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Determinants of Broiler Production in Ahiazu Mbaise L.G.A of Imo State

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Abstract

This study analyzed the determinants of broiler production in Ahiazu Mbaise L.G.A of Imo State. Data were collected with the aid of a well-structured questionnaire from 60 randomly selected broiler producers. Data were analyzed using descriptive statistics, gross margin analysis and multiple regression technique. Results showed that more males (65%) were in broiler production and fall within the age bracket of (21-35) years. The cost and return analysis showed that broiler producers had a net income of ₦1,654,500 and return on investment of 163% per production cycle. Educational level, years of experience and number of birds were significant socio – economic factors influencing net income of broiler producers at 5% level each. Results further showed that high cost of feed (20.7%) ranked the highest among the constraints militating against broiler production in the study area. The study recommended that Government should subsidize feeds and make them more available to farmers.

Keywords: *Determinants, Broiler production, Poultry*

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Background to the Study

The term poultry is a collective name given to a group of birds reared or hunted for useful purpose. They are those species of birds that render economic services to man and reproduce freely under his care. According to chamber 21st Century Dictionary (2004), poultry refers to collective domesticated birds kept for their meat (Broiler) or egg (Layers) production which include chickens (domesticated fowls), turkey, duck and geese. Poultry, according to Rao (2020), is a broad category of birds of different kinds that are often slaughtered and prepared for sale while still living or dressed. Turkeys, ducks, geese, guinea fowls, pigeons, peacocks, peafowls, quails, ostriches, and even other game birds are involved. The majority of them, such as meat and egg types, dual-purpose, game, decorative, and so on, may be categorised according to their economic worth, utility, or function. Poultry farming has numerous advantages. It provides facilities for recreation and tourism for people, for industrial goods and income generation for the farmers and the government.

The importance of animal protein in our daily meal cannot be over emphasized. It is essential for proper development of worn-out tissues (Pawel *et al.,* 2023). According to Meng *et al.,* (2021), man must consume adequate amount of animal proteins in addition to plant proteins in order to live healthy life. She further stated that protein of animal origin has a balanced amino acid profile and thus is superior to plant proteins. The sub-optimal supply of good food in Nigeria and more particularly the dearth of food from animal origin is a serious challenge to farmers as well as planners, administrators, economists and agricultural scientists. This could be linked to a range of determinants (social, economic, environmental) etc. Vocabulary dictionary defined determinant as a determining or causal element or factors that makes something happen or leads directly to a decision. Animal products (meat, eggs and milk) are known to affect positively the quality of life of an individual, regulate his growth, sustain his intelligence, maintain and assure good health, encourage proper reproduction and promote resistance to disease (Payton, 2023).

In the past, Nigerian government had introduced some measures to increase animal products in the state in particular with greater emphasis on pig and poultry production (Ministry of Foreign Affairs, 2020). For instance, the Ihitte poultry project was established in 1976 by the defunct civilian government under chief (Dr) Sam Onunaka Mbakwe, a project which is still functioning till date. It is regrettable that the farmers and the people of Ahiazu Mbaise Local Government Area seem not to appreciate the full importance of food of animal origin, particularly chicken and are therefore not making sufficient food for the populace.

Statement of Problem

Broiler production has so many potentials which includes super-efficient converter of feed to meat, large number of birds requires small space, marketable at different ages, ease of operation, gives quickest turnover, and the meat is palatable, easily digestible and low production cost per unit relative to other livestock.

However, despite the potentials associated with broiler production, its level of production in Nigeria has been on the decline according to Umeh *et al* (2016) and Emaziye *et al* (2023).

Findings have revealed that poultry production in Nigeria is constrained by a lot of factors ranging from technical support, farming inputs, lack of finance, pollution, environmental/ climate change etc. (Emaziye, Enwa, Sorhue & Efe, 2023) but these researchers failed to address the issue of high cost of feed specifically which this study addressed. Again, researchers like Ojo, Falaye & Ojaomo (2021) in their study on determinants of profitability of broiler production in the out-grower schemes in South West Nigeria did not consider number of birds which this study tackled.

The average poultry meat consumption is 1.9 kg per capita in Nigeria, compared to 32.98 kg in South Africa and 7.67 kg in Ghana (Nwobodo *et al,* 2023). This present situation with respect to broiler production is not encouraging. Considering the rural nature of Ahiazu Mbaise and the dearth of animal protein in their daily diets, broiler production has great potentials in reducing the protein insufficiency. Therefore, identifying and understanding the key determinants of broiler production in Ahiazu Mbaise Local Government Area of Imo State is essential for developing targeted interventions and support strategies to enhance the sustainability and efficiency of broiler production with a view to making policy recommendation to boost broiler production in the study area

Objectives of the Study

The aim of the study was to ascertain the determinants of broiler production in Ahiazu Mbaise L.G.A of Imo State. Specifically, the study wants to:

i. Ascertain the socio-economic characteristics of the poultry farmers in the study area
ii. Determine the cost and return of broiler production in the study area,
iii. Determine the socio-economic factors affecting the net return of the broiler farmers in the study area,
iv. Identify the various problems hampering broiler production in Ahiazu Mbaise L.G.A of Imo State.

