

PROFITABILITY ANALYSIS OF POULTRY EGG PRODUCTION IN ONDO STATE, NIGERIA

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ABSTRACT

Poultry meat and eggs are the most consumed animal protein; unrestricted by any religion or culture in Nigeria. It was recorded that the poultry industry contributed about 25% of the country's Agricultural GDP. Most studies focus mainly on poultry production and efficiency of its production, however, paucity of information exist in the areas of budgeting analysis in the study area. Hence, the profitability of poultry egg production among poultry egg farmers in Ondo State, Nigeria were investigated.

A purposive sampling technique was used to obtain primary data from poultry egg farmers in Owo and Akure local government area of Ondo State, through a well-structured questionnaire. socio-economic characteristics such as age, gender, educational level, marital status, household size, access to credit, extension contact, other variables were input and output data like flock size, cost of feeder and drinker, cost of feed, cost of labour, cost of drugs and medications, cost of energy, price of crate of table egg, price of spent layers were variables used in the study. Data were analysed using descriptive statistics, budgeting analysis and regression analysis.

Result of the descriptive statistics shows that 52 per cent of the poultry farmers were between 31-40 years, 62 per cent were male, 90 per cent had tertiary education, 66 per cent were primarily poultry farmers, 78 per cent were original poultry farm owners and 55 per cent had more than 5 years' work experience. Descriptive statistics on cost and returns indicated that 64 per cent of the return were from sales of egg, while the remaining 36 per cent was from sales of spent layers. The cost of feeding take the highest proportion of 69 per cent of cost of production and cost of medication the lowest (7 per cent). A positive gross margin of ₦5,518,869.76, net farm income of ₦ 5,500.446.82 and profitability ratios indicated poultry egg production is profitable. Education, access to credit and years of experience are factors that affect profitability of poultry egg production in the study area.

Keywords: Profit, Regression, Profitability Ratio, Depreciation, Cost, Returns Gross Margin

Introduction

The contribution of the agricultural sector in Nigeria is around 42% of the gross domestic product (GDP). The sector also employed over 70% of the populace particularly in the rural sector (Central Bank of Nigeria (CBN, 2018). Thus a driving force behind Nigeria economic growth (NBS 2014). The Nigerian agricultural sector comprises of the crop, livestock, fisheries, and forestry sub-sectors, the livestock sub-sector is the second largest sector (NRS, 2018). The importance of livestock production in the agricultural sector cannot be over emphasised in the Nigerian economy as it provides food, increase foreign trade, reduce rate of unemployment and create employment opportunities to sustain the economy (Yusuf *et al.*, 2016; Olorunwa, 2018). In particular, the poultry industry is responsible for the provision of raw materials to some industries, it also serve as a take up industry for other industries like the animal health industries (Omiti and Okuthe, n.d.). Also it provides economic support and development influence on the tourism sector and the fashion industries Darre (n.d.). Poultry production in Nigeria is estimated at about 150.682 million, out of which about, 25% are commercially farmed, 15% semi-commercially farmed and 60% are backyards (Ebukiba and Anthony, 2019). Despite this figure, there is a wide gap between its consumption and demand, where demand is greater than supply. This thus made the Government of Nigeria place ban on importation of poultry products and to encourage local production (ATA, 2012). The demand for poultry products is also on the high side as consumers' preference for white meat increased progressively.

According to Olatunji and Abesogun (2012), Egg is an important, most nourishing and cheapest source of animal protein for man. The major challenge in the sub-sector stem from excessive price of raw materials used for animal feed production; although, this is a universal issue that concerns in every part of the world (Ahmed and Mohammed, 2015). The current high cost of major and essential ingredients of feed production has led to increased cost of production and lowered profitability (Mamman *et al.*, 2016). Inadequate financing, high feed cost, poor quality of feed, lack of access to finance, high cost of medication are some of the reasons for reduced profit in poultry production (Emokaro and Erhabor (2014), Ebukiba and Anthony (2019) and Mamman *et al.*, (2016). Efforts through the presidential initiative to improve local poultry production in Nigeria by encouraging commercialised large scale poultry farmers is on the top gear. Poultry production has therefore, becomes a full time job for many and is considered to be a commercially viable enterprise (Yusuf *et al.*, 2016). Poultry production depend mostly on grains and other feed materials consumed by man, which subsequently led to major competition, particularly for maize grains, while its production in Nigeria is extremely lower than its demand. Variations in maize outputs and its price has cause changes in poultry feed and poultry products prices and consequently its profitability (Sani, 2015). The feed, being the single item with the highest cost in poultry production, increase in its price would negatively affect the total profit accruable to farmers (Hassan, 2014).

