



# ANALYSIS OF BROILER PRODUCTION IN THE SOUTHERN AGRICULTURAL ZONE OF NASARAWA STATE, NIGERIA

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## ABSTRACT

The study analyzed broiler production in the Southern Agricultural Zone of Nasarawa State. The study adopted a multi-stage sampling technique to select 60 broiler farmers, primary data on items such as age, gender, level of education, cost of production were collected with the aid of well structured questionnaire and interviewing method. The data were analyzed with descriptive statistics, costs and returns analysis and multiple regression models. The findings revealed that majority (60%) of the broiler farmers were male and 58.3% had tertiary education, 50.0% had 1-5 persons in their households and 36.7% had 6-10years farming experience. It was also revealed from the findings that 50.0% had small flock size between 100-200 birds. The analysis of the costs and returns indicated that the total revenue of broiler farmers was N331, 941.67, the total cost of broiler farmers was N162, 167.99 and the total fixed cost was N12, 344.09. The gross and net farm income were estimated at 182,177.77 and 169,833.61 and net farm income per naira invested of N1.05 which showed that broiler production is profitable. Also, the multiple linear regression showed that  $F=42.927$ ,  $R=0.923$  and  $R^2$  indicated that about 85.2% of the variation in the dependent variable was explained by the independent variables. Age, Level of education, Farming experience, Flock Size were positively correlated with the farmers net farm income involved in broiler production, while gender, marital status and household were negatively correlated. Age was significant at 1%, level of education at 1%, gender at 10% and years of experience in poultry at 10%. However broiler production was constrained by inadequate credit, high cost of day old chicks, and high cost of feed, pest and diseases infestation, lack of electricity among others. Based on the results from the findings of this research It was concluded that broiler production was profitable and showed that broiler production depends to a large extent on proper care and efficiency of the necessary resources to maximize profit. It was recommended that poultry farming should be encouraged among young and educated people, broiler farmers should be granted access to loan facilities, research institutions should provide lasting solutions to menace of pest and disease outbreak and government should provide extension service agents to assist the farmers in the areas of management and technical competency.

**Keywords:** *Broiler, Poultry, Farmers, Gender and Enterprises.*

## INTRODUCTION

Agriculture is a significant sector in Nigeria's economy and the economic mainstay of the majority of households in Nigeria (Amaza, 2000). It contributes about 45% of the GDP, employs two third of total labor force and provides livelihood for over 90% of the rural population (Ademosun, 2000).

In recent years, Agricultural productivity in Nigeria has declined due to various decisive constraints and limitations. The declining performance of Nigerian agricultural sector, especially in the livestock sector is traceable to technological, socio-economic, institutional, organizational, natural and climatic constraints. (Njoku, 2002) saw the problem from the point view of diversification which has occurred in the economy, especially the phenomenal growth of the crude oil, and manufacturing sector. (Asiabaka, 2000) identified inefficiency in improved agricultural technology transfer systems as the bane of Nigerian agricultural development. This decline in agricultural production coincides with the nation's oil boom.

Furthermore, Nigeria has enjoyed yearly economic growth (GDP) of 10.8% in real terms between 1980 and 1987 as a result of export earnings from petroleum. Real per capital income rose at 60% per year during this period. However, the decline in the world oil price experienced in 1987, combined with the reduction in world market prices of agricultural products in 1995 brought an end to the country's economic growth and real per capital income (Ademosun, 2000). As a result of this, the food sufficiency ratio of Nigeria dropped from 98% level in the 1960s to less than 60% in the 1980s and to less than 54% in 1986 and so on (Ikpi, 1995).

Poultry production (broiler) is one of the urban and pre-urban agricultural enterprises in Nasarawa State. It encompasses all birds (domesticated) kept or reared for meat or egg production. Poultry meat is highly purchased mainly by urban dwellers in Nigeria. In context, poultry production involves rearing of domesticated birds for meat. Modern Farming (2015), reported on the benefit of poultry farming as thus:-

- i. The main benefit of poultry farming is, it does not require high capital for starting. You need just basic capital to start raising poultry. And most of the poultry birds are not costly enough to start rising.
- ii. Poultry farming doesn't require big space unless you are going to start commercially. Commercial poultry farming business also ensure high return of investment within a very short period.
- iii. Poultry provides fresh and nutritious food as has a huge global demand. Global consumers

of poultry products prefer them due to their nutrients and freshness.

