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Economic Analysis of Broiler Production in Anambra State of Nigeria.

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ABSTRACT
The study was on Economic Analysis of Broiler Production in Anambra State. The study-specific objectives were to describe the socio-economic characteristics of the farmers, determine the net returns from the broiler enterprise, determine the influence of socioeconomic factors on net farm income and ascertain the constraints of broiler production in the area. Data were collected with a well-structured questionnaire from 95 randomly selected broiler farmers in the study area.Data were analyzed using a combination of analytical tools such as Descriptive statistics, budgetary model, and multiple regression analysis. The result presented showed that the majority (76.8%) of the farmers aremale; the mean age of the farmers was 42 years while the majority (74.7%) of them were married. The mean farming experience and household sizes were 16 years and 8 persons respectively. The net return and return on investment (ROI) was N1, 005,136.73, and 0.78 respectively which implies that, for every N1 invested in broiler production in the study area, the farmer will realize N0.78. . Equally, the environmental challenges facing broiler farmers in Anambra State; climate condition, seasonal diseases, farm ventilation, and temperature regulation, while the socioeconomic factors challenging broiler farmers include; feed quality, quality of chicks, medical, biosecurity, farm input management, improper nutrition and addition of feeding ingredient. Finally, the socioeconomic variables significantly influencing the profit of broiler farmers include; age, sex, marital status, and household size.
Keywords: Economic, Broiler, Production and farmers

INTRODUCTION

In Nigeria, agriculture has remained at the forefront of economic activities, thus, accounting for 20-25 percent of the national income [1] and a large proportion of the overall exports. For this reason, both public and private concerns in the agricultural sector continue to increase. According to [2], about 75% ofthe total population in Africa depend on agriculture for livelihood and the dmand for various agricultural products has continued to increase in recent years; With the increase in the disposable income of the population, the demand for agricultural produce especially broiler products (meat) has continued to increase across Nigeria. The popularity of broiler production in Nigeria is noteworthy and can be attributed to the numerous benefits attributed with the production of broiler and other value chains [3]. [4], argue that poultry birds are better sources of protein either used as eggs or meat. They further explained that the production of poultry birds is relatively cost-effective, thus, making it possible for low-income farmers to start up the business. More so, the return on broiler production investment is relatively high compared to other livestock production and the high level of acceptability of the broiler meat across diverse ethnic backgrounds and religious beliefs broadens the market share and makes the business very Viable. This adds to the relative importance of broiler production to agriculture. As cited by [5],The production estimates of poultry birds on the report indicate that between 1998 and 2003, 179,667 metric tonnes of meat was produced in Nigeria. Despite the positive spill-over effects associated with broiler production, the output hardly meets the growing demand (presidential committee

in livestock PCOL) this is because consumption increases rapidly than output. The shortfall in poultry production amidst the growing demand has remained a key challenge as it reduces the net-marginal contribution of this livestock segment to the agricultural output. Recently, high cost of feed, poor qualities of feed ingredients, inefficiency in production and rising prices of ingredients has led to the fallen performance of the poultry industry in Nigeria,[6] Ume, Ezeano, Dauda, and Okeke (2016) reported that the animal protein supply in the Nigerian diet especially in the rural areas has remained inadequate. However, successive governments have come up with some programmers aimed at reviving the sector. Such programmers included farm input subsidies and disbursement of credit facilities to farmers. According to [7] the early government in agricultural programmers emphasized that poultry farming gurantees subsidies for day-old chicks and feeds. Therefore, the challenge is that of efficient and sustainable production of poultry products to meet the farmers' expectations in the nearest future. The current level of food insecurity calls for well-defined approaches in meeting the desired objectives. One of the generally adopted approaches is increased production and productivity of the broiler sub-sector [8]. Increasing productivity and efficiency within the agricultural sector, particularly among small-scale poultry broiler producers requires a good knowledge of the current efficiency or inefficiency inherent in the subsector as well as factors responsible for this level of efficiency or inefficiency. Growing local demand has not matched the fluctuating local supply [9]. Therefore, becomes essential to gain more insight into the challenges and problems confronting. It is in line with this, that this research is designed to provide answers to the following objectives viz; Socio-economic characteristics of poultry broiler production in the study area, cost and return analysis of poultry broiler farmers, the influence of socio-economic characteristics on profit and constraints to poultry broiler production in the study area [10].