It is against this background that the current study seek to investigate the profitability of poultry egg production in the face of rising cost of production.

The general objective is to apply budgeting analysis to poultry egg production in Ondo state
The specific objectives are:

- To identify socioeconomic characteristics of Poultry Egg Farmers in the study area
- To analyse cost and returns of poultry egg farming in the study area
- To examine factors influencing profitability of poultry egg production in the study area.

METHODOLOGY

The study was carried out in Owo and Akure South local government area of Ondo State. A purposive sampling technique was used in the selection of Owo and Akure South Local Government Areas (LGAs). This was due to the large number of poultry egg farmer in the local government area. From the entire local government, fifty (50) poultry egg farming household were randomly selected as respondents for the study.

Data were collected using well-structured questionnaire on the socio-economic characteristics of egg poultry farmers such as age, gender, educational level, marital status, household size, access to credit, extension contact, 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 multiple 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 (π) = Total Revenue (TR) – Total Cost (TC)

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

Where:

GM = Gross Margin in ₦,

$P_i Y_i$ = Total Revenue in ₦,

$r_i C_i$ = Total Variable cost in ₦,

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

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

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

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

Cost and returns structure per 5,000 laying birds per production cycle in the study area.

Return on Investment: Return on investment (ROI) is an approximate measure of an investments profitability. It is a ratio between net profit and cost of investment. A high ROI means the investment's gains compare favorably to its cost.

$$ROI = \frac{\text{Net income}}{\text{cost of investment}}$$

Gross Margin Returns (GMR): A gross margin return on investment is an inventory profitability evaluation ratio that analyzes a firm's ability to turn inventory into cash above the cost of the inventory. It is calculated by dividing the gross margin by the average inventory cost.

$$GMR = \frac{\text{Gross profit}}{\text{Average cost}}$$

Net Profit Ratio: Net profit margin (also known as “return on sales”) is a profitability ratio that measures the percentage of net income to sales. It is calculated as;

$$NPR = \frac{\text{Net profit}}{\text{Total revenue}} \times 100$$

Return on Capital Employed (ROCE): is a financial ratio that measures a firm's profitability and the efficiency with which its capital is used. The ROCE ratio is considered an important profitability ratio. It is calculated as;

$$\text{ROCE} = \frac{\text{Total assets} - \text{Current liabilities}}{\text{Capital Employed}}$$

Determination of Fixed Costs

Depreciation on capital (machines, equipment and buildings) items was obtained from the initial costs and useful lives of such fixed items. Annual depreciation values of assets were calculated using straight line method of depreciation. The method is given as

$$D = \frac{C - S}{L}$$

Where:

D= Annual depreciation (₦)

C=Cost of fixed Assets (₦)

S=Scrap salvage value (₦)

L= Useful lifespan (years)

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

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \dots + V_i \dots\dots$$

Where

X₁= Age farmer (in years),

X₂ = Level of education (number of years spent in school),

X₃ = Gender (male = 1, female =2),

X₄ = Farming experience (in years),

X₅ = Credit status (Access =1, no access=0),

X₆ = Household size (number),

ε₁= Error Term.

The coefficient of the unknown parameters are to be estimated by the method of maximum likelihood using computer program FRONTIER Version 4.1 (Coelli, 1994).

Results and discussion

Table 1; Socioeconomic Characteristics of Poultry Egg Farmers

Variable	Range	Frequency	Percentage
Age	21-30	9	18.0
	31-40	26	52.0
	41-50	13	26.0
	51-60	02	04.0
	Total	50	100.0
Gender	male	31	62.0
	Female	19	38.0
	Total	50	100.0
Educational level	No formal	1	2.0
	Pry	1	2.0
	Sec.	3	6.0
	Tertiary	45	90.0
	Total	50	100.0
Pry occupation	Farming	18	36.0
	Civil serv.	16	32.0
	Trading	9	18.0
	Artisan	2	4.0
	Others	5	10.0
	Total	50	100.0
Experience	1-5 years	24	48.0
	>6 years	26	52.0
	Total	50	100.0
Farm age	below 5yrs	12	24.0
	Above 5yrs	10	20.0
	10 years	8	16.0
	10- 15yrs	11-	22.0
	Btw 15-20	1	2.0
	Above 20yrs	8	16.0
Total		50	100.0

Source: Field Survey 2021.

