Original Research Article

Economic analysis of layers poultry production in Anambra State, Nigeria

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The study examined the economic analysis of layers poultry production in Anambra state, Nigeria. Primary data was collected using a well-structured questionnaire which was administered to sampled layers poultry farmers in the study areas. Data collected were analyzed using descriptive statistic, enterprise budgeting techniques and multiple regression analysis. Gender distribution of the respondents shows that 54% of farmers are males while 46% are females. More respondents are between the ages of 31–40years and have household size of 4-6. Farming experience showed that 131 respondents representing 62% had engaged in poultry egg production between 11-20yrs. The feeding cost which is 42.82% of the total cost constituted the largest share of the cost of production. The Profitability Index (PI) was 0.32 which means that for every naira earned as revenue, 0.32kobo was returned to the farmer as net income. An R^2 of .7530 explains 75.3% of the variability of the dependent variable (Net income realized) was accounted for by the predictor variables; hence, the remaining 24.7% was due to random disturbance. Out of the ten parameters included in the model, the t- values of flock size (3.88), farming experience (1.82), household size (-1.13) and farming status (1.74) exerted statistic and significant influences on the amount of income realized at 5% level of probability. It is recommended that credit facilities for Poultry financing should be made available in order to boost poultry production in Nigeria since the result indicates that poultry production is a viable venture in Nigeria.

Keywords: Cost, flock size, profitability, analysis

INTRODUCTION

In Nigeria, the agricultural sector contributes about 42% of the gross domestic product (GDP) and provides employment to more than 70% of the people especially those in the rural sector (Central Bank of Nigeria (CBN, 2018). It has been one of the driving force behind the country's economic growth (NBS 2014), and therefore fundamental to cutting hunger and reduction of the burden of food import (Peacock, 2010). The sector is composed of crops, livestock, fisheries, and forestry sub-sectors and in Nigeria, the livestock sub-sector is the second largest sector constituting 17% of the agricultural share of the GDP, after 80% contribution of the crop sub-sector (NRS, 2018). Livestock production is an important agricultural sub-sector of the Nigerian economy considering its contributions in food production, increasing external trade and reducing unemployment in rural areas, and creating new employment opportunities in the industrial and service sectors (Olorunwa, 2018). Its importance in the provision of animal protein in the diet of the people cannot be over emphasized.

Poultry is a sub-sector in the livestock industry constituting a major component of the agricultural

economy. Among livestock based vocations, it occupies a pivotal position because of its enormous potentials to bring about rapid economic growth (Odimegwe et al. (2015) and has become apparent as the most vibrant and fastest growing division in the livestock sub-sector. Poultry refers to a wide variety of winged animal species which are nutritionally and economically useful to man (Adesiyan, 2014) and these include domestic fowl, Turkey, Guinea fowls, Duck and Geese, Quails, Pheasants, Ostriches, Pigeons and Doves. The domestic fowl is commonly called chicken reared as either broiler for meat and Layers for eggs and meat when the chicken is culled**.**

According to FAO Report (2010), poultry comes fourth among sources of animal proteins for human consumption in Nigeria and contributes about 27% of the national meat production. The egg as a major product of poultry is one of the most nutritious and complete food known to man. It is the cheapest per unit source of animal protein and readily affordable by the populace than other sources of animal protein (Olatunji and Abesogun, 2012). Egg is a rich source of protein, lipids, vitamins, phosphorus and other nutritionally important Substances.   They are easily digestible and are a source of raw materials for agro-allied Industries that utilize them in the production of food, drinks, baking, and confectionary and in the propagation of viruses in vaccine production. Usually the price of egg is determined by the market demand and supply overtime.

