

---

**ANALYSIS OF SMALL SCALE BROILER POULTRY PRODUCTION IN SOUTH EAST NIGERIA, WEST AFRICA**

**Chiekezie, Njideka Rita. PhD<sup>1</sup>, Nwankwo, Eucharia Chijindu <sup>2</sup>(PhD) Ozor, Maurice U PhD<sup>3</sup>**

1. Department of Agricultural Technology, School of Agriculture and Related Disciplines, Anambra State Polytechnic, Mgbakwu, Nigeria, West Africa.
  2. Department of Agricultural Economics and Extension, Chukwuemeka Odumegwu Ojukwu University, Igbariam, Anambra State , Nigeria
  3. Department of Agricultural Economics and Extension, Nnamdi Azikiwe University, Awka, Nigeria, West Africa.
- 

**Citation:** Chiekezie, Njideka Rita , Nwankwo, Eucharia Chijindu, Ozor, Maurice U.(2022) Analysis of Small Scale Broiler Poultry Production in South East Nigeria, West Africa, *International Journal of Animal and Livestock Production Research*, Vol. 6, No.1, pp.1-16

---

**ABSTRACT:** *The study analyzed the small scale broiler poultry production in South East Nigeria, West Africa. Specifically, the study examined the socio-economic characteristics of the farmers, the cost and returns of the enterprise, influence of socio-economic characteristics on Net income and challenges to production in the study area. Primary data used for the study was collected using well-structured questionnaire which was administered to 405 sampled broiler poultry farmers in the study area. Descriptive statistical tools (frequencies, percentages and means), enterprise budgeting techniques (Gross margin, Net return on investment, Gross Ratio) and Multiple Regression Analysis were used to analyze the data. Profitability Index (PI) was ₦0.26 which means that for every naira earned as revenue, 0.26kobo was returned to the farmer as net income. An  $R^2$  of .7770 explains 77.7% of the variability of the dependent variable. Four out of the ten parameters included in the model exerted statistic and significant influences on the amount of income realized. Major constraints to Broiler poultry production in the study area were high cost of feed, high cost of vaccines and high cost of day old chicks. Based on the study, the following recommendations are made; since broiler production is profitable, attention should be paid to the broiler farmers to ensure that best practices are adopted for sustainability in the agribusiness.*

**KEYWORDS:** analysis, small scale, broiler, poultry production, South East Nigeria, West Africa

---

## INTRODUCTION

Livestock production is fundamental to sustainable economic development with poultry production being responsible for 80% of its production (FAO, 2019). The poultry industry has become a diverse industry with a variety of business interests such as egg and broiler production. According to the report of FAO (2019), Nigerian poultry sector contributes 30% to agricultural GDP making it the largest poultry producer and fourth largest meat producer in Africa. Broiler production is just a niche in the poultry farming business. It involves

---

the keeping of chickens of heavy meat breeds for the purpose of getting good quality meat products usually sold live or processed at ten to twelve weeks of age (Amos, 2006). It is one of the fastest growing enterprise, engaged mostly by small scale farmers and has in addition contributed to the nation's gross domestic product (GDP). According to World Bank (2017), the income and nutritional security of rural household hinge on the poultry sub-sector as it provide about 37% of their total intake. In addition, Ume, Ezeano and Obiekwe, (2018) argued that poultry birds are most capable in providing dietary protein intake in most developing countries due to their intrinsic features, thus capable of bridging the protein deficiency gap prevailing in the country (Mamman and Anzaku, 2016). A part from the fact that meat consumers' interest is gradually being shifted from red to white meat, broiler production have advantages of fast growth rate and high feed conversion efficiency (Mgbako and Ezeadachie, 2013).

Aside nutritional benefits, broiler production is carried out in all the parts of the country and increasingly capturing market share with tremendous growth. FAOSTAT (2017) attributed the growth in poultry meat production to increase in the number of broiler production and as noted by FAO (2019), Nigeria is currently the second largest chicken production in Africa, with about 180 million birds placed annually (30% layers and 70% broiler) and that the poultry meat has jumped from 158 thousand tons in 2000 to 317 thousand ton in 2015 and expected to reach 544 thousand tons by 2030 (FAO, 2019). Consequently, the high demand for broiler products, the availability of exotic breeds and the ease with which farmers master the techniques of broiler production has moved the venture from subsistence to the status of agribusiness (Ebukiba and Luka, 2019). However, this has not only contributed to the total household income but also created opportunities for small-scale and emerging producers in the value chain (FOASTAT, 2017). In addition, broiler production is unique in that it offers the highest turn-over rate and the quickest returns to investment outlay in the livestock enterprise (Sanni and Ogundipe, 2005).

