Economic Analysis and Determinant of Income of Poultry Egg Farmers in Ido Local Government, Oyo State, Nigeria

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ABSTRACT

This research aimed to analyze the income factors and financial analysis of poultry egg farmers in the Ido local government area of Nigeria's Oyo State. One hundred fifty (150) registered poultry farmers in the local government were selected at random using a purposeful sampling approach. The primary source of data was gathered using structured surveys.

Regression analysis, farm budget analysis, and descriptive statistics were used to evaluate the study's aims. The findings indicate that 52% of survey participants are under the age of 41-50years, 72% are males, 67. 3% are married, 92. 7% are educated, 7-9 people make up each household, and 36. 6% have 9-12 years of experience in poultry farming. The information also revealed that the average overall revenue was ₦1,050,691. 09, with a total investment of ₦620,932. 28 in each production cycle. The total fixed costs (₦149,345. 81) accounted for 24. 06% of the total cost, while the total variable costs (₦471,586. 47) made up 75. 94% of total cost. The net farm income was N429,758. 81, and the gross margin was N579,104. 62. The profitability ratio of 0. 41 indicates that 41% (N0. 41k) of every N1 invested in poultry farming was made as profit, while 59% (N0. 59) was allocated to the total cost. The main challenges of poultry farming are the high cost of inputs, seasonal gluts, and insufficient storage facilities, but the primary determinants of poultry output are education level, years of experience, and farm size. According to the study, poultry farming is a very profitable enterprise due to its high gross margin ratio and profitability index

(Keywords: poultry eggs, determinant economic regression, budgetary analysis)

INTRODUCTION

The world's poultry industry is a vital, lucrative, and rapidly expanding source of meat. Poultry has become one of the most efficient protein sources for people to consume. It is also a significant producer of eggs and meat, both of which are highly healthful, notably as providers of animal protein (Olagunju and Babatunde, 2011). Because of their extreme vulnerability to deterioration, the marketing and manufacturing of eggs needs to be improved. Because it requires a large workforce in its production, handling, transportation, distribution, and marketing, the product has a significant potential to reduce poverty (Okpeke, *et al*., 2017).

A significant part of the agricultural economy is made up of poultry, which is a subsector of the livestock sector. This industry serves the public with food products made using animal protein. According to Sorensen (2010), chicken accounts for about 27% of Nigeria's overall meat output, making it the fourth most popular source of animal protein for human eating. More than 50 billion chickens are raised annually for their flesh and eggs as a food source in the vast poultry industry, with chickens being the most common species (Paula, 2015). The primary goal of egg production is to use high-quality layer hens to generate eggs for human consumption (Ogunlade and Adebayo, 2009).

The food security and socioeconomic welfare of sub-Saharan Africa depend on the value chains of livestock production (Kamau, *et al*., 2018). This is caused by a number of things, such as increased urbanization, higher income, a larger population, and increasing demand for meals made from animals. Thieme, *et al.* (2014) lists income and urbanization as factors that have led

to a greater emphasis on livestock production. Poultry farming (production) is the practice of domesticating birds such as chickens, ducks, quails, turkeys, and geese to cultivate them for meat and eggs, as well as using their incidental byproducts, such fecal droppings and feathers, in industries as raw, natural materials (Stiles, 2017). The two main categories of poultry production are meat and egg production, even if there are additional ones like feed production, point of lay production, chick production, and poultry tools and equipment (USDA, 2018).

Due to its expansion, the poultry industry's contribution to the national economy cannot be understated, Popular among the little farmers who have kept the nation's economy afloat about 1. 3 kg of poultry products consumed per capita annually (Ologbon and Ambali, 2012), poultry makes up around 15% of Nigeria's total annual protein intake.

In Nigeria, the poultry industry has risen to prominence as a source of animal feed and a means of enhancing employment opportunities. The layer sector is particularly vital in developing nations because it helps satisfy local food needs and provides extra income (FAO,2014). The Nigerian poultry business is worth N1. 6 trillion and accounts for 25% of the nation's agricultural GDP, according to the Central Bank of Nigeria (CBN) (Oluseyi, 2019). Over 13 million households rely on the poultry industry for at least some of their income. Okoli, *et al*. (2005) estimated that poultry farming is practiced by 85% of rural families. Families mainly raise native chickens and small ruminants in order to make money and produce meat or manure for domestic consumption or for use at festivals. Nonetheless, the need for animal protein has not been satisfied by poultry production.