Egg is a highly perishable product that needs more efficient production and marketing activities. Its production, handling, transportation, distribution and marketing require employing a large number of people; therefore the product has great poverty alleviation tendencies. Moreover, Low Animal protein intake has remained a major human nutritional problem in Nigeria, especially for low income and non-wage earners (Okpeke and Ellah, 2018). Recently, the performance of the poultry industry in Nigeria has fallen below expectation due to high cost of feed arising from fluctuations in feed supplies, rising prices of ingredients, poor feed ingredients qualities and inefficiency in production (Olatunji and Ifeanyi-Obi, 2011). Ume et al. (2016) reported that the animal protein supply in Nigerian diet especially in the rural areas have remained inadequate. Secondly, the Nigerian Bureau of Statistics, NBS, (2018) reported that the livestock subsector under Agriculture Gross Domestic Product (GDP) has been experiencing a decreasing growth from 2.94% in 2016, to 1.61% in 2017 and 0.33% in 2018. Thirdly, World Bank (2020) reported that employment in agriculture (% of total employment) in Nigeria has been in downward growth from 42.22% in 2008 up to36.81% in 2018 (World Bank, 2019). To add to this is the high rate of unemployment in the country which has continued to surge; increasing from 7.54% in the first quarter of 2015 to 23.13% (39.14 million people) in the third quarter of 2018 (NBS, 2018)

Successive governments have come up with programmes aimed at reviving the sector. Such programmes include farm input subsidies and disbursement of credit facilities to farmers. According to Aji, (2011), the early government agricultural programmes emphasized poultry farming and contained substantial subsidies in the procurement of day-old chicks and feeds. This attracted millions of peasant farmers, civil servants, professionals and entrepreneurs into poultry farming at small, medium and large scales. The programmes also include placement of embargoes and high tariffs on the importation of some agricultural products. Aji (2011) also reported that the embargo placed on the importation of poultry products in 2002 by the Federal Government was aimed at encouraging local production. Nonetheless, farmer's productivity is still low due to a number of challenges militating against their production.

Presently, a major challenge faced by poultry farmers is high cost of input resources which may likely impede efficient and sustainable production required for increasing productivity within the poultry industry in the nearest future. FAO (2014) reported that small-scale commercial poultry often produced with lower efficiency and constraints to securing quality inputs (chicks and feed) and marketing products. Consequently, one of the surest ways of liberating the farmers especially the small scale farmers that constitute the bulk of the farming population is through enhancing the efficiency of their use of input resources. Based on the above backdrop, the study examined the socio-economic characteristics of the layer poultry farmers in the study area, analyzed cost and returns of farmers, examined the influence of socio-economic characteristics on net farm income and identified the constraints to poultry egg production in the study area.

METHODOLOGY

Study Area

The study was carried out in Anambra State. The State is made up of twenty one (21) Local Government Areas and Four (4) Agricultural Zones (AZs).

Sample size and sampling Technique

The study population comprises all poultry Farmers who are into egg production in the four Agricultural Zones (AZs) of the state namely Onitsha, Aguata, Awka and Anambra. Multistage sampling techniques were used to select the respondents for the study. The first stage was the purposive selection of the four agricultural zones in the state since poultry production was spread round the four Agricultural Zone (ADP bulletin, 2018). In stage two, two Local Government Areas known for poultry production were purposively selected from each of the four zones in the state to arrive at eight (8) LGAs. ln stage III, a random selection of three Communities across the eight (8) selected Local Government Areas making it a total number of 24 communities. The fourth stage was random sampling of 10 layer poultry farmers from each of the 24 Communities

giving a sample size of 240 respondents.

Data collection

Primary data used for the study was collected using well-structured questionnaire which was administered to sampled layer poultry farmers in the study areas. 240 copies of questionnaire were administered to the farmers with the help of trained enumerators while 210 copies of the returned questionnaire were found useful and thereafter utilized to collate data for analyses.

The questionnaire was designed to collect information on the following:

i.   The socio-economic characteristics of the farmer which include age, gender, educational level, marital status, household size, farming experience and extension visits, farming status, household size, access to loan/credit, flock size and cost of input

ii.   Cost and returns of layer poultry production ;

iii.   Constraints to layer poultry production in the area.

Data Analysis

In analyzing the data, descriptive statistical tools such as means, frequency counts, and percentages were used to achieve **objective one; objective two;** was achieved using the enterprise budgeting techniques; Gross margin, Net-farm income as used by Ugwumba and Okeke (2012) and profitability ratios.

