Never	80	88.9	
Sometimes	10	11.1	0.1
Regularly	0	0	
Contact farmers			
Never	19	21.1	
Sometimes	56	62.2	1.0
Regularly	15	16.5	
Opinion leaders			
Never	37	41.1	
Sometimes	42	46.7	0.7
Regularly	11	12.2	
Friends/Neighbours/Relations			
Never	5	5.6	
Sometimes	27	30.0	1.6
Regularly	58	64.2	
Radio			
Never	15	16.7	
Sometimes	31	34.4	1.3
Regularly	44	48.9	
Television			
Never	29	32.2	
Sometimes	41	45.6	0.9
Regularly	20	22.2	
Extension bulletin/Newsletter			
Never	66	73.3	
Sometimes	17	18.9	0.3
Regularly	7	7.8	
Poster			
Never	69	76.7	
Sometimes	18	20.0	0.3
Regularly	3	3.3	
Handbills			
Never	77	85.6	
Sometimes	12	13.3	0.2
Regularly	1	1.1	
Telephone			
Never	55	61.1	
Sometimes	15	16.7	0.6
Regularly	20	22.2	
Internet			
Never	42	46.7	
Sometimes	26	29.2	0.8
Regularly	22	24.5	
Total	**90**	**100**	

Source: Field survey, 2018

Distribution of respondents according to theuse of ImprovedPoultry Practices by Poultry Farmers

The result of the adoption level of improved poultry innovations is presented in Table 3. The result shows high percent adoption of the following improved poultry innovations by farmers, vaccination (86.5%), good hygiene (86.5%) and record keeping (54.4%). The adoption of these practices could be due to awareness, knowledge and favourable condition of respondents to maintain poultry production. This is in line with Kurghur*et al.* (2014) who observed that most poultry farmers in Nigeria are willing to adopt improved poultry production practices especially those on vaccination, good hygiene and de-beaking. A farmer's ability and willingness to adopt improved production practices is crucial in production as it enhances the productivity of the farmer. The result however shows low percent adoption of the following improved poultry innovations by farmers, debeaking (40.5%) and use of different exotic breeds (40.5%). The low adoption could be attributed to individual behavior lack of technical skill(s)required or due to strenuous nature of suchpractices.

Table 3. Improved Poultry Practices used by Poultry Farmers (n = 90)

Adoption Level	Frequency (f) *	Percentage of cases (%)
Vaccination	64	86.5
Good hygiene	64	86.5
Debeaking	30	40.5
Records keeping	41	55.4
Use of different exotic breeds	30	40.5
Others	31	41.9
Total	**260**	**351.4**

*Multiple responses

Source: Field Survey, 2018

Type of Poultry Management System Practised by Farmers

The result of the type of poultry management system among farmers in the study area is presented in Table 4. The result revealed that majority (47.8%) of the respondents practiced intensive system of poultry management, 33.3% of the respondents practiced free range (extensive) system of poultry management while 18.9% of the respondents practiced semi-intensive system of poultry management in the study area. This implies that the use of intensive system of poultry production is generally more prevalent in the study area than the extensive system and semi-intensive systems of poultry management. This result however disagrees with Ochieng*et al.* (2013) who observed that most poultry producers in Nigeria practiced free range (extensive) system of poultry management.

Table 4: Type of Poultry Management System

Management System	Frequency (f)	Percentage (%)
Intensive	43	47.8
Semi-intensive	17	18.9
Free range (extensive)	30	33.3
Total	**90**	**100.0**

Source: Field survey, 2018

Type of Poultry Management Practices among Farmers

The result of the type of poultry management practice among farmers in the study area is presented in Table 5.The result revealed that majority (88.6%) of the respondents cull sick birds in the study area. The result further revealed that most (77.2%) of the respondents carry out proper sanitation, 55.4% of the respondents keep records of their day to day activities on the poultry farm, 59.5% of the respondents provide feed adlibitum for the birds. This agrees with the findings of Adedeji*et al.* (2014) who opined that vaccination, adequate feeding, culling amongst others are the predominant poultry management practices in Nigeria.However, the study showed that debeaking (30.4%), brooding (48.1%) and Provision of heat for warmth (49.4%) were not management practices commonly in use in the study area.