Both government and industry sources indicated that poultry meat (broiler) production fell below 11 percent of demand (USDA, 2014). This has propelled government at all levels to design policies that will encourage broiler production. It was against this background that Anambra state government established public-partnership poultry farm in 2017 with the sole aim of launching the state into providing five million birds annually. It was done to bridge the demand/supply gap existing in the state. Presently, these efforts are being undermined by high cost of production necessitated by high cost and unavailability of quality inputs. Grains and some basic ingredients that form bulk part of poultry feeds are equally consumed by man and both therefore compete directly for limited grains. This is evidenced from Olasunkanmi, (2008) who reported that a change in output of maize vis-à-vis its price are immediately reflected in change in output and prices of poultry products. High cost of production cannot only be attributed to high cost of inputs, but efficient cost management has a direct bearing on the cost of production as observed by USDA, (2014), poor infrastructural facilities, lack of technical efficiency such as labour, capital and feed efficiency will result to low yield.

---

Accordingly, if farmers are efficient in resource allocation, it would result to minimization of cost and maximization of profits and consequently encourage production. Poor quality of feeds on the other hand, can lead to high mortality rate, low productivity and consequently, low rate of returns to investment (Mamman, Anzaku and Umar (2016).

The key constraint faced by poultry farmers among others are high cost of input resources especially feed and medication which has encumbered proficient and sustainable production within the industry. This was reported by FAO (2014) that small-scale commercial poultry often produced with lower efficiency and constraints to securing quality inputs (chicks and feed) and marketing products. It is important to understand that sustainable broiler production can only be achieved by conquering the inherent challenges as well as expertise in poultry business. This study therefore, investigated the socio-economic characteristics of the poultry farmers in the study area, analyzed cost and returns, examined the influence of socio-economic characteristics on net farm income and identified the constraints to poultry production in the study area

### **Empirical Framework**

Ebukiba, et. al. (2019), in their study of Economic analysis of Broiler production in Karu Local Government Area of Nasarawa revealed that average gross revenue of broiler production in the study area was N2, 063000 while the total average variable cost of production in the area was N1, 459,274.35, indicating a gross margin of N603, 726.6 showing that broiler production was a profitable venture even with the high cost of feed that constituted about 68% of the total cost. This is in line with the assertion that lower the gross and operating cost, the higher the profitability of the farm enterprise and vice versa. 0.41 rate of return on investment was equally recorded, implying that in every N1 invested in broiler production, yielded 41 percent interest on investment in the study area.

On the other hand, the problems militating against the broiler production in the area was not left out. The majority (80%) of the farmers experienced high cost of feeds as the major problem militating against the smooth operation of the broiler business in the study area while 67% were of the opinion that poor marketing was the major problem confronting their production. More so majority (62.5%) and 57.5% of the farmers identified lack of capital and lack of storage facility for the process of poultry product as the major constraints to broiler production. Moreover, the sampled respondents were also of the view that high rate of disease infestation, high cost of drugs/ vaccines were among the identified problems while poor access to credit and high cost of broiler equipment, were also among the identified problems. Majority (70%) also encountered poor market price as the very serious problem while 92.5% identified lack of extension services as the major constraint militating against broiler production in the study area. Mamman et al (2016) revealed a net income of 11.6%. This indicates that after deducting the costs of performing market functions, the poultry (broiler) farmers earned an average of 11 kobo for every naira of the final price paid for the buyers. The result showed

---

that total revenue per poultry (broiler) farmers was found to be N 119,050.00 which accrued from the sale of birds and poultry dung while the total cost incurred per the respondent was N 13,755.00.

In addition, feeds and medication accounted for 27.6% and 12.0% of the total variable costs respectively. There is always a high cost of feed, according to Mamman et. al (2016), feeds resource is a major input in production system, accounting for over 60% of total production costs in the commercial poultry sector. Mgbakor and Nzeadachie (2013), investigated the cost; returns and profitability of broiler production in Orumba Local Government Area of Anambra State, reported a non-maximum profit based on the fact that none of the inputs was optimally allocated, capital and other inputs were underutilized and Labour and feed were over utilized. According to the study, broiler production was dominated by small scale farmers in the area as majority (86.53%) reared below 500 birds. This is because, high cost is required to operate larger scale. Furthermore, the study reported some challenges confronting the productivity of broiler production in the area; majority (37.21%) of the farmers identified inadequate capital as a major constraint, followed by incidence of mortality (20.93%) then transportation problem, inadequate feed supply, market channel and storage problem posed same degree of limitation (6.98) and ranked lowest.