Table 1 shows that greater percentage (52 percent) of the farmer ranged between the ages of 31-40 years. This indicated that poultry egg farmers are young, economically active and are in productive age. This finding is in line with the findings of Chiekezie *et al.*, (2021) and Ume *et al.* (2016). Outcome from the study also shows that the gender of the poultry eggs producers in the study area specified 31 respondents (62 percent) were male, while 19 respondents (38 percent) were female. This result corroborates the findings of Yusuf *et al.*, (2016), Aminu and Hermmans (2021)

The result further revealed that majority (90 percent) of the farmer had one form of education or the other. The implication of this is that most of the farmer will easily adopt innovation and have the technical know-how of how to use improve technologies. This finding agrees with Aminu and Hermmans (2021). It was also noted that Farming remains the major occupation of the poultry farmers in the study area, it constitute 36 percent of the entire study area. 32 percent were civil servant, while 4 percent, 10 percent and 18 percent of the respondents were artisan, traders and people with other professions, respectively.

It was discovered that majority (52percent) of the farmers have above 6years of poultry farming experience while 48 percent have less than 6years working experience in poultry farming. This implies that the higher the experience, the higher the level of efficiency in production. This finding validates Aminu and Hermmans (2021), Ugwumba and Okeke (2012) and Chiekezie *et. al.*, (2021) who confirms about 10 years of poultry experience

The age of farm according to the findings of this research work revealed that 25 percent are below 5 years, indicating that all equipment are still new and functional which will enhance productivity of the farm and hence profit efficiency.

Table 2: Cost and Return Analysis of poultry egg production in the study area

Incomes and Expenses	Value (₦)	Percentage
Value of eggs (5000 birds) (₦900 x 6m x 30d x100c)	₦16,200,000	63.65
Value of spent layers (₦1,850 x 5000 birds)	₦9,250,000	36.35
Total Revenue	₦25,450,000	100.0
Fixed and Variable cost item		
Cost of laying birds (5,000 birds x ₦1,200)	₦6,000,000	30.1
Cost of medication @ point of lay (₦5100 x 2w x 6m)	₦61,200	.30
Cost of feeding (₦3800 x 20bags x 30d x 6m)	₦13,680,000	68.6
Cost of energy (₦32.89 x 152unit)= ₦4,999.28 + ₦9,831.25	₦14,830.53	0.07
Cost of Equipment's and repairs	₦31,099.71	0.16
Total cost of labour (₦1,500 x 4w x 6m x 4 persons)	₦144,000	0.72
Total Variable Cost (TVC)	₦19,931,130.24	99.95
Gross margin	₦ 5,518,869.76	
Cost of depreciation	₦ 18,422.94	0.09
Total Cost	₦ 19,949,553.18	100.0
Net farm income	₦5,500,446.82	
Return on investment	0.28	
Gross margin returns	0.28	
Net profit ratio	0.22	
Return on capital employed	1.28	

Source: Field Survey 2021.

Results from table 2 indicates that poultry egg business is a profitable enterprise, with a positive gross margin of ₦ 5,518,869.76 and a net farm income of ₦5,500,446.82 per five thousand laying birds in a given production cycle. This finding agrees with Afolabi *et al.*, (2013), Hassan *et. al.*, (2016) whose study revealed that the poultry egg business is a profitable enterprise, with a gross margins of ₦ 211,828.01 and ₦414,690.18 per production cycle a net farm income of ₦201,185.72 and ₦208, 079.75 per 100 laying birds in a given production cycle. All indicating positive gross margin and net farm income. The value of sales from eggs accounted for **63.65%** of the total income. Sales of spent layers accounted for **36.35%** of the total revenue. Cost of feeding was **68.6%**, which was the highest. While the initial bird stock accounted for **30.1%** of the total cost. This result is in line with Ashagidigbi