Table 5: Type of Poultry Management Practices among Farmers (n = 90)

Management Practices Used	Frequency (f) *	Percentage of cases (%)
Culling	70	88.6
Proper sanitation	61	77.2
Records keeping	43	55.4
Debeaking	24	30.4
Brooding	38	48.1
Feeding adlibitum	47	59.5
Provision of heat for warmth	39	49.4
Total	**322**	**407.6**

*Multiple responses
Source: Field Survey, 2018

Factors Limiting Poultry Production among Smallholder Farmers

 The result in Table 6 is factors analysis of constraints to poultry production management practices among small-scale farmers in the study area. The factors were named based on item loadings. Factor 1, 2 and 3 were named technical ,labour and input-related constraints respectively. Constraints that loaded under factor 1 include lack of technical knowhow (0.718), poor market networks (0.769), extremes of weather (0.487), poor means of transportation (0.764), lack of timely information (0.858), lack of infrastructure (0.819) and poor productivity (0.456) were shown to be the technical factors constraining the poultry production management practices among small-scale farmers in the study area. This is consistent with the findings of Kughur*et al*. (2014) who pointed out that the major problems faced by smallholder poultry farmers in Nigeria include high prevalence of diseases, inadequate capital, high cost of feeds, bad quality of water, poor marketing, theft, inadequate space and poor means of transportation.

   Furthermore, the result revealed that high cost of feed (0.795), high cost of vaccines (0.624), high mortality rate (0.520) and inadequate capital (0.428) loaded under factor 2 and were shown to be labour factors constraining the poultry production management practices in the study area. This is in line with the findings of Ojo (2003) who posit that the problems confronting the poultry industry in Nigeria include poor chick quality, poor and low performing breeds, inadequate access to and high cost of veterinary services, feeding and management problems and lack of capital.

   Finally, diseases and parasite infestation (0.726) theft and predators (0.618) loaded under factor 3 and were shown to be input-related factors constraining the poultry production management practices among small-scale farmers in the study area. This is in consonance with the findings of Onuk (2017) who observed that Sources of economic losses in poultry business include lack of technical know-how, poor quality feed, poor housing, mismanagement and diseases outbreak which had continued to receive tremendous attention.

Table 6: Factor Analysis of Constraints to Poultry Production among Small-Scale Farmers in the Study Area (n = 90)

Factors	Factor 1	Factor 2	Factor 3
High mortality rate	0.159	0.520*	0.469
High cost of vaccines	0.115	0.624*	0.448
Diseases and parasite infestation	0.039	0.188	0.726*
Theft and predators	0.019	0.099	0.618*
Inadequate capital	0.053	0.428*	0.320
Lack of technical knowhow	0.718*	0.012	0.032
Poor market networks	0.769*	0.103	-0.013
Extremes of weather	0.497*	0.048	0.069
Transportation difficulty	0.764*	0.101	-0.037
Lack of timely information	0.858*	0.063	0.235
Lack of infrastructure	0.819*	0.162	0.007
Poor productivity	0.456*	0.428	0.123
High cost of feed	0.055	0.795*	0.020

Source: Field survey, 2018

0.3 Significant levels (all values less than 0.3 are considered not significant)
Method: Varimax Rotation with Kaiser Normalization

Effects of Socio-Economic Characteristics of Respondents on Poultry Production

   To determine the effect of socio-economic characteristics on poultry production management Practices, the logit regression model was carried out and the result presented in Table 7.

Table 7: Estimate of Logit Regression of Socio-Economic Characteristics of Respondents on Production

Variables	B	S.E	Wald	Df	Sig	Exp (B)
Age	-5.302	3.141	8.189	1	0.009*	0.005
Sex	1.266	0.624	4.109	1	0.043**	3.545
Marital Status	0.042	0.644	0.004	1	0.949	1.042
Education	-0.026	0.052	0.248	1	0.619	0.974
Household size	0.445	0.136	10.701	1	0.001*	1.560
Farming Experience	-0.226	0.138	2.694	1	0.101	0.798
Number of Birds	0.001	0.001	0.227	1	0.634	1.001
Annual Income	0.000	0.000	4.447	1	0.035**	1.000
Constant	-2.538	1.723	2.168	1	0.141	0.079

Cox & Snell R^2 = 0.471
Chi-sq = 28.458
Nagelkerke R^2 = 0.384
 -2 loglikelihood = 81.489[a]

   Source: Field survey, 2018.
   T–ratio *, ** significant at 1% and 5% level of significance respectively

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The result showed that the Chi-square statistics (28.458) is significant at 1% level of probability with sig value = 0.000 indicating that the variables tested affected poultry production significantly and positively. The result shows that age (p–value = 0.009), annual income (p–value = 0.035), sex (p–value = 0.043) and household size (p–value = 0.001) were all significant at 5% and they all had significant effect on poultry production among small-scale farmers in the study area.