MATERIALS AND METHODS

The study area is Anambra state, with administrative headquarters at Awka town. Its geographic coordinates are 6"01 '0 North, 7"05'O East. The study focused on Aguata Local Governmen Area of Anambra State. Aguata is made up of 13 districts namely: Achina, Aguluezechukwu, Akpo, Amesi, Ekwulobia, Ezinifite, Igboukwu, Ikenga, Isuofia, Nkpologwu, Oraeri, Uga, and Umuchu. It has a rapidly growing population of about 369,972 people with 187,262 males and 182,710 females. It has an area of 195km2,the rainfall pattern and temperature vary seasonally. In the dry season, the mean temperature is as high as 35degree Celsius and in the rainy periods, it can go as low as 25-28degree Celsius. Rainfall reaches an average of 2000 per annum. This depicts high precipitation. The main occupation of the people is farming. Their cropping system is mainly mixed farming, intercropping. Most people here engage in livestock production, such as. Sheep, goat, pig, and poultry production while some people are civil servants. Agricultural products like cassava, maize, cocoyam, palm wine, palm oil, etc are produced here. The vegetation is tropical which is characterized by thick forest and high fly infestation which disfavors livestock production but favors non-ruminant livestock farming. The study population comprises all the broiler farmers residing in Aguata LGA. Purposive, Multistage and random sampling technique wasadopted for this study. In the first stage Aguata Local Government Area were purposively selected due to higher concentration of broiler farmers. In the second stage, from the local government selected four communities which were Isuofia, Ekwulobia, Uga, and Ezinifiteall in Aguata Local Government, Area were purposively selected due to the higher number of broiler producers in the area. In the third stage, from each of the four communities selected, 25 brolier farmers were randomly selected, giving a total number of 100 Broiler farmers that were selected

for the study. Primary data were obtained using a structured questionnaire administered through personal interview. Data were collected on revenue and cost variables, product price, as well as constraints to broiler production. The profitability of broiler production was achieved using the budgetary technique. The influence of socioeconomics characteristics on income was achieved using multiple regression. The net income technique was adopted by [11,12,13], in the determination of enterprise profitability. The technique is given as

$$NMI = \sum_{i-1}^{n} P_{yj} Y_j - \left(\sum_{i-1s}^{n} P_{xij} X_{ij} + \sum_{i-1}^{r} F_{ij} \right)$$

Where

$$NMI = \sum_{i=1}^{n} P_{yi} Y_i - \left(\sum_{k=0}^{n} P_{xij} X_{ij} + \sum_{i-1}^{r} F_{ij} \right)$$

Where:

NMI/Profit = Net Marketing Income /Profit

Σ = Sum $P_{yj}Y_j$ = Unit price x quantity of j^{th} respondent's sales = total revenue (TR) for j^{th} respondent.

$P_{xij}X_{ij}$ = Prices x quantities of j^{th} respondent's variable inputs = total variable cost (TVC) for j^{th} respondent.

NMI/Profit = Net Marketing Income/Profit

Σ = Sum P_{yj}Yj = Unit price x quantity of j^{th} respondent's sales = Total revenue (TR) for j^{th} respondent.

$P_{xij}X_{ij}$ = Price x quantities of j^{th} respondent's variable inputs = Total variable cost (VC) for j^{th} respondent

F_{ij} = Depreciation values of equipment, the annual rent for store, interest on the loan, etc. for j^{th} respondent = Total fixed cost (TFC) for j^{th}respondent

TC = Total cost (TVC + TFC).