Methodology

Study Area

The study was conducted in Ahiazu Mbaise Local Government Area of Imo State. Ahiazu Mbaise L.G.A. is one of the 27 Local Government Area in Imo State with its headquarters at Afor Oru. It has 27 Autonomous Communities which include: Oru, Lude Nnarambia, Obodo Ahiara, Obodo Ujuchi, Akabor, Ogwuama Amuzi, Ogbene isii, Ogbe, Otulu, Aguneze, Ogbor Umueze, Ihitte Aforukwu, Ekewerazu Town, Okirika Nwenkwo, Ezioma Opara na dim, isiala Oparanadim, Okirika Ama, Elekere Owasi Obohia, Amimo Obohia, Umuhuocha Obohia, Umumbiri Oparanadim, Nnemara Mpam, Umuokirika Ama, Umuedo Obohia, Ogbor Ihitte, Odu Na Izuoha, Umunumo/Umuchieze. Ahiazu Mbaise L.G.A has a population of 117902 (NPC, 2010). The people of Ahiazu Mbaise L.G.A are predominantly subsistent farmers. They grow maize, cassava, yam etc. They are also involved in animal husbandry such as poultry production, sheep and goat rearing.

Population of the Study
There are 27 autonomous communities that make up Ahiazu Mbaise L.G.A. However due to the vast and extensive nature of the L.G.A, the research was conducted in 15 randomly selected autonomous communities. With a population of 85 ADP registered poultry farmers scattered throughout the fifteen communities.

Sample Selection
4 poultry farmers were randomly selected from the 15 autonomous communities giving a total of (60) sixty poultry farmers for the study

Table 1.

S/N	Communities	No. of Farmers Chosen
1	Isiala Oparanadim	4
2	Umuedo Obohia	4
3	Ogbe nne isii	4
4	Obodo Ahiara	4
5	Obodo Ujuchi	4
6	Akabo	4
7	Ogwu Ama Amuzi	4
8	Okirika Nwenkwo	4
9	Eziama Opara Na Dim	4
10	Nnemara Mpam	4
11	Ihitte Aforukwu	4
12	Ekwerazu Town	4
13	Lude	4
14	Otulu	4
15	Agueze	4
	Total	60

Source: Field Survey Data, 2024.

Method of Data Collection
The study's cross-sectional data came from both primary and secondary sources. A well-structured questionnaire was used to gather the primary data. Secondary data was gathered from pertinent conferences, textbooks, and conference proceedings.

Method of Data Analyses
The data was analysed using descriptive statistics and the econometric approach. Frequency, mean, and percentage were among the descriptive statistics used to analyse objectives one and four. Using gross margin analysis, the second objective was examined. A multiple regression model with ordinary least squares was used to analyse objective three.

Model Specification
Analysis of the Gross Margin for the model specification is given thus:
GM = TR = TVC

Where:
GM = Gross margin
TR = Total Revenue
TVC = Total Variable Cost

The Net farm income is given by the expression:
NFI = GM = TFC

Where:
NFI = Net farm income (N)
GM = Gross margin (N)
TFC = Total fixed cost (N)

The Return on Investment is derived thus:

$$ROI = \frac{NFI}{TC} \; X\,100$$

Where:
ROI = Return on Investment
NFI = Net Farm Income
TC = Total Cost

Ordinary Least Square Multiple Regression Model stated thus:
$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7,)$

Where:
Y = net return from sale of poultry bird (₦)
X_1 = Sex
x_2 = Age
x_3 = educational qualification
x_4 = household size
X_5 = years of experience
x_6 = No of birds
x_7 = Cooperative Membership and

The explicit functional forms tried were as follows:

(a) Linear form: $Y = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + b_7x_7 + e$
(b) Semi log form: $Y = \ln b_0 + b_1 \ln x_1 + b_2 \ln x_2 + b_3 \ln x_3 + b_4 \ln x_4 + b_5 \ln x_5 + b_6 \ln x_6 + b_7 \ln x_7 + e$
(c) Double log form: $\ln Y = \ln b_0 + b_1 \ln x_1 + b_2 \ln x_2 + b_3 \ln x_3 + b_4 \ln x_4 + b_5 \ln x_5 + b_6 \ln x_6 + b_7 \ln x_7 + e$ (d)
The exponential form: $\ln Y = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + b_7x_7 + e$