et al. (2011), Bariwa and Fabode (2019) and Busari and Okanlawon (2015) whose studies also revealed that the cost of feeding laying birds accounted for the highest cost of production. The result of the profitability ratios showed that for every ₦1 invested in those poultries by farmers, a poultry farmer/investor earns ₦0.28 gross margin, a ₦0.28 net income and a gross revenue of ₦1.28. This study supports the findings of Chiekezie *et al.* (2021), Aminu and Hermmans (2021), Wale *et al.*, (2020) and Hassan (2014) who also had a positive profitability ratios, which measures the overall success of the poultry enterprise. The study further revealed that a net income of 0.22k is guaranteed for every ₦1 sales that is made at the farm gate.

Descriptive statistics on cost and returns indicated that 64 per cent of the return were from sales of egg, while the remaining 36 per cent was from sales of spent layers. The cost of feeding take the highest proportion of 69 per cent of cost of production and cost of medication the lowest (7 per cent).

Table 3. Factors affecting profitability of poultry egg production in the study area

Variables	Para.	Coeff.	Stan Err.	T-ratio	Prob
Constant/Intercept	X ₀	0.31129	4.096	.076	.442
Age (X ₁)	X ₁	-10.883	3.972	-2.740**	.049
Education (X ₂)	X ₂	2.3143	0.649	3.566**	.574
Mar. status farmers (X ₃)	X ₃	2.04114	8.798	0.232	.818
Household Size (X ₄)	X ₄	-18.4291	5.681	-3.244**	.220
Access to Credit (X ₅)	X ₅	16.027	7.822	2.049	.961
Experience (X ₆)	X ₆	7.277	2.527	2.880**	.384
Variance (R ²)	R ²	0.622	-	-	0.011

Source: Field Survey 2021.

Result of factors influencing profitability of poultry egg production in the study area indicated that the variables of education, access to credit and years of experience has positive coefficient and were significant at 5%. This simply means that a direct relationship exist between these variables and profitability of the poultry egg production. That is as education level, access to credit and years of experience increases, profitability of egg production increases. This result is in line with the findings of Oladunni and Fatuase (2014), Aminu and Hermmans (2021), that improvement in the level of education would lead to increase and boost revenue and profits from poultry production. The more access a farmer has to credit facilities, the more productive he is and the more profit he gets. Also, the more the years of experience of farmer, the more the profit than the new entrants. This affirms the findings of Olorunwa (2018), Aminu and Hermmans (2021), that continuous practice of a job over a long period, makes the person more proficient and more productive.

The coefficient of age and household size is negative, indicating an inverse relationship exist between these variables and profit making, although significant at 5%. The negative sign in age variable indicates as the farmer grows older his ability and efficiency reduces and hence his profitability. The variable is significant because old age can be tantamount to experience. Household size has a negative impact on farmers because the higher the size, the higher the consumption rate and the multiplier effect is a reduction in profit margin of the farmer. Though significant because more hand involve in the operation of the farm, hence higher productivity and profitability.

R^2 value of 0.622 implies that 62% of the variation in profitability of egg production (dependent variable, Y) has been explained by the independent variables.

CONCLUSION

Based on the findings from the study, it can be concluded that poultry farmers in the study area are young, energetic individuals, mostly male and have one form of education or the other, with wealth of experience on the job. It was also discovered that poultry egg enterprise is a profitable venture, due to the positive profit margin and profitability ratios values from the study. Educational level, access to credit facilities and years of experience are known to be a major factor to achieving high profit in the study area.

RECOMMENDATION

In the light of the findings of the study, the following recommendations have been put forward:

- i.) Measures should be put in place by appropriate authorities to reducing the cost of poultry production, specifically in the area of cost of feeds which constituted the largest proportion of the total cost of production in poultry egg production. This will go a long way to enhance profitability of poultry egg production in Nigeria.
- ii.) It is also recommended that poultry farmers be exposed to seminars and workshops that will give them more enlightenment, which will increase their understanding, productivity and profitability.
- iii.) Poultry egg production should be integrated as a vital component in government programs geared towards loan facilities to empower the teeming unemployed youths in Nigeria due to its profitability.

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