

## **Economic Analysis of Broiler Production in Karu Local Government Area, Nasarawa State, Nigeria**

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**Abstract:** *This study evaluated economics of Broiler Production in Karu local Government area Area, Nasarawa State, Nigeria. Data were obtained using structured questionnaires; the questionnaires were administered to forty (40) broiler farmers in the study area sampled using simple random sampling technique. Data obtained were analyzed using descriptive statistics and budgetary technique. The result shows that majority 55 percent were female while 45 percent were male farmers. The average age of the farmers was 38 years these shows that the farmers were in their active age of productivity. More so 47.5 percent of the sampled respondents attended secondary school while 37.5 percent obtained tertiary education; the result also revealed that majority 72.5 percent had less than 4 years' experience in broiler production while 25 percent had 5- 9 years of farming experience in the study area. Also the result shows that majority 85 percent of the sampled farmers could not have access to credit while only 30 percent of the sampled respondents were members of cooperative society. The result of the analysis of cost and returns/profitability analysis revealed that the average revenue of broiler production was ₦2, 063000, the average variable cost of production was ₦1, 459,274.35 and the gross margin realized was ₦603, 726.6 which shows that broiler production is profitable in the study area with 41 percent rate of return on investment this portrays that every ₦1 invested in broiler production will yield 41 kobo profit. Despite the profitability of broiler production in the study area, However, lack of extension services, high rate of disease infestation, high cost of feeds, lack of capital, high cost of broiler equipment and poor market price were identified as the major constraint militating against broiler production in the study area. The study therefore recommends that provision should be made for capital, subsidized feeds, and extension agents to train broiler farmers, infrastructural facilities, and drugs/ vaccines to farmers in order to improve poultry production that will yield more profit which will attract more farmers to invest in broiler production in the study area.*

**Keywords:** *Broiler, profitability, cost, revenue, analysis, Nasarawa*

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### **I. Introduction**

The challenges of food insecurity and hunger worldwide and particularly in developing countries like Nigeria have continued to receive attention from experts and Governments (FAO, 2003; Babatunde et al., 2007). Consequently several conferences and World Food Summits on human nutrition have brought to fore for debate the issue of eradicating extreme poverty and hunger. FAO (1995) asserted that the most critical in the global food basket crises is animal protein. Studies by Okayeto (1992), Egbunike (1997) and Ojo (2003) revealed that in spite of the numerous human and natural resources of Nigeria, it still remains among the least consumers of animal protein in Africa. More so, that the protein intake of an average Nigerian is about 53.8% with only 6.0 to 8.4 g/head/day of animal origin. The studies further revealed that North America, Western and Eastern countries consume 66, 3 and 33 of animal protein per head per day, while an average Nigerian consumes 7.5 g which is below the recommended level of 27 g/head/day. To increase protein intake in Nigeria, it therefore calls for urgent need to increase poultry production at both household and commercial holdings. Oluyemi and Roberts (2000) and Isika et al. (2006) postulated that poultry was strategic in addressing animal protein intake shortage in human nutrition because of its high fecundity, fast growth rate, short generation interval and unparalleled competence in nutrient transformation to high quality animal protein. The industry has a significant effect on national economy. A report by Okonkwo and Akubo (2001) show that about ten (10) percent of Nigerian populations are engaged in poultry production, mostly subsistence and small or medium sized farms. Broiler production in addition contributes to the nation's gross domestic product (GDP), it provides gainful employment and income to sizeable proportion of the populace (Rahman and Yakubu 2005). This will go a long way to alleviate poverty and improve the welfare of the populace (Adebayo and Adeola, 2005). The poultry industry has become a diverse industry with a variety of business interests such as egg production, broiler production,