The methods are mathematically given as:

i.   Gross Margin = Total Revenue – Total Variable Cost

ii.   Net Farm Income = Total Revenue - Total Cost or Gross Margin – Total Fixed Cost

Where:

Total Cost (₦) = Total Variable Cost + Total Fixed Cost

Gross Margin (₦) = Total Revenue – Total Variable Cost

iii.   Return on Investment (ROI)

$$\frac{\text{Total Revenue}}{\text{Total Cost}}$$

iv.   Net return investment

$$\frac{\text{Net Farm Income}}{\text{Total Cost}}$$

v.   Gross Ratio

$$\frac{\text{Total cost}}{\text{Total Revenue}}$$

vi.   Profitability Index (PI)

$$\frac{\text{Net Farm Income}}{\text{Total Revenue}}$$

Determination of Fixed costs

Depreciation on capital (machines, equipment and buildings) items was obtained from the initial costs and useful lives of such fixed items. Annual depreciation values of assets were calculated using straight line method of depreciation. The method is given as

$$D = \frac{C-S}{L}$$

Where:

D= Annual depreciation (₦)

C=Cost of fixed Assets (₦)

S=Scrap salvage value (₦)

L= Useful lifespan (years)

Objective three; was realized using Multiple Regression Analysis

The implicit form of the multiple regression model employed for the analysis is given as:

NET FARM INCOME = f (GENDER, AGE, EDUCATIONAL ATTAINMENT, EXPERIENCE, FLOCK SIZE, MEMBERSHIP OF FARMERS SOCIETY, MARITAL STATUS, EXTENSION CONTACT, FARMING STATUS, HOUSEHOLD SIZE)

Where:

NET FARM INCOME = the amount of Profit attained (₦)

GENDER= this is measured as dummy variables, 1 for male and 2 for female.

AGE= Number of years

EDUCATIONAL ATTAINMENT = Years of formal education.

EXPERIENCE= Years of experience in poultry production.

FLOCK SIZE = Number

MEMBERSHIP OF FARMERS SOCIETY = Number.

MARITAL STATUS = If married = 2, otherwise = 1

EXTENSION CONTACT = Total number of visits/contacts within the period of production

FARMING STATUS =   2 if the farmer is a full time farmer and 1, if otherwise.

HOUSEHOLD SIZE **=** Actual number

e   =   Error term

Bo=   Constant

$\beta_1 – \beta_{12}$ =Coefficients of the parameter estimates

The above model was fitted with the data and tried with four (4) functional forms of the multiple regression models; linear, exponential, semi-log and double log. The equation with the best fit was chosen on the basis of conformity with *a priori* expectations of parameters, statistical as well as econometric criteria such as the magnitude of R^2, the t-values of the estimates and, the number of significant variables in each estimated equation.

Objective four was analyzed using likert scale

A 3-point likert type scale method was used to determine the degree of seriousness of the layer production problems. The response indicating the most serious constraint was given the highest score and was disaggregated as follows:

Table 1. Socio-economic characteristics of Layer Poultry Farmers

S/N	Variables	Frequency (F)	Percentage (%)
1	**Gender**		
	Male	114	54.28
	Female	96	45.72
	TOTAL	**210**	**100.00**
2	**Age (years)**		
	21 - 30	14	6.7
	31 - 40	74	35.2
	41 - 50	68	32.4
	51 - 60	32	15.2
	60 and above	22	10.5
	TOTAL	**210**	**100.00**
3	**Marital Status**		
	Single	11	5.23
	Married	148	70.48
	Widow	41	19.52
	Divorced/Separated	1 0	4.77
	TOTAL	**210**	**100.00**
4	**Household Size**		
	1 – 3	82	39.04
	4 – 6	90	42.85
	7-10	22	10.50
	≤10	16	7.61
	TOTAL	**210**	**100.00**
5	**Farming Experience**		
	1 – 10	15	7.14
	11 – 20	131	62.38
	≤ 21	64	30.48
	TOTAL	**210**	**100.00**
6.	**Educational Level**		
	No formal education	37	17.62
	Primary education (6years)	80	38.09
	Secondary education(12years)	77	36.67
	Tertiary education (16years)	16	7.62
	TOTAL	**210**	**100.00**
7 .	**Extension Visit**		
	No visit	125	59.53
	1-2	78	37.14
	3-4	07	3.33
	≤4	-	
	TOTAL	**210**	**100.00**
8	**Flock Size**		
	≥ 100	66	31.43
	101 – 500	92	43.81
	501 – 1000	62	24.76
	TOTAL	**210**	**100.00**
9	**Membership of farmers association/cooperative society**		
	Yes	120	57.14
	No	90	42.86
	TOTAL	**210**	**100.00**
10	**FARMING STATUS**		
	FULL TIME	142	67.62
	PART-TIME	68	32.38
	TOTAL	**210**	**100.00**

Source: Field Survey, 2020

Very serious = 3, Serious = 2 and Not serious = 1. To make an inferential statement, the calculated mean was compared with the critical mean (2.00). If the calculated mean of a problem is greater than the critical value, then that problem is regarded as serious, otherwise not serious.