### **Theoretical framework**

The emphasis of production theory centers on the process of economic growth, which explains how certain specific inputs are jointly combined to produce a given level of output. It was opined that production theory has its footings in the works of Neoclassical economists. The argument of Neoclassical was that economy comprises of two important agents – the producer and consumer and the activities of both are inseparable. The decision of poultry farmer is very paramount in the choice of inputs (amount and nature of labour, amount of capital and sources) combination. According to Ewubare (2019), these decisions shape the configuration of inputs to be used and the quantum of output to be realized. In line with the above, the resource management efficiency can be best analyzed using theory of cost minimization and output maximization. The tendency of every entrepreneur is to maximize profit and this is subject to how costs efficient a farmer is in producing goods and services at a lowest possible cost. Farmer's satisfaction lies on the ability to reduce costs of input as much as possible for profit maximization. Input-Output theory according to Leontief (1936) emphasized on the role of interrelationship in the growth of economy. The theory tries to explain the forward and backward economic linkages between industries. The basic principles of this model is that the products sold (outputs) from one industry are purchased (inputs) in the production process by another industry. Therefore, it is possible that a change in the inputs of one industry can effect a change in the other. On the other hand, the economic growth theory of Solow (1956), maintains a different position as far as economic growth is concerned. According to him knowledge is a key to economic growth. He argued that economic growth is a dynamic process between inputs (capital, labour and technology) and outputs. According to Kasun (2019) in trying to explain this knowledge based growth model, opined that

measure of knowledge stands out in theoretical models in which a notion of human capital affects growth through the adoption of a known technology and consequently leads to the improvement in the productivity. Thus Solow argued against savings and capital accumulation as responsible for economic growth.

## **MATERIALS AND METHODS**

### **The study Area**

The study was carried out in South East geo-political zone of Nigeria. The zone comprises five states, namely, Abia, Anambra, Ebonyi, Enugu and Imo. It has an estimated land mass of 32,610 km<sup>2</sup> and a 2006 population of 22,583,076 (National Population Commission, 2006). The zone is bounded by Benue and Kogi States in the north, Rivers, Akwa Ibom and Bayelsa States in the south, Delta and Edo States in the west and Cross River State in the east. South-Eastern Nigeria has two distinct ecological zones – the tropical rainforest to the South and derived guinea savanna to the North. It lies between longitude 2o61 and 6.32 East and latitudes 6o74 and 8o15 North of Equator. The mean annual temperature ranges from 21.6°C to 32.4°C while the annual rainfall ranges from 720 mm to 1440 mm in the rainforest region . Farming, trading, civil service and teaching are the major occupations of the people. Major crops farmed by the inhabitants include yam, cassava, cocoyam, maize, vegetables, plantain and rice. Tree crops such as oil palm, citrus, mango, breadfruit and coconut are often grown in homesteads and plantations. The major livestock reared in the area are chicken (meat and egg)sheep, goat, pig and little Muturu cattle population. (ADP, 2018)

### **Sample size and sampling procedure**

Multistage and random sampling techniques were used to select 405 respondents for the study. At stage I, three States namely, Enugu, Anambra and Imo were randomly selected from the five states in the zone. At Stage II three Local Government Areas (LGAs) known for poultry production were purposively selected from each of the three States to arrive at nine L.G.As. At stage III, three towns were selected from each of the nine selected L.G.As bringing the total number of towns to 27. The final stage (Stage IV) involved random sampling of 15broiler poultry farmers from each of the twenty seven selected Towns/Communities, thus arriving at 405 respondents.

### **Data collection**

Data for the studu was collected 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 broiler poultry production ;
- iii. Constraints to broiler poultry production in the area.

It was assembled using well-structured and pre-tested questionnaire administered to sampled broiler poultry farmers in the study area through personal interview. A total of 405 copies of the questionnaire were administered with the assistance of trained enumerators fluent in both English and Igbo languages. 380 copies of the returned questionnaire were selected and utilized for data for analyses.

### Data Analysis

Descriptive statistical tools (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, Net return on investment, Gross ratio and profitability index.

The methods are mathematically given as:

- i. **Gross Margin** = Total Revenue – Total Variable Cost
- ii. **Net Farm Income** = Total Revenue - Total Cost  
**Where:** Total Cost (₦) = Total Variable Cost + Total Fixed Cost
- iii. **Net return investment**  
$$\frac{\text{Net Farm Income}}{\text{Total Cost}}$$
- iv. **Gross Ratio**  
$$\frac{\text{Total cost}}{\text{Total Revenue}}$$
- v. **Profitability Index (PI)**  
$$\frac{\text{Net Farm Income}}{\text{Total Revenue}}$$

### Calculation of depreciation

Depreciation on capital items (machines, equipment and buildings) was obtained from the initial costs and useful lives of such fixed items. Straight line method of depreciation was used and the method is given as

$$AD = \frac{CF-SV}{ULS}$$

Where:

AD= Annual depreciation (₦)

CF=Cost of fixed Assets (₦)

SV=Scrap salvage value (₦)

ULS= 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:

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

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

B<sub>0</sub>= 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<sup>2</sup>, the t-values of the estimates and, the number of significant variables in each estimated equation.

Objective four was realized using a 3-point likert scale method. The response indicating the most serious constraint was given the highest score and was disaggregated as follows: 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.