hatchery and poultry equipment business (Oluyemi and Roberts, 1979). Broiler production 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). Broiler production is carried out in all parts of the country with no known religious, social or cultural inhibitions associated with their consumption. Specifically, investment in broiler enterprises is attractive because the production cost per unit is low relative to other types of livestock, broiler meat is very tender and broiler enterprises have short production cycles (Nwajiuba and Nwoke, 2000). The high demand for broiler products, the success of exotic breeds and the ease of mastering the techniques of broiler production among other factors has made it developed to the status of agribusiness in Nigeria as distinct from subsistence production (Nwajiuba and Nwoke, 2000; Sani et al., 2000). According to Badejo (1983), Wong (1991), Ogundipe (1996) and Aduku and Dafwang (2002), broiler marketing is a very challenging task for any sizeable broiler production outfit in Nigeria that, no farmer should invest in it unless he has a fair knowledge of market outlet and the size of their demand. Broiler production is an important agribusiness enterprise that has a great potential for providing additional income to our farming community and educated unemployed persons of the rural areas through creating self-employment opportunities. In addition to its contribution to the Gross Domestic Product (GDP) and provision of employment opportunities, it is a major source of meat which has high nutritional value particularly in the supply of protein (Olagunju and Babatunde, 2011). Broiler production is unique in that it offers the highest turnover rate and the quickest returns to investment outlay in the livestock enterprises (Sanni and Ogundipe, 2005). Fund invested in broiler production are recovered faster than in any other livestock enterprise. The rate of growth in broiler breeds is the highest when compared with ruminants and other monogastric animals (Ojo., 2002) and the cheapest, commonest and the best source of animal protein (Ojo,2002).broiler meat is not forbidden by any culture or religion and therefore its demand has no barrier. Poultry refers to all birds of economic value to man as source of meat, and fibre. Animal protein is an essential part of human nutrition because of its biological significance. Oram (2012) reported that proteins are required for the growth of young ones, formation of gametes in reproduction, formation of digestive juices, repair of worn-out tissues or cells, production of anti-bodies as well as enzymes and hormones in the body. Okwonkwo and Akubo, (2001) reaffirmed that animal proteins are more “biologically complete” than vegetable proteins with regards to their amino-acids composition. The dearth in the quantity and quality of protein supply in Nigeria is a challenge that is beyond dependence on plant protein alone. According to Ogaji (2010), Nigeria has a total land area of 98.3 million hectares out of which 71.3 million hectares are cultivable, while 34.2 million hectares representing 48% of the cultivable area are actually being cultivated and less than 10% of the arable land is irrigated. It suffices therefore, to explore quality protein of animal origin of which broiler meat is of prime importance. Nigeria hosts more than 45% of the poultry in the West African sub region (WHO, 2006) and its poultry population is estimated at 140 – 160 million comprising of 72.4 million chicken, 11.8 million ducks, 4.7million guinea fowl, 15.2 million pigeon and 0.2 million turkeys (FAO, 2006). This figure accounts for 71.38% of the total livestock kept in the country and supplies 17% of animal protein need of the population (Oji and Chukwuma, 2007). FAO (2009) estimated world broiler meat production at 91,307.582 tonnes and identified USA (18.982.752 tonnes), China (16.437.587 tonnes) and Brazil (10.385.331 tonnes) as leading producing countries. It was further estimated that yearly poultry meat consumptions per capital were 50.59, 31.66, 11.84 and 20.78 kg in USA, Brazil, China and EU countries, respectively. According to FAO (2006) livestock sector is vital to the socio-economic development of Nigeria. It contributes about 9-10% of agricultural GDP. Moreover, Nigeria’s chicken population is about 150.682 million (UNDP, 2006) of which 25% are commercially farmed, 15% semi-commercially, and 60% in backyards. It is one of the highest investments in agriculture with net worth of N250 billion (aicpnigeria.org). The worldwide average per capita consumption of broiler meat has nearly quadrupled since the 1960s (11 kg in 2003 compared with 3 kg in 1963) (FAO,2009). The meat is rich in proteins and is a good source of phosphorus and other minerals, and of B-complex vitamins. Broiler meat contains less fat than most cuts of beef and pork. Broiler liver is especially rich in vitamin A). Though the broiler industry in Nigeria had been rapidly expanding in past years, increasing from 185,300 MT in 2001 to 268,000 MT in 2011, the production and consumption of this product in Nigeria is lower compared to developed countries of the world. FAO (2011) still identify increase in Broiler meat consumption in recent years and the need for increase production