MATERIALS AND METHODS

The study was carried out in Ido local government area of Oyo State. A purposive sampling technique was used in the selection of Ido Local Government Area (LGA). This was due to the large number of poultry egg farmers in the local government area. From the entire local government, one hundred and fifty (150) registered poultry egg farmer were randomly selected as respondents for the study.
Data was collected using well-structured questionnaire on the socio-economic characteristics of egg poultry farmers such as age, gender, educational level, marital status, household size, input-output cost on poultry production and constraints faced by egg poultry farmers in the study area.

Analytical tools used were descriptive statistics, budgeting analysis and regression analysis. The descriptive statistic tools used include frequency, percentage and table. Budgeting analytical tools which include mathematical notation for calculating the gross margin was used to measure profitability, which is given as:

Net Profit (л) = Total Revenue (TR) – Total Cost (TC)

Gross Margin (GM) = Total Revenue (TR) – Total Variable Cost (TVC)

Where:

GM = Gross Margin in ₦,

P1Y1= Total Revenue in ₦,

riCi =Total Variable cost in ₦,

Pi =Farm gate price of the i^{th} egg in crate in ₦,

Yi = Output of the i^{th} farm producing i^{th} egg,

ri = Price of the i^{th} variable input,

Ci = Quantity of the i^{th} variable input

Rate of return on investment (ROI) = Net income/Cost of investment

Gross margin return (GMR) = Gross profit/Average cost

Net profit ratio (NPR) =Net profit/Total Revenue

Regression analysis was used to determine factors influencing the output of poultry egg farmers in the study area. The model is specified as;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_{7+} \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} \text{ Ví } \ldots\ldots$$

Where,

X_1= Age farmer (in years),
X_2 = Sex

X_3 = Education level
X_4 = Marital status
X_5 = Years of farming experience
X_6 =Household size
X_7 =Cooperative member
X_8 =Extension contact
X_9 =Annual income
X_{10} =Farm size
ε1= Error Term

RESULTS AND DISCUSSIONS

Table 1 shows the distribution of the respondents. The age data in Table 1 shows that the majority (52%) of people in the study region live in homes with heads of household aged 41 to 50,18% of the population are between the ages of 51 and 60, and up to 6. 7% were elderly. The conclusion is that the majority of poultry producers are at the height of their productivity and active life. The findings of Chiekezie, *et al*., (2021) and Ume, *et al*., (2016) support this conclusion.

Gender influences a person's aptitude for carrying out certain physical activities. It is commonly believed that males are more productive in the physical workforce than women. The basis for comparing the Farmers' sex is actually this. As shown in the table above, 28% of respondents are females, while the majority 72. 0% are men in the study area, poultry farming activities are gender sensitive, as evidenced by this. This result backs up the findings of Yusuf, *et al*., (2016) and Aminu and Hermmans (2021), and it demonstrates that education as one of the major socioeconomic factors that has a substantial influence on the respondents' output and productivity.

Respondents who have completed formal education have the benefit of being among the first to engage with cutting-edge innovations and superior technologies that are designed to increase output and productivity. In addition, formal education tends to reduce risk aversion among these respondents, who are early adopters. The majority of respondents have a secondary school education (56. 7%), a primary school education (16. 7%), a tertiary education (19. 3%), and no formal schooling (7. 3%), according to the table. This result backs up Didunyemi and Owoeye's (2022) finding, as well as Aminu and Hermmans' (2021), that the majority of poultry farmers are literate.

When respondents are married and have the opportunity to work from home, their marital status helps to reduce labor costs. As a result, their income rises dramatically. The statistics show that, as expected, the majority of the participants (67. 3%) are married, while 32. 7% are single. This could help the members of his household, who are more likely to provide labor in marketing (Abdulshakur, *et al.*, 2019).

The total number of members in the household of the respondents includes their children, wife/wives, and dependents. According to the table's data, the majority of respondents reside with their family members (54%), while the remaining respondents live with between one and three members (6%), four to three members (18%), and over nine members (22%). The number of years that respondents have been involved in cooperative society can be used as a gauge of their effectiveness.