RESULT AND DISCUSSION

The Socio-economic characteristics of the Respondents

The socio-economic characteristics of the respondents in the study as highlighted in Table 1 are gender, age, marital status, household size, farming experience, extension visit, flock size, membership of association/cooperatives, and farming status. Table 1 shows that 54% of producers are males while 46% are females. This implies that more males are associated with the business than females. This may be because poultry egg production is a technical and tedious business which requires much labour and expertise. The table shows that 32% of the respondents belong to the active age of 31–40. This is the economically active and productive age bracket (Ebewore, 2010) and in line with Ume et al. (2016) who reported a mean value of 28.4 years on Broiler poultry production by rural women in Imo State. Age is an important factor influencing production. Production declines as one gets older. The result further stated that 70% of producers are married. Single men or women, widows, divorced and separated have 5.2%, 20% and 4.8% respectively. The result further indicates that 43% of the respondents have household size of 4-6, 39% have 1-3 persons, 10% have 7-10 persons while 10 and above have 7.6%. This implies that poultry egg production does not necessarily require a large household size but a size that are technically trained for the business. It is expected that high level of farming experience bears positively on farmer's skill and production. The distribution of respondents on level of farming experience showed that 131 respondents representing 62% had engaged in poultry egg production between 11-20yrs, 64 of them representing 30% had 21 and above years and 15 representing 7.1% .This implies that high level of experience increases efficiency in production. This agrees with Ugwumba and Okeke (2012) that an increase in farming experience leads to an increase in production efficiency

Further analysis of socioeconomic characteristics indicated that 38% of respondents have primary education while 37% have secondary education. 32% have no formal education while 16% have territory education. This shows that the bulk of the respondents have primary and secondary education. This is important because the level of education of the respondents determines the level of adsorption of innovations. The distribution of the respondents according to extension visit showed that 60% of the respondents had no extension visit while 37% and 3.3% had extension visit. The implication of less number having smaller size could be that those engaging in the business must have acquired the business skill formally rather than from extension personnel. Flock size

distribution showed that 44% of the respondents had flock sizes ranging from 100-500 while 31% had 501-100. This implies that poultry egg productions in the area are small scale farmers. The classification here followed that of Olorunsanya (2004) who concluded that a farmer who maintains at least 5000 birds is classified a large scale producer and farmers with between 500 and 4999 birds are medium scale producers, while those with less than 500 birds are said to small scale producers. Further analysis showed that 57% of the respondents belong to association and cooperatives; while 45% do not belong. The implication is that they could easily access financial loans firm financial institutions. On the distribution of the respondents according to farming status, the result indicates that 67% are involved in full time while 32% are involved in part time. This could be as a result of the business being cited in the rural areas.

Cost and return analysis of layer (egg) production in the study area

As indicated in Table 2, the cost and returns analysis indicates that the total revenues of ₦3, 379, 860 was realized by an average layer farmer for one production cycle. These comprise the income realized from the sale of spent (culled) layers, eggs and droppings. The result also shows that an average poultry farmer invested ₦2, 297, 684 as total costs of production for the enterprise per cycle. These consist of both total variable cost and total fixed cost. The total variable costs (₦1, 901, 520) accounted for 82.75% of the total cost of production and the variable expenses include the cost of stocking, feeding, labour, medication, utility and other costs. The feeding cost of ₦ 984,050 constituted the largest share of the total costs with 42.82% of the total cost. This agrees with the findings of Bariwa and Fabode (2019) that feed cost is the major important cost item associated with poultry production. Consequently, Busari and Okanlawon (2015) are of the opinion that the increased cost of poultry feed could be a result of increase in the cost of Maize, Soybean meal, Groundnut and scarcity of Wheat offal. Cost of feed was followed by cost of medication (₦267, 780) and cost of labour (₦ 260, 480) accounting for 11.65% and 11.33% of the total cost of production respectively. Cost of the day old chicks was ₦ 174, 710 and this account for 7.60% of the total cost. Cost of water was ₦ 65,000. Cost of lighting, warming and fuel for the enterprises was ₦ 38,000 while cost of other utilities was ₦ 93,000. The fixed costs (₦ 396, 164) accounted for 17.2% of total cost.