The major problems militating against the economic production of broiler in this study range from poor market access, high feed and chick costs, untimely delivery of farm inputs, inadequate capital and poor extension services Rahman et al. (2005). The challenges of food insecurity and hunger worldwide and particularly in developing countries like Nigeria have continued to receive attention from experts and Governments (FAO, 2003; Babatunde et al., 2007). Consequently, several conferences and World Food Summits on human nutrition have brought to fore for debate the issue of eradicating extreme poverty and hunger. To increase protein intake in Nigeria, it therefore calls for urgent need to increase broiler production at both household and commercial holdings. These factors brought about uncertainty in broiler production. In

recent time, broiler industry in Nigeria has been experiencing a steep decline in output as indicated at the background information of this chapter, which is attributed to soaring cost of production, and hence significantly reduced net returns in the business. This has culminated in the exit of many poultry farms especially the broiler farms, with prospective investors becoming increasingly unwilling to invest in the industry (USDA, 2011). The situation does not only threaten existence and survival of the broiler industry but also calls for a conjunctive effort to save the industry from total collapse. Both government and industry sources have indicated that poultry meat (broiler) production fell below 11 percent of demand (USDA, 2008). This steep decline in the local broiler industry has been attributed to the very high cost of production. Time and time again, farmers attribute the high cost associated with broiler production to the cost of feeding the birds, and the cost of other inputs ignoring the crucial role of cost management can play. Efficient cost management or otherwise by the farmers has direct bearing on their cost of production. Lack of technical efficiency, such as labour, capital and feed efficiency will result to low yield (USDA, 2014). If farmers were efficient in allocation of inputs, this would minimize wastage of production resources resulting in minimization of cost and maximization of profit and, hence encouraging them to produce more. This presupposes that low cost efficiency (high cost inefficiency) could be a contributory factor to the high broiler production cost and for that matter resulting to low broiler meat production in Nigeria. Also time management plays a critical role in reducing cost of production. Most broilers farmers are not conscious of the timely sales of broiler birds. Keeping them unnecessary longer will incurred high cost of production thereby resulting colossal lost or reduction in the profit level of the farmers (USDA, 2013). Nigeria government and private individual have tried to design policies that will encourage broiler production because of its profitability tendency. It is quite unfortunate that the decline in the growth of broiler industry today has continued unabated. These factors brought about uncertainty in broiler production. Broiler products were a times not available in the markets and times they were there in abundance. Hunger and malnutrition remain among the most devastating problems facing the world poor. The Food Insecurity Report by FAO (2002) estimated that 799 million people in 98 developing nations are not getting enough food to live a normal, healthy and active live including Nigeria. The broiler industry has been lagging behind the other livestock's sub-sector and the gap between production and consumption has been growing wider. In view of this, there is a need to investigate the economics analysis of broiler production in Karu Local Government Area of Nasarawa State, Nigeria. So that farmers can divert their resources to broiler production that will earn them more income and improve their livelihood. In line with the above this calls for thorough investigation, therefore this study was carried out to provide answers to the following research questions.

I. What are the socioeconomic characteristics of broiler farmers in the study area?

II. What is the profitability of broiler production in the study area?

III. What are the constraints militating against by broiler production in the study area?

The broad objective of this study is to determine the Economic Analysis of broiler production in Karu Local Government Area of Nasarawa State, Nigeria.