- iv. Poultry farming creates income and employment opportunities for the people. Unemployed educated youth can easily create a great income and employment opportunity for them by raising or going into poultry production.

Over the years, there has been a clarion call to improve the nutritional status of developing countries, through protein intake especially animal protein. Production of poultry (broiler) in Nigeria has not been able to meet with the demand of her increasing population (FAO, 1990).

Some of these are the following challenges: The sector now faces a number of issues and difficulties including water, feed, electricity and other major problems. In addition to the challenges posed by the various pathogenic diseases, the farmers also face the problem for low capital. Help from the government and other investment institutions, is all that is needed by them for ensuring health growth and development conditions for the domesticated animals. High cost of production and low returns; Most of the farmers of the third world countries are forced to sell their products at low costs to suppliers, which in turn earn little profits from them. Also limited access to core markets can pose as a challenge to the farmers. As they get little return on what they sell, so they never try to improve the quality of the poultry (broiler). Various significant improvements can be made in these production systems through the use and implementation of the most advanced and scientific practices (Mojtaba, 2011).

The aim and specific objectives of this study was to determine the socio-economic characteristics of broilers producers in the study area, to estimate the cost and returns of broiler production in the study area, to determine the factors influencing the net farm income of broiler production in the study area, and to determine the constraints faced by the various producers/farmers of broiler in the study area.

The Nigeria poultry industry in particular has been rapidly expanding in recent years and is therefore one of the most commercialized (capitalized) subsectors of Nigerian agriculture (USDA 2013). The popularity of poultry production can be explained by the fact that poultry has many advantages over other livestock. Poultry birds are good converters of feed into useable protein in meat and eggs. The production costs per unit remain relatively low, and the return on investment is high. Therefore, farmers need a relatively small amount of capital to start a poultry farm. Furthermore, also the production cycle is quite short, so capital is not tied up over a long period (Aboki *et al.*, (2013). As the human population

increases, the poultry industry continues to grow to meet the demand for poultry products in world markets. The importance of poultry farms lies in the quality of products that are provided to humans. Broilers farms provide meat that supplies the human body with high quality proteins (Aboki *et al.*, 2013).

The challenges of food insecurity and hunger in developing African countries like Nigeria have caught the attention of experts and governments worldwide (Emaikwu *et al.*, 2011; FAO 2011). Population growth, urbanization, and income improvements are the main drivers of increased demand for foods of animal origin in developing counties (Abdullah *et al.*, 2011). The sufficient supply of animal protein is most critical in the global food basket crisis (FAO, 2011). As a result, growing demand has led to a rise in the production of foods of animal origin all around the globe, especially from poultry (FAO, 2010). Therefore by an analysis of broiler production among poultry farmers in the southern Agricultural Zone of Nasarawa State; the study has not only helped to identify protein intake to improve the nutritional status of developing countries but also provided the indices for various significant improvements that can be made to improve the quality of the poultry products in the study area. Thus, the findings from this study, if well disseminated through seminars, publication and advocacy will help policy makers to formulate policies that would enhance the resource use efficiency and productivity of farmers. This will be used to determine the direction of resource adjustments that could lead to increase in the production of broilers that will meet the demand for the country's ever increasing population and the world at large.

## MATERIALS AND METHOD

The study was conducted in the Southern agricultural zone of Nasarawa State. Nasarawa State has thirteen (13) Local Government Areas (LGAs) and is divided into three agricultural zones namely: Central, Western and Southern agricultural zones respectively. The study was conducted in the Southern Senatorial Agricultural Zone which comprises Lafia, Doma, and Obi Local Government Areas (LGAs). The zone is characterized by a long period of rainy season (May-October). The zone is located between latitude 9°33' North and longitude 9°32' East. The average annual rainfall is approximately 107.3mm and annual temperature ranging from 22.7°C to 36.8°C (Meteorological Department, Nigeria 2008). Crops grown in the study area include Yam, maize, rice, millet, soya bean, beniseed, cassava, sweet potatoes and cocoyam. Farmers in the study area also keep livestock such as cattle, poultry, goats, and sheep. And the permanent tree crops planted by farmers include:

oranges, mangoes, and cashew. Most of the people are farmers who also engage in trading and artisan work as part time commercial activities.