**RESULTS AND DISCUSSION****Table 1: Socio-economic characteristics of Broiler poultry farmers**

| S/N    | VARIABLES   | FREQUENCY                            | PERCENTAGE                               |
|--------|---|--------------------------------------|--|
| 1      | <b>Gender</b><br>Male<br>Female<br><b>TOTAL</b>   | 184<br>196<br><b>380</b>             | 48<br>52<br>100                          |
| 2      | <b>Age (years)</b><br>21 - 30<br>31 – 40<br>41 - 50<br>51 and above<br><b>TOTAL</b>   | 94<br>174<br>87<br>25<br><b>380</b>  | 25<br>46<br>23<br>6<br>100               |
| 3      | <b>Marital Status</b><br>Single<br>Married<br>Widow/Divorced/Separated<br><b>TOTAL</b>  | 132<br>218<br>30<br><b>380</b>       | 34.74<br>57.37.<br>7.89<br>100           |
| 4      | <b>Household Size</b><br>1 – 3<br>4 – 6<br>7and above<br><b>TOTAL</b>   | 128<br>170<br>82<br><b>380</b>       | 33.67<br>44.74<br>21.59<br>100           |
| 5      | <b>Farming Experience</b><br>1 – 10<br>11 – 20<br>21 and above<br><b>TOTAL</b>  | 105<br>198<br>77<br><b>380</b>       | 27.63<br>52.11<br>20.26<br>100           |
| 6.     | <b>Educational Level</b><br>No formal education<br>Primary education (6years)<br>Secondary education(12years)<br>Tertiary education (16years)<br><b>TOTAL</b> | 77<br>100<br>127<br>76<br><b>380</b> | 20.2 6<br>26.32<br>33.42<br>20.00<br>100 |
| 7<br>. | <b>Extension Visit</b><br>No<br>Yes<br><b>TOTAL</b>   | 182<br>198<br><b>380</b>             | 47.89<br>52.11<br>100                    |

|    |   |                                |                                |
|----|---|--------------------------------|--------------------------------|
| 8  | <b>Flock Size (Number of flock)</b><br>≥ 100<br>101 – 300<br>301 – 500<br><b>TOTAL</b>    | 106<br>182<br>92<br><b>380</b> | 27.90<br>47.90<br>24.20<br>100 |
| 9  | <b>Membership of farmers association/cooperative society</b><br>Yes<br>No<br><b>TOTAL</b> | 220<br>160<br><b>380</b>       | 57.89<br>42.11<br>100          |
| 10 | <b>FARMING STATUS</b><br>FULL TIME<br>PART-TIME<br><b>TOTAL</b>                           | 222<br>158<br><b>380</b>       | 58.42<br>41.58<br>100          |

Source: Field Survey, 2021

The socio-economic characteristics of the respondents in the study as highlighted in table 1 are: genders, age, marital status, household size, farming experience, educational level, extension visits, flock size and membership of farmers' association/cooperative society. Table 1 show that 48% of producers are males while 52% are females. This implies that more females are associated with the business than males. This may be because broiler production in small scale is not time consuming and tedious, hence females are more suitable for the job. The table further shows that 46% of the respondents belongs to the active age of 31-40. This is the economically active and productive age bracket (Abewore, 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 get older.

The result further indicates that 57.37% of the respondents are married. Single men or women, widow, divorced/separated are 34.74% and 7.89% respectively. This implies that broiler poultry production is mostly a business of married people. The implication is that married people are usually utilized the labour of their children in running the business. The result further shows that 44.74% of the respondents have a household size of 4-6, 33.67% have 1-3 while 21.59% have 7 and above. This indicates that small holder poultry production does not necessarily require a large household size since it is in small holding capacity, but a small household that is technically knowledgeable in the business. The distribution of the respondents on level of farming experience showed that 52.11% of the respondents have engaged in the business between 11-20 years, 27.63% between 1-10 years and 20.26% between 21 and above respectively. 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 the socio-economic characteristics indicated that 33.42% of the respondents have secondary education, 26.32% have primary education, 20% have tertiary education while 20.26% have no formal 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 adoption of innovations. The distribution of the respondents according to extension visit showed that 52.11% of the respondents were visited by extension personnel while 47.89% were not visited. This is important because the level of awareness of innovations is a function of its practicability and production efficiency. This was as a result of the operation of the extension personnel at the grass root in the study area. The flock size distribution showed that 47.90% of the respondents have flock size ranging from 100-300, 27.90% have greater than or equals to 100 while 24.20% have between 301-500. This implies that the area is dominated by small scale holder poultry farmers. This agrees with Olurunsanya (2004) who concluded that a farmer who maintains at least 5000 birds is classified as 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 be small scale producers.