The Gross margin of the enterprise for one production cycle was ₦1,478,340 while the Net farm income realized was ₦1, 082, 176. The Return on Investment was ₦1.47 and it implies that the Layer production enterprise generated 1.47 times more income than expenses incurred for the production. On the other hand, it indicates that every ₦1.00 invested, Layers production yielded a cash flow ₦ 1.47. This suggests that the enterprise is in a healthy financial state. The Net return on investment shows that, for every naira

invested in the production of Layers about ₦ 0.47 returned to the farmer as income. In addition, the result indicates a Gross ratio of 67%. The implication of this is that 67% of the total revenue generated from the sales of the outputs was used to pay off all the costs incurred in the production. Profitability Index (PI) was 0.32 which means that for every naira earned as revenue, 0.32kobo was returned to the farmer as net income. This is in agreement with Baruwa and Fabode (2019) and Onu and Okoronkwo (2019) who asserted that egg production enterprise is profitable.

Analysis of Farm Financial Ratios

(N)

1.   Return on Investment (ROI)

Total Revenue   3,379, 860
Total Cost   2,297,684   **= 1.47**

2.   Net return investment

Net Farm Income   1, 082, 176
Total Cost   2,297,684   **= 0.47**

3.   Gross Ratio

Total cost   2, 297, 684
Total Revenue   3, 379,860   **= 0.67**

4.   Profitability Index (PI)

Net Farm Income   1, 082, 176
Total Revenue   3, 379,860   **=0.32**

Influence of socio-economic characteristics of the respondents on net farm income

The multiple regression technique was adopted to predict the influence of the farmers' socio-economic characteristics (independent variables) on the net income realized (dependent variable). Ten variables estimated were gender (GEN), age (AGE), marital status (MRS), educational attainment (EDU), farming experience (EXP), membership of other farmers group (MFG), household size (HHS), extension contact/visit (EXC), farming status (FST) and stock size (FLS). Out of the four functional forms of the regression model (linear, exponential, semi-log and double-log) fitted with the data, output of the linear form gave the best result in terms of economic, statistical and econometric *a prior* criteria and hence, was accepted. The MINITAB statistical software was used to run the analysis. The Model Summary indicates that the multiple correlation co-efficient (R) is 0.7820. This is considered to be one measure of quality of the prediction of the dependent variable (Net income) (Table 3). The value of 78.2% indicates a good level of prediction. An R^2 of .7530 explains 75.3% of the variability of the dependent variable (Net income realized) was accounted for by the predictor

Table 2. Costs and returns of layer (egg) poultry production

S/	ITEMS/CATEGORY	UNIT COST(₦)	VALUE (₦)	% OF TOTAL COST
	REVENUE:			
	a) Sale of culled Birds {average closing stock (326)}	1,750	570,500	
	b) Sales of droppings (14bags)	400	5,600	
	C) Sale of Eggs (2,776 Crates)	1,010	2,803,760	
	TOTAL REVENUE(TR)		*3,379,860*	
2	**VARIABLE COST:**			
	Stocking: Day old Chicks {average opening stock (387)}		174,710	7.60
	Feeding		984,050	42.82
	Labour		260,480	11.33
	Water		65,000	2.80
	Medication/Vaccines/additives		267,780	11.65
	Warming, Lighting and fuel		38,000	1.65
	Litter material		18,500	0.80
	Other utilities		93,000	4.04
	TOTAL VARIABLE COST(TVC)		**1, 901, 520**	**82.75**
3	**FIXED COST:**			
	Depreciation on:			
	Building		184,070	
	Cages		71, 690	
	Feeders		43, 601	
	Drinkers		31,486	
	Stove		12,590	
	Jerrycan, Bucket & Basins		5,178	
	Spades & Shove		l9,455	
	TOTAL FIXED COST(TFC)		**396,164**	**17.2**
4	**TOTAL COST(TVC+TFC)**		2, 297, 684	
	GROSS MARGIN(TR-TVC)		1, 478, 340	
	NET FARM INCOME(TR-TC)		1, 082, 176	
	RETURN ON NVESTMENT(TR-TC)		1.47	
	NET RETURN ON INVESTMENT(NFI/TC)		0.47	
	GROSS RATIO(TC/TR)		0.67	
	PROFITABILITY RATIO (NFI/TR)		0.32	