The specific objectives were to:

I. Examine the socio-economic characteristics of broiler farmers in the study are

II. Estimate Cost, Returns and Profitability of broiler Production in the study area

III Identify Constraints militating against broiler production in the Study Area

## **II. Materials and Method**

### **The Study Area**

The Study was conducted in Karu local government Area of Nassarawa State, Nigeria. Nasarawa State is made up of thirteen local government areas namely; Wamba, Kokona, Kean, Nassarawa/Eggon, Toto, Awe, Akwanga, Keffi, Karu, Lafia, Obi, Doma and Nassarawa. It is bounded in the north by Kaduna state, in the west by the Federal Capital Territory, Abuja, in the south by Kogi and Benue States and in the east by Taraba and Plateau States. The state has agriculture as the mainstay of its economy with the production of varieties of cash crops throughout the year. It is also blessed with solid minerals notably salt and bauxite. Karu is a Local Government Area in Nassarawa State, central Nigeria. It is close in proximity to the Federal Capital Territory of Nigeria. Karu Local Government is located between latitudes 8° 5' N and 10° 42' N and longitudes 9° 25' E and 7° 54' E of the Greenwich Meridian. It lies on latitude 07° 30' N and longitude 08° 50' E with an area of 2,640 km<sup>2</sup>. It shares its western boundary with the Federal Capital Territory (FCT) of Nigeria, its southern boundary with the Nassarawa Local Government area, its eastern boundary with the Keffi Local Government and its northern boundary with Kaduna State. Karu local government has its headquarters in New Karu town. According to the 2006 census, the population of mainly New Karu town was 205,477. Karu is the second most populous Local Government Area in Nasarawa state after Lafia. Karu consists of five districts namely: Aso, Gurku, Kabusu, Karu and Kodope.

### Sampling Techniques and Sample Size

A random sampling technique was employed in selecting the wards for this study. The four selected wards for this study were Gurku, Karu, Aso and Kabusu. A Simple random Sampling was applied to select ten (10) respondents from each of the four wards selected out of the thirteen wards in Karu Local Government Area making the total sample size of (40) poultry farmers.

### Method of Data Collection

Data were collected through primary source. Primary data were obtained through the use of a well-structured questionnaire, Data was collected based on the socio-economic variables such as gender, age, farming experiences, educational status, household size and income level of the respondents, as well as profitability variables and factors influencing poultry production, types and sources of input and production cost as well as cost and returns in the study area.

### Method of Data Analysis

The following tools of analysis were employed to achieve the stated objectives:

- (1) Descriptive Statistics.
- (2) Farm Budgeting Technique

### Descriptive Statistics.

This tool was used to have the description of the data collected. It involves the use of percentages, means and frequency distributions and tables. This was used to achieve specific objective one (1) & three (3).

### Budgetary Technique

The budgeting tool that was used in the study was the Gross Margin Analysis (GMA). Gross Margin (GM) measured as the difference between the Gross Revenue (TR) and the Total Variable Cost (TVC). The Gross Revenue (TR) is the Total output multiplied by the unit price. This gives a measure of the value of the enterprise. The total variable cost measures those costs that vary more or less in direct proportion to the level of production. The Fixed Cost component of the Total Cost of Production is assumed to be negligible at a short run.

The Model is expressed as follows: -

$$GM = TR - TC$$

Where,

GM = Gross Margin (₦)

TR = Total Revenue (₦)

TC = TFC + TVC

TC = Total Cost

TFC = Total Fixed Cost

TVC = Total Variable Cost (₦)

GR =  $\sum P_i \times Q_i$ ;

P<sub>i</sub> = Cost of poultry per (kg) and;

Q<sub>i</sub> = Quantity of poultry produced in (kg)

$\sum$  = Summation from the *i*th farmer to the *n*th farmer

### Rate of Return on Investment

$$(RORI) = \frac{\Pi}{TC}$$

Where,

Π = Profit (₦)

TC = Total Cost (₦)

This tool was used to achieve specific objective two (2).