Further analysis showed that 57.89% of the respondents belong to association and cooperative societies while those with 42.11% do not belong. This is as a result of the fact that most of the small holder broiler producers live in the rural areas where cooperatives are more functioning. On the distribution of the respondents according to farming status, the result indicates that 52.42% of the respondents are full time while 41.58% are part-time. This could be as a result of the business being cited in the rural areas.

### Cost and Returns Analysis

**Table 2: COST AND RETURN ANALYSIS OF BROILER PRODUCTION**

| S/N       | DESCRIPTION  | BROILERS PRODUCTION COST |                        |
|-----------|--|--------------------------|------------------------|
| <b>1.</b> | <b>Stocks</b>  |                          |                        |
|           | Average Opening stock (254 birds per production cycle of 3 months )  |                          |                        |
|           | Average Closing stock (232 birds per production cycle of 3 months)   |                          |                        |
| <b>2.</b> | <b>Revenue</b>   | <b>Value (₦)</b>         | <b>% of Total cost</b> |
|           | a) Sale of Birds (232 birds @ average unit cost of N4, 050 per Bird) | 939, 600                 |                        |
|           | b) Sales of droppings (6 bags @ N650 per bag)                        | 3, 900                   |                        |
|           | <b>Total Revenue (TR)</b>  | <b>943, 500</b>          |                        |
| <b>3.</b> | <b>Variable Cost:</b>  |                          |                        |
|           | Stocking (Day old chicks 254 birds@ N510 per Bird)                   | 129,540                  | 18.0                   |
|           | Feeding  | 391,420                  | 55.72                  |
|           | Labour   | 62,230                   | 8.86                   |
|           | Water  | 9,060                    | 1.28                   |
|           | Medication/vaccines/additives  | 78,200                   | 11.0                   |
|           | Warming + lighting & fuel  | 3,500                    | 0.4                    |

|   |                   |             |
|---|-------------------|-------------|
| Litter material   | 2, 100            | 0.3         |
| Transportation  | 1,250             | 0.18        |
| Other Utility expenses  | <u>8,780</u>      | 1.24        |
| <b>Total Variable Cost (TVC)</b>                              | <b>686,080</b>    | <b>97.7</b> |
| <b>4. Fixed Cost:</b>   |                   |             |
| Depreciation on:  |                   |             |
| Buildings/cages   | 11,870.0          |             |
| Feeders   | 768.8             |             |
| Drinkers  | 772.2             |             |
|   | 886.6             |             |
| Stove   | 505.5             |             |
| Jerry-can, Bucket& Basins                                     | 109.5             |             |
| Spades & Shovel   | 432.4             |             |
| Wheel Barrows   | <u>1,0387.0</u>   |             |
| <b>Total Fixed Cost ( TFC)</b>                                | <b>16,383.7</b>   | <b>2.3</b>  |
| <b>TOTAL COST ( TC) = (TVC + TFC)</b>                         | <b>702, 463.7</b> |             |
| <b>GROSS MARGIN (GM) = (TR-TVC)</b>                           | <b>257, 420</b>   |             |
| <b>NET FARM INCOME (NFI) = (TR – TC)</b>                      | <b>241,036.3</b>  |             |
| <b>NET RETURN ON INVESTMENT (NFI / TC)</b>                    |                   | <b>0.34</b> |
| <b>GROSS RATIO =Total cost/Total Revenue</b>                  |                   | <b>0.74</b> |
| <b>PROFITABILITY INDEX (PI)=Net farm income/Total Revenue</b> |                   | <b>0.26</b> |

The profitability of small scale broiler production is indicated in table 2. The cost and return analysis indicate that the total revenue of N943, 500.00 was realized by an average small holder broiler farmer for one production cycle. These comprise the income realized from the sale of birds and that of droppings. The result also shows that an average broiler small scale farmer invested N702.463.3 as total cost of production for the enterprise per cycle. These consist of both variable cost and total fixed cost. The total variable costs (N686.680) accounted for 97.7% of the total cost of production and the variable expenses include the cost of stocking, feeding, labour, water, medication, warming/lighting and fuel, liter materials, transportation and other utility expenses. The feeding cost of N391.420 constituted the largest share of the total cost 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, Bursary and Okonkwo (2015) are of the opinion that the increased cost of poultry feed could be as a result of the increase in the cost of maize, soyabean meal groundnut and scarcity of wheat offal. Cost of feed was followed by cost of stocking N129.540, with the least being that of transportation N1.250, 0.18%. The fixed cost (N16, 383.7) accounted for 2.3% of total cost.

The gross margin of the enterprise for one production cycle was N257.420, while the Net farming income realized was N241,036.3. The Net Return on investment shows that, for every naira invested in the production

of broilers, about N0.34 returned to the farmers as income. In addition to the above, the result indicates a Gross ratio of 0.74%. The implication of this is that 0.74% 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 (p1) was 0.26 which means that for every naira earned as revenue, 0.26 kobo was returned to the farmer as net income. This is in agreement with Baruwa and Fabode (2019) and Onu and Okonkwo (2019) who asserted that broiler production is profitable.