The budgetary technique (Ugwumba and Uzoegbunam, 2010; Ugwumba*et al*, (2012) used in determining enterprise profitability is specified as;

F_{ij}= Depreciation values of equipment, annual rent for store, interest on loan, e.t.c. for j^{th} respondent = Total fixed cost (TFC) for j^{th} respondent.

TC = Total cast (TVC + TFC).

RESULT AND DISCUSSION

SOCIAL-ECONOMIC CHARACTERISTICS OF BROILER FARMERS

The Socio-economic characteristics of Broiler Farmers in Aguata Local Government Area of Anambra State. Is presented in table .1.

Sex: The Table shows that the majority (78.8%) of the farmers are male while the remaining 23.2% are female. This is an indication that broiler farming is a male dominate enterprise in the study area. This was in line with the finding of [14,15] who opined that females were more risk-averse than males

Age: The Table Shows that the majority (60.%) of the farmers are within the age bracket of 31 -40 years, while the remaining 15.8%.14.7% and 9.5% are within the age bracket of 41-50 years, ≤ 30 years, and < 50 years respectively. The researcher found out that the means age was 42 years. The implication is that broiler farmers are still in their active farm age.

Marital Status: The study revealed that the majority (74.7%) of the respondents are married, while the remaining 25.3 are un-married. This result is also in line with the work of [16] who observed that they were more married people in poultry production in IhubeOkigwe L.G.A Imo State than unmarried people.The implication is that broiler production is so technical and only married people who know the hurdles in marital life can apply it in the business and secondly it affords them the opportunity of using family labour.

Level of Education: The study shows that the majority (48.4%) of the respondents attended secondary school, while the remaining 30.5%, 14.7% and 6.3 attended tertiary, postgraduate level, and primary education respectively. Thus, at this level of education, the farmers can adopt innovation for optimal productivity.

Experiences (years). The study shows that the majority (48.4%) of the respondents have farming experience from 6-10 years, while the remaining 45.3% 5.3 %, and 1.1 % have farming experience from 11-15 years, ≤ 5 years, and 16 years and above respectively. The means farming experience was 14 years. Thus, the farmers are well experienced in their broiler enterprise.

Household Size: The study shows that the majority (49.5%) of the farmers have a household size of 11-15 persons, while the remaining 20.0% and 5.3% have a household size of ≤5 persons, and 6-10 persons respectively. The mean household size was 8 persons. Large household size supplied cheap family labor. The result was in line with the finding of Conolly (2014) who opined that rural farmers engage in polygamy to have access to farm labour at a reduced cost.

Monthly Income: The study showed that the majority (92.6%) of the respondents earn ≤ 50,000 Naira monthly, while the remaining 7.4% earn 51,000-100,000 nairamonthly. The meanmonthly income was 53,684.21 Naira. This was because most of the farmers in the study area engage in small-scale broiler production.

Table 1.

Sn	Variables	Frequency	Percentage	Mean
1	Sex			
	Male	73	76.8	
	Female	22	23.2	
2	Age			
		≤30	14	14.7
	31-40	57	60.0	42
	41-50	15	15.8	
	>50	9	9.5	
3	Education level			
	Primary	6	6.3	
	Tertiary	29	30.5	
	Secondary	46	48.4	
	Post graduate	14	14.5	
	Monthly income(N)			
	≤50,000	88	92.6	53684.21
	51,000-100,000	7	7.4	
	101,000 and above	0	-	
	Experience (Years)			
	Experience (Years)			
	≤5	46	5.3	
	6-10	43	45.3	14.00
	11-15	1	1.1 48.4	
	Marital status			
	Married	71	74.7	
	Unmarried	24	25.3	
	Household size			
	<= 5	19	20.0	
	6-10	5	5.3	8.16
	11-15	47	49.5	
	16 and above	24	25.3	