Experience is expected to have a significant positive impact on the respondents' management abilities. The result is that, assuming everything else is equal, the more experience they have, the better he will be at managing them because their behavior will be impacted by the experience they have gained throughout the years. The table shows that the majority of respondents have between nine and twelve years of poultry farming experience (36. 6%), 6-8 years of experience (33. 3%), one to five years of experience (18%), and over thirteen years of experience (12%). This suggests that experience improves with increased efficiency in production. This conclusion is supported by Aminu and Hermmans (2021), Ugwumba and Okeke (2012), and Chiekezie, *et al*. (2021), all of whom have around 10 years of experience raising poultry. The majority of the study participants (45. 3%) had between five and six acres of agricultural farmland.

Gross Margin analysis of Poultry Egg Production in the Study Area

During the course of production, poultry farmers incur a variety of costs. In the near future, these costs include both fixed and variable manufacturing expenses. The cost and returns analysis, as shown in Table 2, demonstrates that the average poultry farmer in the research area earned average total revenue of ₦1,050,691. 09 from the sale of birds and eggs during a single

production cycle, according to the average poultry farmer's overall cost structure.

Table 1: Socio Economic Characteristics of the Poultry Farmers.

Characteristic	Frequency	Percentage
Age Group		
31-40 years	35	23.3
41-50 years	78	52.0
51-60 years	27	18,0
Above 60 years	10	6.7
Gender		
Male	108	72.0
Female	42	28.0
Level of Education		
No formal education	11	7.3
Primary six	25	16.7
Secondary school	85	56.7
Tertiary	29	19.3
Marital Status		
Single	49	32.7
Married	101	67.3
Household size		
1-3	9	6.0
4-6	27	18.0
7-9	81	54.0
Above 9	33	22.0
Year of Experience		
1-5	27	18.0
6-8	50	33.3
9-12	55	36.6
13 above	18	12
Farm Size		
1-2	57	38.0
3-4	25	16.7
5-6	68	45.3
Total	**150**	**100.0**

Source: Field Survey, 2025.

The research found that the typical poultry farmer invested ₦620,932.28 each cycle in the complete production of the enterprise. The total fixed cost and the total variable cost are included in this. Seventy-five percent (75.94%) of the overall cost was made up of total variable costs (₦471,586. 47), while 24. 06% of the total cost was made up of total fixed costs (₦149,345. 81), which accounted for 48. 13% of the cost of production.

The cost of labor (₦25,111.5) represents 4. 04% of the total cost, while the cost of water (₦2,835. 60 represents 0. 46% of the total cost. The cost of stocking 500-day old chicks is represented by N107,811. 28, which accounts for 17. 36% of the total cost. Additionally, the data showed that the enterprise had a total fixed cost of ₦149,345. 81 for one production cycle and a Net Farm Income (NFI) of ₦429,758. 81. The gross margin per production cycle was ₦579,104. 62, with a gross margin ratio of 0. 55. The gross margin ratio is used to compare the gross margin of the businesses to its revenue.

Table 2: Gross Margin Analysis of Poultry Eggs Production in the Study Area.

Inputs	Mean
Cost of bird	298,908.76
Cost of feed	107,811.28
Cost of water	2,835.60
Vaccine	5,785.45
Medication/veterinary service	19,320.70
Transportation cost	11,813.12
Labour cost	25,111.56
Total Variable Cost	**471,586.47**
Cost of pen	98,723.32
Cost of cage	28,532.52
Cost of feeder	9,023.32
Cost of drinker	1,0251.78
Cost of crate	6,823.43
Cost of shovel	3,213.23
Cost of cutlass	2,004.21
Total Fixed Cost	**149,345.81**
Total Cost	**620,932.28**
TOTAL REVENUE	**1,050,691.09**
Gross Margin	**579,104.62**
Net profit	**429,758.81**
Return on investment	**0.69**
Gross margin return	**0.55**
profitability ratio	**0.41**

Source: Field Survey, 2025

After taking into consideration the entire Total Variable Cost (TVC), the farm's profitability is shown. The GMR (0. 55) indicates that the poultry farmer retains ₦0. 55k for every ₦1 revenue generated, with ₦0. 45k allocated to total variable expenditures. The table also revealed that the return on investment (ROI) is 0. 69 (69%). According to Kramaric, et al. (2017), the ROI is a profitability matrix that compares the profitability of an investment to its cost. By calculating the percent return on investment, it may be used to evaluate a company's performance over a specific period of time. The ROI of 69% indicates that for every N1 invested in poultry production, the poultry farmer earns a return of N0. 69k.