**Table 3: Estimated determinants of Profit in Broiler Poultry production**

| Predictor                | Linear              | Semi-log           | Exponential          | Double-log           |
|--------------------------|---------------------|--------------------|----------------------|----------------------|
| Constant                 | -8.1295<br>(-0.43)  | 6.5641<br>(-0.03)  | 3.5347<br>(44.55)    | 8.6281<br>(13.18)    |
| GEN                      | 2.236<br>(0.46)     | 2.4457<br>(0.81)   | -0.456<br>(-0.40)    | -0.3410<br>(-0.11)   |
| AGE                      | -5.127<br>(-0.50)   | 3.350<br>(0.46)    | -0.8175<br>(-1.34)   | -0.0786<br>(-0.51)   |
| EDU                      | 3.897<br>(3.23) **  | 3.688**<br>(0.222) | .3384<br>(4.103)**   | 0.0341 **<br>(1.237) |
| MRS                      | -1.124<br>(-1.002)  | -0.325<br>(-1.12)  | -0.0322<br>(-0.252)  | -0.0432<br>(-0.214)  |
| HHS                      | 5.112<br>(1.78)**   | 2.336<br>(1.14)    | 0.0343<br>(1.09)     | 0.0375<br>(0.86)     |
| FST                      | -1.430<br>(-0.18)   | -2.262<br>(-0.69)  | -0.0126**<br>(-0.44) | -0.4223<br>(-0.98)   |
| FLS                      | 4.433<br>(3.71)**   | 2.130<br>(2.35)**  | 0.1232<br>(0.115)    | 0.4434<br>(2.33) **  |
| EXC                      | 1.343<br>(1.013)    | 3.450<br>(1.943)   | 1.2331<br>(1.623)    | 1.625<br>(2.442)     |
| EXP                      | 0.1227<br>(2.77) ** | 0.2834<br>(1.415)  | 0.3424<br>(1.333) ** | 0.5032<br>(1522) **  |
| MFG                      | 0.4546<br>(2.001)   | 0.4673<br>(2.323)  | .02224<br>(1.115)    | 0.3532<br>(1.235)    |
| R-SQUARED                | 77.70%              | 72.51%             | 69.10%               | 75.23%               |
| R <sup>2</sup> -ADJUSTED | 76.1%               | 66.90%             | 63.42%               | 70.17%               |
| F-STATISTIC              | 41.24               | 32.15              | 29.60                | 39.00                |
| D-W STATISTIC            | 1.88                | 1.79               | 1.77                 | 1.86                 |

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

The result in Table 3 showed the regression analysis of broiler production. It was used to determine the influence of the farmers' socio-economic characteristics (independent variables) on their net farm income (Dependent variable). Ten variables estimated were gender (GEN), age (AGE), educational attainment (EDU), marital status (MRS), household size (HHS), farming status (FST), stock size (FLS), extension contact/visit (EXC), farming experience (EXP) and membership of other farmers group (MFG). Linear model was taken to be the lead equation because of economic, number of significant variables and econometric a priori criteria.

The Model Summary indicated that co-efficient of  $R^2$  is 0.7770 which explains that 77.7% of the variability of the dependent variable (Net income realized) was accounted for by independent variable. While the remaining 22.3% could be due to stochastic error. Adjusted  $R^2$  value of 0.7610 showed that only 76.1% of variation in the dependent variable could be explained by the predictor variable that actually affect the dependent variable. The F-ratio shows whether the overall regression model is a good fit for the data. The F-value is 41.24 shows that the independent variables were statistically significant at 5% level of probability. This implied that socio-economic variables of the respondents significantly influenced the farmer's net income and that the regression model was a good fit.

Out of ten variables included in the model, four (education, household size, stock size and farming experience) were statistically significant and thus exerted influences on the net farm income. The co-efficient of education (3.23) had positive relationship with net income. This implies that education is a driving force for profit making. This support the arguments of Kasun (2019) as opined by theory of Solow (1959) that knowledge is a key to efficient resource management and the ease of adoption of new technology by farmers. A positive co-efficient of household size (1.78) is related to net farm income. This implies that the higher the household size, the more output and more income a farmer makes. The findings are in line with Nwibo, Mbam and Biam (2016) who argued that large household size can be a good source of labour. But in contrast to Nwankwo, Chiekezie and Offia (2021) who stated that pressure of large household size can increase the dependency ratio of farmers. A positive co-efficient of stock size (3.71) is according to a priori expectation. The positive relationship implies that an increase in stock size will result to an increase in output level and consequently net income. This complies with the results of the Tjjani et al (2012) who opined that as more chicks are stocked, all things being equal, output and income are increased. The co-efficient (2.77) of years of farmers experience are positively related to farmers net come. This proves that years of experience in poultry farming improves efficient use of input resources by the farmers. Economic scholars argued that efficiency increases with an increase in production experience (Ike and Ugwumba, 2011).