A multi-stage sampling technique was adopted in which one (Southern Agricultural Zone) out of the three Agricultural Zones in the state was selected. Firstly, three (3) Local Government Areas (Lafia, Obi, and Doma) were selected out of the five (5) Local Government Areas in the Southern Agricultural Zone. The second stage involves random selection of two (2) farming communities from each of the three selected local government areas, namely Shabu, Ombi 2, Obi, Agwatashi, Doma, Idiya-Yalwa, to give a total of six (6) farming communities. Lastly, ten (10) broiler farmers were randomly selected from each of the farming communities to give a total of sixty (60) respondents for the study. Data was analyzed using descriptive statistics such as mean frequency and percentages to achieve objectives 1 and 4. Objective 2 was achieved using cost and returns, while objective 3 was achieved using multiple regression.

## RESULTS AND DISCUSSION

**Socio-Economic Characteristics of the Respondents**  
Results from the findings revealed that larger proportion (48.3%) of the respondents were between the ages of 31-40 years, 38.3% of the respondent were below the age of 30 years while only 13.3% of the respondents were between the ages of 41-50 years. The mean age was 35.5. This indicated that majority of the broilers farmers were in their active age. This is because most of the activities in the farm are done manually. The physical ability of a man obeys the law of diminishing returns. In this chase, the productivity of man increases with age to a peak level after which it declines as the farmer advances in age.

Also a large proportion (36.7%) had years of experience in poultry business of between 6-10 years, 30.0% had experience between 1-5 years, 18.3% had experience above 15 years and 15.0% had experience between 11-15 years in poultry production. The mean farming experience was 3.96. It is noteworthy that experience in farming is very essential in order to effectively perform the activities profitably and low farming experience could impact negatively on the profitability and efficient production of broiler production in the study area. According to Otuniya *et al.*, (2007) experience is expected to have a significant positive impact on the ability of the farmer or farm manager. This implies that the more experienced a poultry farmer is, the more efficient he would be in management because the acquired experience over the years would be brought to bear on the production activities.

The results showed that majority (58.3%)

of the respondents in the study area had tertiary education, 31.7% had secondary education, while those that had primary and non formal education were 5.0%. This shows that quite a number of the respondents are educated in the study area; it is noteworthy that education is one of the major socio-economic factors that have impact on the output and productivity of the farmers. Farmers with formal education are privileged to have early contact with new innovations and improved technologies which are designed to improve output and productivity, moreover such farmers are early adopters and become risk aversion tendency reduces with formal education. This is collaborated by Adams (2009) that in poultry industry, formal education affords farmer especially, those that have training in agriculture the opportunity to understand proper management of resources in poultry production.

Furthermore, the results from the findings show that majority (50.0%) of the respondents had between 1-5 persons in their household and that 36.7% had between 6-10 persons in their household while 13.3% had above 10 persons in their household. The mean household size was 4.42. This showed that there are relatively small family sizes which could hamper family labour in poultry enterprise. This may be that family members are all educated and have gone for one or more educational programmes. Although a large family size implies that there are more mouths to be fed. This is in line with Baruwa and Oke (2012) who stated that the size of household is a good indicator of labour available for work in the production activities.

The results also revealed that majority (60%) of the respondents were male and 40% were female. This implies that there are more male in poultry production than female; this is so because the activities involved are very strenuous which could be difficult for women to undertake.

Majority (73.3%) of the respondents was married and 26.7% were single in the study area. This implies that married people are more involved in broiler production than the single in the study area. This shows that married farmers tends to provide family labour for the poultry production and thus reduce money on hired labour.

The results also showed that 31.7% of the respondents had a flock size below 100 birds, 50.0% had a flock size 100-200 birds, also 8.3% of the broiler farmers had a flock size of 201-300 birds, 8.3% of the had a flock size of 301-400 and 1.7% of the farmers had a flock size above 500 birds. The mean flock size was 151.88. This implies that broiler farmers in the study area were operating on small scale.