Age (W = 8.189) significantly and positively affected poultry production at 1% level of significance (sig = 0.009). This implies that the factors limiting poultry production are better managed by respondents of higher age probably due to their greater understanding and experience as matured adults. Sex (W = 4.109) significantly and positively affected poultry production at 5% level of significance (sig = 0.043).

Household size (W = 10.701) significantly and positively affected poultry production at 1% level of significance (sig = 0.001). This implies that as farmers' household size increases, poultry production increases.Annual income (W = 4.447) significantly and positively affected poultry production at 5% level of significance (sig = 0.035). This implies that as farmers' income level increases, factors limiting poultry production are ameliorated.The Chi-square statistics (x^2) value of the logit regression model is 28.485 and was significant at 1%. This is implies that the socio-economic characteristics of the respondents have significant effect on poultry production in the study area.

The Cox and Snell R^2 value of the logit regression model indicates that about 47% of the variations of the dependents variables were explained by the logit regression model. The result also shows that the Nagelkerke R^2 for regression is 0.384 indicating that the variables tested accounted for about 38% of the variation of the dependent variables. The remaining variation is attributed to the error term.Based on the chi – square and R^2 result shown above, which are statistically significant, we reject the null hypothesis which stated that socio-economic characteristics of the respondents have no significant effect on poultry production in the study area and accept the alternative hypothesis.These results corroborate the findings of Adebayo and Adeola (2005), Onuk et al, (2017) who posited that some socio- economic factors affected poultry production.

Implications for sustainable poultry production.

Findings from this study indicate that more women are in poultry production. The respondents adopted some innovations; however, they had some constraints which included poor network market, extreme weather conditions, high mortality rate, high cost of vaccines, diseases and parasite infestations, lack of technical know - how, lack of timely information, infrastructure and high cost of feed

The implication is that more men should be encouraged to participate in poultry production this can be achieved through the creation of the awareness of benefits of poultry production through the use of trained extension agents trained in poultry, use of radio, television sets, friends and relatives and telephones. Constraints affecting poultry production can be addressed throughdissemination of relevant information to farmers. This can be realized through the use of trained extension agents to also train the farmers on how to ameliorate these constraints.

CONCLUSIONAND RECOMMENDATIONS

Conclusion

In this study, attempt has been made to identify some factors/constraints limiting poultry production in Benue state, Nigeria. The study revealed that age distribution of the respondents fell within the productive age of 31-40 years. The literacy level of respondents in the study area is generally high. Meanwhile, some of the daily routine management practices that could promote hygiene and increase poultry productivity were ignored by poultry farmers in the study area. The study also pointed out that vaccination/disease control was the practice mostly adopted by poultry farmers to control the high prevalence of diseases. Information on improved poultry practices were obtained regularly from friends, neighbours and fellow farmers. The major factors limiting poultry production in the study area were identified as lack of technical know-how, poor means of transportation, lack of timely information, inadequate capital, high cost of feed, diseases and parasite infestation which loaded as technical constraints, labour constraints and input-related constraints. The study further showed that there is a significant relationship between socio-economic characteristics of the respondents and poultry production in the study area. They are age, sex, household size and income.

Recommendations

Based on findings of this study, the following recommendations were advanced towards alleviating the problems being encountered by poultry farmers and increase their productivity.
1. Government should make policies specifically for transformation of the small scale poultry industry. This will assist in removing the challenges of small poultry farmers and thereby creating a favourable environment to increase poultry production among small holder poultry farmers.
2. Extension activities should focus on training of the farmers on the improved production management to enable them use the available resources efficiently and increase productivity.
3. Both the private and public sectors should make vaccines and veterinary services available to the rural

Farmers and the media particularly radio should produce and broadcast more programmes on poultry rearing.

4. Farmers should be encouraged to form cooperative societies or join the existing one to enhance their capacity to procure the necessary machineries and input under their cooperatives organizations.

5. Capacity training of poultry farmers to enable them to cope with the challenges of modern poultry farming and commercialization of small scale poultry production should be carried out.

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