**Constraints encountered in Broiler Production****Table 4: Distribution of the respondents according to constraints encountered in Broilers Production**

| Constraints                           | Calculated mean | Ranking of mean |
|---------------------------------------|-----------------|-----------------|
| 1. High cost of feed                  | 2.93            | 1 <sup>st</sup> |
| 2. High cost of vaccines /medications | 2.81            | 2 <sup>nd</sup> |
| 3. high cost of day-old chicks        | 2.79            | 3 <sup>rd</sup> |
| 4. High mortality rate                | 2.71            | 4 <sup>th</sup> |
| 5. Poor marketing outlets             | 2.68            | 5 <sup>th</sup> |
| 6. Fluctuating price market price     | 2.67            | 6 <sup>th</sup> |
| 7. High cost of labour                | 2.65            | 7 <sup>th</sup> |
| 8. Poor access to credit facilities   | 2.50            | 8 <sup>th</sup> |

**Source : Field survey, 2021.**

The results in Table 4 showed the problems faced by broiler farmers in the study area. It could be seen from the table that high cost of broiler feed ranked first as the most serious problem confronting the farmers with the mean score value of 2.93. This could be attributed to the scarcity of maize and wheat that form the bulk of the feed. This is supported by the findings of Ebukiba et al (2019) that high cost of poultry feed is one of the most critical factors affecting poultry production. The high cost of vaccine/medicine, Day-old and high mortality rate with mean values of 2.81, 2.79 and 2.71 respectively. Research authorities attributed the high cost of day-old chicks to breeders and hatchery services which are capital and labour-intensive in Nigeria. This affirms the position of Chiekezie et al (2021) that scarcity of day old chicks and high mortality rate of poultry birds constitute a serious problem to poultry farmers. The result also indicated that poor marketing outlets (2.68), fluctuating market price (2.67), High cost of labour (2.65) and poor access to credit (2.50) are challenges faced by farmers. According to Ndubueze et al (2018), broiler production is faced with a myriad of problems.

**CONCLUSION/ RECOMMENDATIONS**

The study reveals that Broiler poultry production is a very viable venture and consequently if the production processes are technically and resourcefully managed, it is capable of yielding a reasonable net return over time to any poultry farmer. It can be deduced through the study that enough potential exists for increased production in the study area and as such, a breakthrough in productivity and increased efficiency are vital for the requisite boost and growth that guarantees sustainable broiler poultry production.

Based on the study, the following recommendations are made; since broiler production is profitable, attention should be paid to the broiler farmers to ensure that best practices are adopted for sustainability in the agribusiness. There is need for promotion of rural household education, rural infrastructure, and better access to credit facilities through improvement of rural financial markets. And finally, Government should

---

strengthen extension service delivery, employ more extension agents and motivate them adequately to reach out to the poultry farmers in the study area.

## REFERENCES

- Amos, T.T. (2006). Analysis of backyard poultry production in Ondo State, Nigeria, *International Journal of Poultry Science*, 5(3), 34-47
- Baruwa, I.O, Fabode, O, A (2019). Comparative investment analysis of small-scale Broiler and Layer production. *J. of Agric. Sci.* 64 (3), 279-290.
- Bursary, A.O, and Okonkwo, I. N (2015). Economic appraisal of small & medium scale poultry egg production in Ife and Ilesha Metropolis, Osun State Nigeria. *Turkish J Agric. Food Sci. Tech.* 3 (7), 562-565.
- Chiekezie, N. R, Ozor, M. U and Isibor, C. A (2021). Economic Analysis of Layers Poultry Production in Anambra State, Nigeria. *International Journal of Agricultural Policy and Research* 9(3), 129-137
- Ebewore, S.O. (2010). Assessment of loan administration by a Micro-Finance Bank to farmers in Isoko South Local Government Area, Delta State, Nigeria. In R.N. Okoh (ed.). *Engendering policy for attainment of the millennium development goals in Nigeria*, Proceedings of National Conference by Centre for human resource and gender services. Rural linkage network (pp.125-136).
- Ebukiba, S.E and Luka, E. (2019). Economic analysis of Broiler production in Karu Local Government Area, Nasarawa State, Nigeria. *Journal of Agriculture and Veterinary Science*. 12 (3), 49-56
- Ewubare, D.B (2019). Impact of economic planning on sustainable development in Nigeria. *Asian Development Policy Review*, 7(1), 12 – 22
- Food and Agricultural Organisation (F.A.O), ( 2019) *The future of livestock in Nigeria: Opportunities and challenges in the face of uncertainty*, Rome.
- Food and Agricultural Organisation (F.A.O). (2015). Statistics division of the Food and Agriculture Organisation. Retrieved from <http://FAO.Stat:FAC.org>.
- Food and Agricultural Organisation F.O.A (2017) Available from: <http://www.fao.org/statistics/en/>
- Ike, P, C, and Ugwumba, C, O. A (2011). Profitability of small scale broiler production in Onitsha North Local Government Area of Anambra State, Nigeria. *Int. J. Poultry Sci.* 10(2), 106-109.
- Kasun, D.R.A (2019). Critical introduction of solow growth theory. *Journal of Research in Humanities and Sciences*. 7(1), 43 - 46
- Leontief, W.W (1936) Quantitative Input and Output Relations in the Economic Systems of the United States. *The Review of Economics and Statistics*. 18(2), 105 – 125
- Mamman B.D.; Anzaku T. A. K.; and Umars H. S. (2016). Profitability evaluation of Broiler production among small-scale commercial Poultry Farmers in Nassarawa - Eggon Local Government Area of Nasarawa, State, Nigeria. *International Journal of Agriculture and Earth Science* (2)1, 52 – 57
- Mgbakor M. N and E. Nzeadachie C, E ( 2013) Economic Analysis of Broiler Production: A Case Study of Orumba South L.G.A of Anambra State, Nigeria. *American-Eurasian Journal of Agronomy* 6 (2): 25-31