**Table 1:** Socio-Economic Characteristics of Broiler Farmers

Variables	Frequency	Percentages
<b>Age</b>		
<b>Below 31</b>	23	38.3
31-40	29	48.3
41-50	8	13.3
<b>Total</b>	60	100.0
<b>Farming Experience</b>		
1-5	18	30.0
6-10	22	36.7
11-15	9	15.0
Above 15	11	18.3
<b>Total</b>	60	100.0
<b>Level of Education</b>		
Non-formal	3	5.0
Primary	3	5.0
Secondary	19	31.7
Tertiary	35	58.3
<b>Total</b>	60	100.0
<b>Household Size</b>		
1-5	30	50.0
6-10	22	36.7
Above 10	8	13.3
<b>Total</b>	60	100.0
<b>Gender</b>		
Male	36	60.0
Female	24	40.0
<b>Total</b>	60	100.0
<b>Marital Status</b>		
Single	16	26.7
Married	44	73.3
<b>Total</b>	60	100.0
<b>Flock Size</b>		
Below 100	19	31.7
100-200	30	50.0
201-300	5	8.3
301-400	5	8.3
Above 500	1	1.7
<b>Total</b>	60	100.0

Source: Field survey, 2017

### Costs and Returns on Broiler Production

Table 4.2 presents the costs and returns of broiler production in the study area. The results revealed that the total variable cost (TVC) was N149, 823. 90, total fixed cost (TFC) N12,344 .09, total revenue (TR) N331,941.67, gross margin (GM) N182,177.77, net farm income (NFI) N169,833.61 and return per naira

invested was N1.05. This indicates that the farmer made profits at the end of their production. Therefore broiler production is profitable and should be giving priority. Also, it was revealed that for every naira invested, a profit margin of N1.05 was realized.

(Oyeleye, 2013) studied on Economic Analysis of Broiler Production in Aboekuta, Ogun State subjected the farmers to cost and returns analysis and multiple regression analysis. The profit level and the rate of the return to investment of broiler enterprise were determined and the extent to which cost variables affects the level of revenue was determined. The study shows that commercial broiler farmers have higher income on the enterprise than the small scale farmers. It also shows that total variable cost affects the level of broiler revenue than the fixed costs.

Also, the findings revealed that the pressing problems encountered by the broiler producers are, high cost feed, lack of capital, cost of medication, transportation problem and in some cases pilfering of birds and disloyalty by poultry attendants.

Table 2: Cost and Returns of Broiler Farmers

Items	Mean value per bird	Percentages of variable cost
<b>A)Variable Cost (Naira)</b>		
Feed	63,353.33	42.29
Labour	53,066.67	35.42
Chicks	20,976.69	13.94
Vaccines	3,889.23	2.60
Transport	2,736.67	1.83
Water	2,108.33	1.41
Litter material	1,386.33	1.00
Electricity	2,306.67	1.54
<b>Total Variable Cost(TVC)</b>	<b>149,823.90</b>	
<b>B)Fixed Cost (FC)</b>		
Rent	4,690.42	
Feeder	2,328.33	
Drinker	2,042.83	
Lantern	1,271.67	
Stove	1,118.67	
Weighing balance	612.50	
Basin	279.67	
<b>Total Fixed Cost(TFC)</b>	<b>12,344.09</b>	
<b>C)Total Cost (TC) (Naira)</b>	<b>162,167.99</b>	
<b>D)Total Revenue (TR) (Naira)</b>	<b>331,941.67</b>	
Gross Margin (GM)=TR-TVC	182,177.77	
Net Farm Income =GM-TFC	169,833.61	
Net farm income Per Naira Invested	1.05	

Source: Field survey, 2017

### Regression Analysis

The multiple linear regression analysis result was used to determine the factors influencing the net farm income of broiler production in the study area. The coefficient of determination R<sup>2</sup> indicates that about

85.2% of the variation in the dependent variable was explained by the independent variables included in the regression model. The standardized regression coefficient of gender (-.098), age (.133), marital status (-.030), level of education (.089), farming experience (.015), household size (-.013) and flock size (.002). Conversely the regression coefficient of age, level of education, years in poultry and flock size were positive. The level of education is positively correlated. This means educated broiler farmers tend to achieve higher net returns than the illiterate farmers as they are highly innovative, well skilled, knowledge about risks and uncertainties associated with the business to improve their profits. It is collaborated by Adejobi and Atobatele (2008) that high level of literacy is needed to do well in the trade as it enhances the production ability and their level of initiative reasoning to new innovations in agriculture. As noted by Babatunde *et al.*, (2007) that low level of education makes introduction to improved technologies by extension agents difficult. Also, Farming experience was also found to be positively correlated. This means that as the farm experience increases, it tends to increase the net farm income of the broiler farmer. This has implication for economy of scale. On the other hand, gender, marital status and household size were negative indicating that an increase in any of this independent variables will lead to decrease in poultry production. This may be that majority of the households are educated and are more engaged in non broiler production.