The profitability ratio (PR) assesses the company's capacity to generate a profit over its manufacturing expenses. The Profitability Ratio is 0. 41, which means that 41% (N0. 41k) of the N1 invested in poultry farming was profit, while 59%

(N0. 59) was allocated to the entire cost of production during a single production cycle. According to research, the poultry farm business in the study region is profitable. The results of Chiekezie *et al.*, (2021), Aminu and Hermmans (2021), Wale, *et.al.*, (2020), and Hassan (2014) are supported by the favorable profitability ratios, which evaluate the chicken industry's overall success. Furthermore, the study discovered that every N1 sale made at the farm gate generates a net income of 0. 22k

Determinants of Output Among Poultry Egg Farmers in the Study Area

The estimated parameters and relevant statistical test results obtained from the analysis are presented in Table.3. The results of the regressions analysis of determinant of output of poultry egg farmers revealed that educational level, farming experience and farm size were statistically significant in determining output of poultry eggs farmers in the study area. At 5% the coefficient of farmers' educational level (0.167) was positive and statistically significant in predicting their production in the study area. This suggests that farmers' educational attainment and productivity are positively correlated in the study region. This suggests that raising farmer education would increase the output of poultry farmers in the study area. The coefficient of years of experience (0.095) was found to be statistically significant at 1%, positive. This suggests a link between the number of years a farmer has experience in the study area and the amount of output they produce. This suggests that the productivity of poultry farmers in the study area will increase as they gain more experience over time.

In determining the production of the poultry farmers in the study area, the coefficient of farm size for the poultry farmers was found to be 1.531 which is positive and statistically significant at 1%. This suggests a direct link between the farmers' farm size and productivity in the study area. This suggests that a rise in the size of the farmers' farms will result in an increase in the production of poultry farmers in the survey area.

Table 3: Regression Analysis of Determinants of Output among Poultry Egg Farmers.

Variables	Co-efficient	t-value
(Constant)		0.233
Age of the respondent	0.010	0.610
Sex of the respondent	0.006	0.453
Educational level	0.167**	2.029
Marital status of the respondent	-0.014	-0.919
Years of farming experience of the respondent	0.095***	2.535
Total number of household members	0.001	0.106
Cooperative member	-0.019	-1.238
Extension contacts	0.009	0.543
Annual income	-0.060	-1.388
Farm size (number of birds)	1.531***	3.127
F-value		834.609
R Square		0.994
Adjusted R Square		0.992

Field survey 2025; 1% Significance level= ***, 5% Significance level= ** and 10% Significance level= *

Table 4: Distribution of Respondents by Constraints in Poultry Farming Activities.

Problems	Yes		No	
	Freq	%	Freq	%
Inadequate Finance	138	92.0	12	8.0
Poor Transportations	21	14	129	86.0
Government policy	35	23.3	115	76.7
High Mortality	109	72.7	41	27.3
Lack of Information	72	48.0	78	52.0
Inadequate Water supply	69	46.0	81	54.0
High Cost of Input	95	63.3	55	36.7
Inadequate Storage facilities	139	92.7	11	7.3
Seasonal egg gluts	119	79.3	31	20.7
Poor Marketing	52	34.7	98	65.3

Source: Field survey, 2025.

Challenges Faced by Poultry Farmers in Egg Production

Table 4 showed varying degrees of constraints being faced by the poultry farmers in the study area. The major constraints as revealed by the table are insufficient fund (92%), high mortality of bird (72.7%), inadequate storage facilities (92.7%),High cost of inputs (63.3%) and activities of middlemen (79.3%).

CONCLUSION

The goal of this study was to assess the production and selling of eggs in the Ido local government. According to the survey, the poultry egg industry in the study area was dominated by men, with 92.0% of respondents being male. The research also found that poultry egg producers struggle with issues like excessive input costs, seasonal egg surpluses, insufficient storage space, and a lack of information. According to the results, the profitability index was 0. 41 in the study area, this translates to poultry egg farmers making N0. 41 for every naira they invested in production.

RECOMMENDATIONS

The study made the following recommendations: the government should offer more income support to affected farms. Appropriate policymakers might implement lower interest rates, tax deferral or waiver, and other measures to sustain poultry production.

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