## III. Results And Discussion

### Socioeconomic Characteristics of the Sampled Respondents in the Study Area

Table 1 shows the analysis of the socioeconomic characteristics of the sampled broiler producers in the study area. 40 sampled broiler farmers was considered. The result shows that majority 55 percent were female while 45 percent were male farmers. This is attributable to the less intensive labour demand of Sex Frequency Percentage (%) of poultry farming which the female gender could afford. More so, females are found to be more caring as is required by broiler rearing than males. Also the result revealed that majority 72.5 percent were married while 27.5 percent were single in the study area. majority 45 percent were between the ages ranges of

31-40 years while 27.5 were between 21-30 years and the average age of the farmers was 38 years these shows that the broiler farmers were in their active age of productivity, so could accept and adopt broiler production innovations faster as well as invest more on broiler production 'if all things being equal. More so 47.5 percent of the sampled respondents attended secondary school while 37.5 obtained tertiary education. Education is not only an important determinant of adoption of an innovation but also a necessary tool for successful implementation of innovation for profitability. This is in line with the findings of Amos (2006). The result also revealed that majority 72.5 percent had less than 4 years farming experience while 25 percent had 5- 9 years of farming experience in the study area. This can be attributed to increase number of new entrance into the enterprise which in turns made them to embark on small-scale production since they had little experience to handle large scale production indicated in table 1 below, where majority of the farmers rear less than 500 birds per batch. Majority 65 percent of the sampled respondents had 1-5 members per household while 32.5 percent were between 6-10 members per household. Also 40 percent of the sampled respondent's uses hired labour while 35 percent applied family labour. Majority 97.5 percent had a flock size of less than 500 birds/ batch per farm while only 2.5 percent had 501-1000 birds per farm. The dominant small-scale of most farms is attributed to the high cost required to operate large scale and inadequate capital faced by the farmers to operate large scale enterprise. This result agreed with Rahman (2005). Moreover, the result also revealed that majority 85 percent of the sampled farmers could not have access to credit while only 30 percent of the sampled respondents were members of cooperative society. Greater proportion 70 percent could not have access to cooperative membership. The non-members might be faced with problems of inability to pool their limited resources together to enjoy the benefit of economies of scale. Furthermore 70 percent had farming as their main occupation while 65 percent practiced battery cage system while 25 percent practiced both deep litter and battery cage system of broiler management in the study area.

**Table 1 Socioeconomic Characteristic of the Sampled Broiler Farmers in the Study Area**

<b>Variable</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Gender</b>		
Male	18	45
Female	22	55
<b>Marital Status</b>		
Married	29	72.5
Single	11	27.5
<b>Age</b>		
20	1	2.5
21-30	13	27.5
31-40	18	45
41 and above	8	20
<b>Educational Level</b>		
No formal education	3	7.5
Primary	3	7.5
Secondary	19	47.5
Tertiary	15	37.5
<b>Farming experience</b>		
Less than 4 years	29	72.5
5-9 years	10	25
10-14	-	-
15-19	1	2.5
20 and above	-	-

**Table1 Continued**

<b>Household size</b>		
1-5	26	65
6-10	13	32.5
11 and above	1	2.5
<b>Source of labour</b>		
Hired labour	16	40
Family labour	14	35

Both	10	25
<b>Farm size/flock</b>		
Less than -500	39	97.5
501-1000	1	2.5
1001-1500	-	-
1501-2000	-	-
2001 and above	-	-
<b>Access to credit</b>		
Yes	6	15
No	34	85
<b>Access to extension</b>		
Yes	6	15
No	34	85
<b>Cooperative membership</b>		
Yes	12	30
No	28	70

Table1 Continued

<b>Training exposure</b>		
None	3	7.5
Rare	5	12.5
Occasionally	20	50
Frequently	12	30
<b>Occupation outside farming</b>		
Yes	15	37.5
No	25	62.5
<b>Main occupation</b>		
Trading	5	12.5
Farming	29	72.5
Civil Service	6	15
<b>Type of poultry management</b>		
Deep litter	4	10
Battery cage	26	65
Both	10	25
<b>Total</b>	<b>40</b>	<b>100</b>