Table 3. Influence of socio-economic characteristics of the respondents on net farm income

Predictor	Linear	Semi-log	Exponential	Double-log
Constant	-2425 (-0.33)	-4390 (-0.13)	5.6797 (42.35)	4.669 (11.31)
GEN	3411 .7(0.23)	1347 (0.43)	0.12601(1.23)	0.16776 (3.45)
AGE	1835.9 (1.01)	1356 (.191)	0.0223(-0.42)	0.16711(1.33)
MRS	1543.1(0.34)	2634 (0.62)	-0.0070 (-0.40)	-0.01615 (-0.32)
EDU	-3023.5 (-0.53)	1058 (0.64)	-0.00362 (-1.24)	-0.00514 (-0.77)
EXC	-163 6.3(-1.87)	5233 (0.31)	-0.00445 (-1.58)	-0.00655 (-0.07)
FST	56666 (1.74) **	23584 (1.91) **	0.00545 (1.44**	0.12220 (1.73)
HHS	-2776 (-1.13) **	-20188 (-0.53)	-0.004659 (-0.62)	-0.02367 (-0.21)
EXP	7672(1.82)**	2346 (1.14)	0.02638 (1.79)**	0.00033 (0.66) **
MFG	-18970 (-0.61)	-24142 (-0.39)	-0.01595 (-0.99)	-0.10554(-0.71)
FLS	80346 (3.88)**	30561(10.28)**	0.17742 (11.39)**	.93634(11.34)**
R	78. 20	77.60%	75.80%	71.20%
R^2	75.30%	70.40%	69.90	62.80%
R^2 Adjusted	69.21%	58.43	53.30	60.26
F-Statistic	22.28	19.61	17.85	15.01

Source: Field survey, 2020. Notes: ** = Significant at 5% level.
GEN, AGR, MRS, EDU, EXP, MFG, HHS, EXC, FST, FLS are already defined.
Figures in ( ) are t-statistic values.

Table 4. Distribution of the respondents according to constraints encountered in Layers (egg) Production

		Calculated mean	Ranking of mean
1	High cost of Poultry feed	2.99	1st
2	Inadequate finance	2.86	2nd
3	Scarcity of high breed day-old chicks	2.81	3rd
4	Lack of storage facilities	2.73	4th
5	High mortality rate	2.71	5th
6	Incidences of disease outbreak	2.69	6th
7	Poor marketing outlets/channels	2.67	7th
8	Poor access to credit facilities	2.64	8th
9	High cost of vaccines	2.51	9th
10	High cost of labour	2.48	10th
11	Low / fluctuating price market price	2.22	11th
12	Poor transportation system	2.02	12th

Source: Field survey, 2020.

variables; hence, the remaining 24.7% was due to random disturbance. The Adjusted R^2 of 69.21 indicates that true 69.21% of the variation in the outcome variable is explained by the predictors. R^2 Shows how well data points fit a regression line assuming every single variable explains the variation in the dependent variable which is not true while adjusted R^2 tells how well the data points fit a regression line showing the percentage of variation explained only by the independent variables that actually affect the dependent variable. The F-ratio shows whether the overall regression model is a good fit for the data. The result shows that the independent variables statistically and significantly predict the dependent variable with an F= 22.28, p (.001) < .05. The F- value of 22.28 being significant at 5% is an indication of the overall significance of the regression.