PROFITABILITY BROILER FARMING ENTERPRISE

The information about the profitability of the broiler production enterprise is presented in table 2 below. The study revealed that the mean broiler produced was 247. The total revenue generated per stocking was N573208.64 and over the four stockings, time was N2,292,834.57. The mean variable input over the four stockings was N1, 287,822.66, while the total fixed input used was valued at N35075.1832. Furthermore, the net return and return on investment (ORI) were N1,005,136.73 and 0.78 respectively. The ROI value implied that for very N 1 invested in broiler production in the study area, the farmer will realize N0.78. Thus indicating that the enterprise is profitable in the study ear. This is in line with the finding of [5] which say that broiler production is a very profitable one in Benin City averaging a contribution averaging a positive gross margin of N573,346.01 yearly.

TABLE 2. Revenue Estimation

Item	Quantity	Unit price (N)	Value (N)
Broiler at Market Weight	247	2323.16	573208.64
Annual stock	4	573208.64	2,292,834.57

Table 3. Variable input

Item	Quantity	Unit price (N)	Amount (N)
Day old chick	260	252.74	65712.4
Feed	2219.68	98.67	219015.8256
Water	1000	1000	
Drugs and Vaccine	6115.79	6115.79	
Veterinary service	000	2000	
Transportation		4,151.62	4,151.62
Labour	2	4,400,00	8800
Logistics		15160.03	15160.03
TVC			321,955.67
TVC in 4 stock			1,287,822.66

Table 4. Fixed input

Item	Quantity	Unit price (N)	Amount (N)
Dep. Housing	2	8341.05	16682.1
Feeding trough	12	808.42	9701.04
Drinker	9	606.31	5456.79
Wheelbarrow	1	554.53	554.53
Borehole	1	200	200
Stove	1.8	150.96	271.728
Generator	1	16.76	16.76
Electricity	1.04	1146.38	1192.2352
Security	1	1000	1000
Van	-	-	-
TFC			35075.1832

Table .5

Item	Value (N)
Total revenue	2,292,834,57
Total variable cost	1,252,622.66
Total fixed cost	35075.1832
Total cost	1,287,697,84
Net returns	1.005,136.73
Return on investment	0.78.

INFLUENCE OF SOCIO-ECONOMICS CHARACTERISTICS ON NET INCOME.

The socioeconomic influence on the profitability of broiler production was realized using multiple regression analysis and the socioeconomic influence calculated through the t- valves produced.Linear function with the highest R^2 (0.4340), the higher number of variables with significant t-ratios and in conformity with the a priori expectation was chosen as the lead equation. Thus, the regression equation was stated as follows:

$Z = - 419.5618 + 6.7045x_1 + 232.5534X_2 - 1.3796X_3 - 0.0009X_4 + 4.8036X_5 + 243.7122X_6 - 12.0671X_7$

The coefficient of multiple Determinant R^2 (0.4340) indicated that 43.40% of the variation in broiler profit was explained by the joint action of the independent variables (Socioeconomic characteristics), while the remaining 56.60%% was as a result of error beyond the control of the farmers.The coefficient of education, income, and experience was not significant at any level of probability. The coefficient of age (6.7045) was positive and significant at a 1% level of probability. This implied that an increase in the age of the farmers by 1% will increase the profit of broiler farmers by 6.7045 units in the study area.The coefficient of sex (232.5534) was positive and significant at a 1% level of probability level. This implied that an increase in the number of male broiler farmers by 1% is likely to increase the profit of boiler farmers by 232.5534 units. This could be linked to the physical strength of male farmers. The coefficient of marital status (242.7122) was positive and significant at a 1% level of probability level. This implied that an increase in the number of married broiler farmers by 1% is likely to increase the profit of boiler farmers by 243.7122 units. This will cause an increase inthe family supply of labor. The coefficient of household size (12.0671) was negative and significant at a 5% level of probability level. This implies that an increase in the household size by 5% is likely to reduce the profit of boiler farmers by 12.0671 units. This s ideal with a –priori expectation since most of the broilers will be consumed as food.