Results and Discussion

According to Table 2, the majority of poultry farmers (38.3%) were between the ages of 21 and 35. This demonstrates that the majority of broiler farmers are youthful, active, and capable of significantly boosting broiler productivity. According to the results, the majority of grill producers in the research region (65%) are male, whereas 35% of the 60 producers questioned are female. This indicates that the majority of grill manufacture in the studied region is carried out by males. This could be due to the labor-intensive nature of grill manufacture, which may be too taxing for women who typically handle home duties. This result is consistent with that of Ettah et al. (2021). Respondents that were married made up the majority (61.7%), and they liked using family labour for chicken farming. Additionally, the majority of responders (56.7%) had completed secondary school. They can embrace some agricultural advances that can aid them in producing poultry because this shows that they are literate. This lends further credence to the claim made by Owoade and Olarinwa (2020) that education benefits farmers by encouraging a greater adoption of innovative and management techniques. According to the results, the majority of respondents (56.7%) had a household size ranging from one to five, and their mean years of production experience was around six years.

This indicates that the sampled farmers were not new in broiler production. Majority (33.3%) had a flock size ranging between 352 -502 birds per batch. According to Ralivhesa *et al.,* (2013) broiler enterprises that produce batches of 2000 broiler chicks or less can be categorized as small-scale enterprises. This indicates that most of the poultry farmers in the study area are small-scale farmers. This could be because most of them lack the financial means to operate large scale farms. This result is in tandem with Ebukika *et al.*, (2019) who noted that broiler production is mostly at small scale level. The study also revealed that majority (51.7%) of the broiler farmers in the study area do not belong to any cooperative society. Not being a member of a cooperative society could probably limit their access to marketing information, and financial assistance, among others.

Table 3 showed that ₦1,010,500 was the total cost, ₦2,665,000 was the total revenue, ₦1,784,500 was the gross margin, and ₦1,654,500 was the net income. The return on investment was 163%, according to Table 3. As a result, they receive 163 for every N100 invested in grill manufacture. The results of the grill production regression analysis were displayed in Table 4. It was employed to ascertain how the socioeconomic traits of the farmers affected their net income. Sex, age, educational attainment, household size, years of experience, number of birds, and cooperative membership were the seven factors that were estimated. Due to the large number of significant variables and the R-Squared value of 0.947, the double log functional form was chosen as the lead equation. With an R2 of 0.947, the independent variable explained 94.7% of the dependent variable's variability, with stochastic error perhaps accounting for the remaining 5.3%.

As shown in Table 4, three of the seven variables in the model—education, years of experience, and number of birds—were statistically significant at the 5% and 1% levels,

meaning they had an impact on net farm revenue. There was a positive correlation between net income and the education coefficient (2.780). This suggests that profit-making depends on education. This is due to the fact that education will allow farmers to acquire new and improved methods that would increase crop output, according to Emaziye (2023). There is a significant correlation between farmers' net income and the coefficient (2.572) of years of experience. This demonstrates how farmers' efficient use of input resources is enhanced by their years of expertise producing broilers. As expected from the outset, the number of birds had a positive coefficient (4.266). The positive correlation suggests that as the number of birds increases, so will the quantity of productivity and, ultimately, net revenue. This is consistent with the findings of Mukaila et al. (2023), who believed that productivity and revenue would likely rise in tandem with an increase in the number of birds.

Table 5 displays some answers that were noted as issues that various farmers in the research area faced. The results showed that the two biggest obstacles facing broiler producers in the research area are the high cost of feed (20.7%) and the prevalence of diseases (17.8%). This is consistent with the findings of Ndubueze-Ogaraku et al. (2018).

Table 2: Socio Economic Characteristics of the Respondents

Age	**Frequency**	**Percentage**
21-35	23	38.3
36-50	17	28.3
51-75	19	31.7
76-90	1	1.7
Total	**60**	**100**
Mean age	**44**	
Sex	**`Frequency**	**Percentage**
Male	39	65
Female	21	35
Total	**60**	**100**
Marital Status	**Frequency**	**Percentage**
Married	37	61.7
Single	18	30.0
Divorced	5	8.3
Total	**60**	**100**
Educational Status	**Frequency**	**Percentage**
Non-formal education	0	0
Primary	5	8.3
Secondary	34	56.7
Tertiary	21	35.0
Total	**60**	**100**
Household size	**Frequency**	**Percentage**
1-5	34	56.7
6-10	24	40.0
11-15	2	3.3
Total	**60**	**100**
Mean	**5 persons**	
Years of Experience	**Frequency**	**Percentage**
1-5	36	60
6-10	13	21.7
11-15	8	13.3
16-20	3	5.0
Total	**60**	**100**
Mean	**6 years**	
No of Birds	**Frequency**	**Percentage**
50-200	19	31.7
201-351	13	21.7
352-502	20	33.3
503-654	5	8.3
655-805	3	5.0
Total	**60**	**100**
Mean	**326 birds**	
Cooperative Membership	**Frequency**	**Percentage**
Yes	29	48.3
No	31	51.7
Total	**60**	**100**

Source: Field survey data, 2024.