The regression coefficient provides the expected change in the dependent variable for a one-unit increase in the independent variable. Out of the ten parameters included in the model, four of the variables; flock size, farming experience, farming status and household size) exerted statistic and significant influences on net incomes at 5% level of probability while others were not significant. A positive co-efficient of flock size (3.88) is according to *a priori* expectation. This means that for every unit increase (one flock increase) in flock size, there is 3.88 naira increase in net income. Simply put, an increase in flock size will result to an increase in output level and net income. This finding is in line with the report of Tijjani et al. (2012) and Ajibefun and Daramola (2000) that as more chicks are stocked, all things being equal, output and income are increased. The co-efficient of farming experience (1.82) was statistically significant at 5% level. This is in line with the result of Ume et al. (2016). This implies that the output of Poultry increases with experience of the farmers in Poultry production. This is in line with a priori expectation since economic theory opines that efficiency increases with an increase in production experience (Ike and Ugwumba, 2011). It is certain that years of experience in poultry farming improves efficient use of input resources by farmers. A positive co-efficient of farming status (1.74) is according to *a priori* expectation. A full time poultry farmer is expected to specialize and get more experience than part-time farmer who has their time to share with other activities. This is in line with the result of Ike and Ugwumba (2011) who assert that the more a farmer is dedicated to poultry production on full time basis, the more the possibility of improving output. The coefficient of household size was negative and statistically significant at 5% level. Contrary to *a priori* expectation, the negative sign of the co-efficient of household size (-1.13) indicates that increase in household size of the farmers causes a reduction of the net farm income by 1.13 naira. This implies that the chances of farmers in increasing net income decrease with household size. This agrees with the study of Suleiman et al. (2017). Consequently, farmers who had small household size may likely make more income. Households are essential in rural farming because it is a pointer to the extent of labour available to any individual farmer. However, the negative sign of households may be because family members are engaged in other forms of business enterprise and as such does not provide labour for the poultry production and definitely, more household size is an indicator of more consumption and expenditure.

Constraints encountered in Egg Production

Poultry product (egg) producers in the study area encountered many problems during the production process. Table 4 shows the result of the analysis of the problem. From the table, it could be deduced that high cost of poultry feed ranked first to become the most serious problem encountered by the producers, with mean score of 2.99. This could be attributed to the high cost of raw material required in feed production. This is in line with the findings of Ezeano and Ohaemesi (2019) that high cost of poultry feed is one of the most critical factors affecting poultry product, producers. The high cost of poultry feed was clearly followed by inadequate finance, ranking 2nd in the table with a mean score of 2.86. This could be as a result

of low income earnings of the producers due to small farm holdings. This agrees with the finding of. This is in agreement with the findings of Mohammed, Ayanlere and Afolabi (2013) that inadequate finance militate against poultry product productions.

Further analysis of the problem associated with poultry product (egg) production indicated scarcity of high breed day-old chick, this ranked 3rd in the table with a mean score of 2.81. This could be attributed to poor research finding and outcomes in livestock industry this agrees with the findings of Ukwuaba and Inoni (2012) that high cost and scarcity of day old chicks affects poultry egg production .Lack of storage facilities and high immortality rate, ranked 4th and 5th with mean score of 2.73 and 2.71 respectively. High immortality rate could be attributed to the poor quality rate of vaccines while lack of storage could be as a result of high cost of warehouses and storage facilities like refrigerators (cooling houses).

Incidence of disease outbreak and poor marketing channels has a mean of 2.69 and 2.67 respectively. This could be as a result of susceptibility of poultry product (egg) to diseases. Poor marketing channels could be as a result of high incidence of road mishap (bandits) which discourages the activities of channel agents. Other not serious problems affecting the production of eggs are poor edit facility 2.64; high cost of vaccines 2.51 high cost of labour, 2.48 low/fluctuating markets of price 2.22 and poor transportation system 2, 02.

Conclusion and Recommendations

This study confirms that Poultry production is a very viable venture given the high gross ratio and profitability index. It is worthy to note that if the production processes are technically and resourcefully managed, it is capable of yielding a reasonable net return over time to any poultry farmer. Major constraints to poultry production in the study area are poor access to credit facilities and scarcity/ high cost of feed while the size of the flock was identified as a significant factor influencing annual profit. As a result, a poultry owner should seek to expand the farm as a necessary requisite that could increase the chances of making more profit and such increase can only be possible if the major constraints are consciously exterminated. Based on the finding, it is recommended that credit facilities for Poultry financing should be made available in order to boost poultry production in Nigeria. The financial institutions should establish policy options to enhance and facilitate farmers' access to credit, and embark on loan increment policy in order to satisfy the demands of farmer borrowers and adequate extension services to ensure proper enlightenment of availability of technology and input, among farmers should be encouraged.

Conflict of interests

The authors declare that they have no conflicting interests

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