Table 3: Factors Influencing Farm Net Income of Broiler Production

Model	B	Std. Error	Beta	T-value
1 (constant)	4.665	.166		28.037***
Gender	-.098	.051	-.121	-1.924*
Age	.133	.041	.227	3.269***
Marital status	-.030	.050	-.041	-.601NS
Level of education	.089	.030	.183	3.001***
Years in poultry	.015	.007	.115	1.955*
Household size	-.013	.009	-.085	-1.416NS
Farm size	.002	.000	.703	10.264***

Source: Field survey, 2017

R = 0.923, R<sup>2</sup> =85.2, F =42.927 \*significant at 10%, \*\*significant at 5%, \*\*\*significant at 1%, NS not significant

### Constraints Faced by Broiler Farmers.

The table shows the constraints faced in broiler production in the study area; 18.7% which ranked 1st experienced high cost of feed, 14.3% which ranked

2nd had a complain of lack of electricity, about 13.6% of the broiler farmers which ranked 3rd complained of high cost of day old chicks, 13.6% which ranked 4th of the broiler farmers were faced with pest and diseases, and 9.5% which ranked 5th complained of high cost of vaccine. All these factors hinder the profitability of broiler production in the study area.

Table 4: Constraints Faced by Broiler Farmers

Constraints	Frequency	Percentages	Rank
High cost of feed	55	91.6	1st
Lack of electricity	42	70	2nd
High cost of day old chicks	40	66.7	3rd
Pest and disease Infestation	40	66.7	4th
High cost of vaccines	28	46.7	5th
Inadequate credit	27	45	6th
High cost of Transportation	26	43.3	7th
High cost of labour	18	30	8th
Inadequate land	9	15	9th
High cost of rent	5	8.3	10th
Illiteracy	4	6.7	11th

Source; Field survey, 2016

Multiple responses

## CONCLUSION

The study was conducted to analyze broiler production in the Southern Agricultural Zone of Nasarawa State. The main objectives was to analyze the socio-economic characteristics of the broiler farmers, costs and returns of broilers, factors influencing net farm returns and the factors affecting broiler production. The study adopted a multi-stage sampling technique to select 60 farmers. Primary data on items such age, gender, level of education, cost of production were collected with the aid of well structured questionnaire and interviewing method. The data were analyzed with descriptive statistics, costs and returns analysis and multiple regression model. The result of the socio-economic characteristics showed that majority (48.3%) of the broiler farmers were within the age range of 31-40years. Most of the broiler farmers were male and 58.3% had tertiary education, 50.0% had 1-5

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persons in their households and 36.7% had 6-10years farming experience, majority(73.7%) were married and had small flock size. The analysis of the costs and returns indicated that the total revenue of broiler farmers was N331,941.67, the total cost of broiler farmers was N162,167.99 and the total fixed cost was N12,344.09. The gross and net farm income were estimated at N169, 773.68 and N169, 833.61. Also, the net return per naira invested was N1.05, which showed that broiler production is profitable. Age, Level of education, Farming experience, Flock Size were positive and significant while gender, marital status and household were negative. However broiler production was constrained by inadequate credit, high cost of day old chicks, high cost of feed, pest and diseases infestation, lack of electricity among others. The study concluded by advocating a number of measures that will help to improve broiler production in the area of research.

- i) Poultry farming should be encouraged among young and educated people to improve the participation of farmers in the enterprise.
- ii) Broiler farmers should be granted access to loan facilities from financial institutions by simplifying the lending terms such as favorable interest rates to increase their production capacity.
- iii) Government should set up and support existing hatcheries managed by experienced and skilled workers in order to produce disease free and vigorous hybrids of day old chicks and at a lower cost.
- iv) Research institutions should be encouraged to provide lasting solutions to the menace of pests and diseases outbreak in poultry production
- v) Poultry farmers especially broilers producers should improve their medical facilities, sanitary condition and vaccination to prevent poor loss growth, loss of weight and high mortality rate of birds.
- vi) Government should provide extension service agents to assist the farmers in the areas of management and technical know-how.

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