- Ndubueze, M. E, Ogaraku, C. U and Nwoziri, C. H (2018). Analysis of Broiler production: evidence from South East, Nigeria. *Nigerian Agricultural Policy Research Journal*, 5(1), 52 – 57
- Nwankwo, E. C, Chiekiezie, N. R & Offia, E. O (2021) Agripreneurial Development among Small Scale farmers in Anambra State, Nigeria. *Journal of Agricultural Extension and Rural Development*. 13(4), 273 - 279
- Nwibo, S.U, Mbam, B.N, and Biam, C.K (2016). Determinants of agripreneurship among the Rural Households of Ishielu Local Government Area of Ebonyi State. *Journal of Biology, Agriculture and Healthcare* 6(13), 3-10.
- Olasunkanmi, M.B (2008). Economic performance of commercial Poultry farms in Oyo State, Nigeria. *International journal of poultry science*. 7(11), 1117 - 1121
- Olorunsanyo EO (2004). Egg farming business in Kwara State, how profitable? *Agrosearch* 6(1), 9-14. Onu, D.O and Okonkwo, F.C (2019). Comparative analysis of technical efficiency and profitability of Broiler and Layer production enterprises in Aba Agricultural Zone, Aba State, Nigeria. *Futo J. Series*. 5(1), 42-56.
- Sanni, S.A and Ogundipe,S.O (2005).Economics of some poultry production in Kaduna State, Nigeria. *Nigerian Journal of Animal Production* 32(1), 102 - 107
- Solow, R.W (1956). A Contribution to the Theory of Economic Growth. *The Quarterly Journal of Economics*, 70 ( 1) pp. 65-94 Published by: The MIT Press. Stable URL: <http://www.jstor.org>
- Tijjani H, Tijjani, B.A, Tijjani, A.N, and Sadiq, M,A (2012). Economic analysis of poultry egg production in Maiduguri and environs of Borno State, Nigeria. *Scholarly J. Agric. Sci.* 2(12), 319-324.
- Ugwumba, C.O.A, and Okeke, R.C (2012). Socio-economic survey of Broiler poultry production in Awka South Local Government Area of Anambra State. Proceeding of international Agricultural conference of Faculty of Agriculture, Anambra State University, held at Anambra State University,Igbariam. 622-629.
- Ume, S.I, Ezeano, C.I, Dauda, E, Edeh, O.N (2016). Analysis of socio-economic determinants to broiler production by rural women in Imo State of Nigeria. *Int. J. Env.,Agric Biotech.*1(4), 1046-1053.
- Ume, S. I., Ezeano, C. I. and Obiekwe, N. J. (2018). Analysis of determinant factors to loan repayment among broiler farmers in Enugu State, Nigeria. *International Journal of Environmental & Agriculture Research*, (IJOEAR) Vol-4.
- USDA,(2013).Grain and Feed Annual Report. Available from [http://grain.fas.usda.gov/Recent%20GAIN%20Publications/Grain%20and%20Feed%20Annual\\_Lagos\\_Nigeria](http://grain.fas.usda.gov/Recent%20GAIN%20Publications/Grain%20and%20Feed%20Annual_Lagos_Nigeria)
- World Bank (2017). Livestock productivity and resilience support project Available from: [worldbank.org/curated/en/386621567697691142/pdf/Nigeria-AFRICA-P160865](http://worldbank.org/curated/en/386621567697691142/pdf/Nigeria-AFRICA-P160865)