#### Cost, Returns and Profitability Analysis of Broiler Production in the Study Area

Table 2 shows the result of the analysis of cost and returns of broiler production in the study area, the result revealed that the average gross revenue of broiler production in the study area was ₦2, 063000 while the average cost of chicks was ₦327390 i.e 22 percent of the average cost of production and the average cost of feeds was ₦979875 carries the highest proportion of the total average cost which was 68 percent of the total average cost. Also the average cost of drugs/vaccines and average cost of litter materials was ₦16132.5 and ₦7548.75 respectively while the average cost of labour, cost of electricity and other expenses was ₦94200, and ₦26710 respectively in the study area. Moreover, the total average variable cost of production in the study area was ₦1, 459,274.35 and the gross margin realized was ₦603, 726.6 which show that broiler production was profitable in the study area with 0.41 rate of return on investment this implies that every ₦1 invested in broiler production will yield 41 percent interest on investment in the study area. This result agreed with the findings of Ojo (2003), who stated that the lower the gross and operating cost, the higher the profitability of the farm enterprise and vice versa the result also agreed with (Omolayo, 2018) which reported 44 percent rate of return on investment in broiler production in Lagos State. The profitability of the enterprise can be attributed to the fact that majority are able-bodied farmers.

**Table2; Cost and Returns Analysis of Broiler Production in the Study Area**

Variable	Average Value(₦)	Percentage
<b>A Gross Revenue</b>	<b>2063000</b>	
<b>B Variable Cost</b>		
(a) Cost of Chicks	327390.0	22
(b) Cost of feeds	979875.0	67
(c) Cost of drugs/vaccines	16132.50	1.1
(d) Cost litter materials	7548.75	0.52
(e) Cost of labour	94200.0	6
(f) Cost of electricity and water	26710.0	1.8
(g) Other expenses	7418.10	0.52
<b>C. Total Variable cost</b>	<b>1459274.35</b>	
<b>D. Gross Margin</b>	<b>603726.6</b>	
<b>Rate of Return on Investment</b>	<b>0.41</b>	<b>100</b>

**Problems Militating Against Broiler Production in the Study Area**

Table 3 shows the distribution of the analysis of problem militating against broiler production in the study area. The result shows that majority 80 percent of the sampled respondents experienced high cost of feeds as the major problem militating against the smooth operation of the broiler business in the study area while 67 percent were of the opinion that poor marketing was the major problem of poultry production. More so majority 62.5 percent and 57.5 percent of the sampled respondents identified lack of capital and lack of storage facility for the process poultry product as the major constraint of broiler production this is in line with (Seth et al, 2013). 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 percent encountered poor market price as the very serious problem while 92.5 percent identified lack of extension services as the major constraint militating against poultry production in the study area.

**Table3; Analysis of Problem Militating against Broiler Production in the Study area**

Variables	Percentage			
	VS	S	LS	NS
High cost of feeds	80	20	-	-
Poor marketing	67	30	-	2.5
Lack of capital	7.5	62.5	7.5	2.5
Lack of storage facilities	17.5	57.5	32.5	2.5
Poor transportation network	12.5	35	40	12.5
High rate of disease infestation	5	12.5	37.5	40
High cost of drugs and vaccines	1	40	45	5
Poor access to credit	15	37.5	40	7.5
High cost of poultry equipment	17.5	45	27.5	10
Poor market price	70	22.5	5	2.5
Lack of extension services	92.5	7.5	-	-
<b>Total</b>				<b>100</b>

key: VS very Serious, S serious, LS less serious, NS not serious

**IV. Conclusion And Recommendations**

This study shows that broiler production is profitable in the study area. Despite the profitability of broiler production, nonetheless farmers were faced with challenges of lack of extension services; education; high cost of feeds; lack of capital; high cost of broiler equipment and high rate of disease infestation as some major production constraints in the study area. Therefore, the study recommends that, a well-coordinated extension programme, aimed at informing broiler farmers on the best-input combinations and management

practices should be put in place. This would enhance productivity and profitability as well as processing and distribution with a resultant impact on flock size. Government Policy should tackle the issue of lack of finance by assisting and encouraging broiler farmers to form cooperatives; this would enclose resource- poor farmers secure loans as well as pool resources together to overcome the inadequacy of capital. Government and private organizations participation in timely and subsidized input supply should be encouraged for more output. Furthermore, as finance is one of the greatest impediments to the success of any plan of action in this section, Government need to make available directly or indirectly low cost funds for broiler sector development.

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