TABLE .6

Variable	linear	exponential	semi-log	double log
Intercept	34.5187 (0.06)	-793,2893 (-2.62)	4.2940 (17.48)	2.7969 (2.67)
Day old chick	0.7768 (7.38)***	1700.8105 (4.66)***	0.0036 (8.00)***	1.1736 (9.25)***
Dep. Asset	-0.0159 (-0.87)	-64.4529 (-1.30)	0.0000 (-0.25)	-0.3163 (-1.84)*
Feed (kg)	-0.0292 (-1.26)	2.3728 (0.05) (-3.95)***	-0.0004 (-3.57)***	-0.6091
Labour	-6.5946 (-0.33)	-2.5461 (-0.06)	0.0248 (0.29)	-0.0990 (-0.71)
Drugs (N)	0.0169 (2.23)**	64.9294 (1.5)*	0.0001 (4.35)***	0,3520 (2.35)**
F-stat	25.55***	14.15***	22.21	27.38
R2	0.5894	0.4428	0.5552	0.6061
N	95	95	95	95

CHALLENGES OF BROILER PRODUCTION IN THE STUDY AREA

The challenges facing broiler farmers in the study area are presented in Table 7 The challenges were separated into environmental and socioeconomic challenges and were equally capture with different qualitative scales. The environmental challenges were capture witha 5-point like Scale and the mean threshold of 3.0 was determined. Variables with a mean threshold greater than equal to 3.0 agreed to be challenged while less than 3.0 disagreed thus, based on the 4 items of environmental challenges 4 of them had men threshold of 3.0, therefore, the environmental challenge facing broiler farmers were climate condition, seasonal diseases, farm ventilation, and temperature regulation. Furthermore, the socioeconomic factors challenging the broiler farmers were scaled with a 7-point Likert scale and the mean threshold of 4.0 was determined. The variables with a mean threshold of 4.0 and above were agreed to be challenges while those less than 4.0. Disagreed. Based on the 7 items of socioeconomic factors, 7 had a mean threshold of 4.0. Thus, the challenges facing the farmer were feed quality, quality of chicks, medical, biosecurity, farm input management, improper nutrition, and the addition of feeding ingredients. However, the framers indicated that high prices of day-old chicks, feed, and lack of funds also hinder them from this business.

TABLE 7.

Sn	Challenges	Minimum	Maximum	Mean	Std Deviation
	Environmental factor				
1	Climate condition	3.00	4.00	3.35	0.48192
2	Seasonal diseases	3.00	4.00	3.85	0.35635
3	Farm ventilation	1.00	4.00	3.32	0.89255
4	Temperature	3.00	4.00	3.56	0.49792
	Cluster mean			3.5263	0.557185
	Socioeconomic factor				
1	Feed quality	7.00	8.00	5.14	0.35635
2	Quality of chicks	7.00	8.00	5.07	0.26264
3	Medical	4.00	7.00	6.75	0.76792
4	Bio security	4.00	7.00	6.05	0.97160
5	Farm input management	2.00	7.00	5.92	1.19611
6	Improper nutrition	2.00	7.00	6.01	1.44026
7	Addition of feeding ingredient	4.00	7.00	5.83	0.79430
	Cluster mean			5.82	0.83

CONCLUSION

The research on the profitability of broiler production in the Aguata Local Government Area was an interesting study. The 0.78 return on investment is an eye-opener to investors and financial institutionsthat are ready to support broiler farmers financially for Upscaling. It will equally finance institutions to the pattern repayment plan. Broiler production in the study area is a profitable business but without some challenges. The government is therefore required to wave into the business cycle in other to address some of the challenges.

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