Table 3: Costs and Returns of Broiler Production for 8 Weeks/Farmer

S/N	Items	Quantity	Unit Price (₦)	Total Amount (₦)
1	VARIABLE COST			
	Cost of day old	400	840	336000
	Cost of starter feed	10 bags	19,000	190,000
	Cost of finisher feed	15 bags	19500	292,500
	Cost of vaccine			16,000
	Cost of labour	2	10,000	20,000
	Rent	Per month	5000	10000
	Cost of charcoal	2 bags	8000	16000
	Total variable cost			₦ 880,500
2	Fixed Cost			
	Cost of small feeders	10	2500	25,000
	Cost of big feeders	10	3500	35,000
	Cost of small drinkers	10	1500	15,000
	Cost of big drinkers	10	2500	25,000
	Cost of lantern	2	8000	16,000
	Cost of stove	2	7000	14,000
	Total fixed cost (TFC)			130,000
	Total cost			1,010,500
3	Revenue			
	Price of matured chicken	380	7000	2,660,000
	Price of manure	10(25kg bags)	500	5,000
	Total revenue			2,665,000
	Gross margin (TR-TVC)			1784500
	Net Income (GM-TFC)			1,654,500
	Return on Investment (ROI) = NI/TC			1.63

Source: Field survey data, 2024

Table 4: Effect of Socio-Economic Characteristics on Net Return of Poultry Farmers.

Variable	Ordinary linear	Semi-log	Double log	Exponential
Constant	-52461.382	-4507715.773	8.2	13.096
Sex (x_1)	-190686.321 (-1.757)	0.000	0.000	-0.243 (-1.808)
Age (x_2)	6760.033 (1.064)	-253885.612 (-306)	0.339 (0.932)	0.005 (0.657)
Educational qualification (x_3)	50109.85 (0.586)	-338860.269 (-872)	0.014** (2.780)	0.001 (0.011)
Household size (x_4)	-58618.773** (-2.631)	-168798.058 (-600)	-0.21 (-1.706)	-0.06** (-2.512)
Years of Experience (x_5)	3262.257 (0.717)	136751.624 (0.265)	0.046** (2.572)	-0.017 (-111)
Number of birds (x_6)	4344.313* (13.014)	1302927.803** (2.861)	0.851* (4.266)	3.00E-03* (7.978)
Coop Member (x_7)	107429.341 (1.020)	0.000	0.000	0.234 (1.795)
R^2	**0.842**	**0.879**	**0.947**	**0.671**
Adjusted R^2	**0.821**	**0.793**	**0.909**	**0.626**
SE	**364693.9498**	**458183.31**	**0.201**	**0.45146**
Sig	**0.000****	**0.004****	**0.000****	**0.000****

**Significant at 5% and *Significant at 1%

Source: Field Survey Data, 2024

Table 5: Problems Hampering Broiler Production

Problem	Frequency	Percentage
Lack of Access to Capital/Loan	31	12.8
Lack of Adequate Information on Broiler Production	8	3.3
Incidence of Diseases	43	17.8
High Cost of Feed	50	20.7
High Cost of Vaccine	41	16.9
High Mortality	24	9.91
Poor Marketing Outlet	18	7.4
Poor Technical Knowledge	5	2.1
Poor Transportation System	14	5.8
Poor Management	8	3.3

*Multiple responses recorded.

Source: Field Survey Data, 2024.

Conclusion

The study analyzed the determinants of broiler production in Ahiazu Mbaise L.G.A of Imo State. Net return analysis confirmed that broiler production was profitable. The regression analysis revealed that educational qualification, years of experience and number of birds is positively related with net return. The broiler producers were however, majorly limited by high cost of feed.

Recommendations

i. **Government:** It is recommended that government should subsidize the price of feeds to reduce high cost
ii. **Farmers:** However, on the other hand farmers should endeavor to develop skills on unconventional feed formulation to cushion the effect of high cost.
iii. **Veterinary Personnel:** More so, it is recommended that veterinary personnel should endeavor to educate the farmers on healthy management practices and vaccination of the poultry birds to reduce incidence of diseases.
iv. **Female Farmers:** More female farmers are encouraged to be more involved in poultry production in the study area as it is a profitable venture.

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