

Profitability of Small-Scale Broiler Farmers Production in Okpe Local Government Area of Delta State.

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Abstract

This study examined the profitability of small-scale farmers broiler production in Delta State, Nigeria. The small-scale broiler farmers are those who raise not more than 100 chicks for meat in a production process. The specific objectives were to evaluate the profitability of small-scale farmers broiler production. The study used multistage random sampling technique. A structured questionnaire was used to obtain information from a randomly selected sample of 120 small scale poultry farmers from Delta State, Nigeria. Descriptive Statistics and Regression model were used in analyzing the data. Among the findings were that 45% were aged between 31 and 40 years. 74% were male headed households. Findings also showed that 58.3% were married while 89.1% had formal education either at primary, secondary, or tertiary level. The average household size was 4-6 persons, some had farming experience between 6 and 10 years. The gross margin was N74,900 while the net farm income was N50,100. The farmers return on investment (ROI) was N0.67 implying that for every one naira spent by broiler farmers in the study area attracts a gain of sixty-seven (67) kobo. Some of the major constraint on broiler production were high cost of feeds, lack of capital, pest/disease outbreak, pilfering, high mortality rate and shortage of water. It is recommended that government and private sector should provide feed to poultry farmers at a subsidized rate as that will encourage more farmers to venture into the business. Veterinary service should be provided to the farmers at affordable rate.

Keywords: Profitability, Small - Scale, Farmers, Broiler, Production

INTRODUCTION

The need to provide sufficient animal protein for the human consumption is of paramount concern to animal scientists and veterinarians. Animal protein, apart from its profitability in terms of income to the farmers, is essential for normal physical and mental development of man (Ugwu, 1990). Poultry remains the largest livestock group estimated to be about 14000 million, consisting of chickens, ducks and turkeys in the world (FAO, 2013). According to Wikipedia (2021) poultry can be defined as domesticated fowls including chickens, turkeys, geese and ducks raised for the production of meat or eggs and the word is also used for the flesh of the birds as food. The interest in poultry was due to several reasons. For instance, poultry meat and eggs are highly desirable in all parts of the country. Just two (2) eggs a day are sufficient to meet 17.2% of an adult person's protein needs as well as essential vitamins and trace elements (FAO, 2013). Poultry meat contains more proteins than beef. In addition,

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poultry housing can be provided at a relatively low cost and growth period is short (usually about 10 weeks for broilers). The Poultry industry has become very popular during the past few years due to the growing rate of unemployment and population explosion in Nigeria (Nwandu, 2019).

The poultry industry in Nigeria has undergone a significant transformation since the early fifties, from a small-scale poultry enterprise in backyard, peasant and primitive household-oriented husbandry to modern and large-scale poultry which can be found in the countryside and urban centers today. However, small-scale poultry production still thrives in Nigeria as 80% of poultry production is with small-scale farmers. According to Sonaiya and Swan (2004) defined small-scale poultry farmers in Nigeria as flock of less than 100 birds unimproved and improved breed raised in either extensive and intensive farming system. Labour is low usually drawn from farm families. Small-scale poultry are small flocks managed by individual farm families in order to obtain food security, income and gainful employment. Small-scale poultry is rarely the sole means of livelihood for the family but is one of a number of integrated and complementary family activities contributing to the overall well-being of the households (Sonaiya and Swan, 2004). Though the value of livestock resources has grown in absolute terms in recent years, its overall contribution to agricultural output remains dismally low (Eke and Effiong, 2016). In Nigeria, animal protein, especially meat is expensive, in short supply and out of reach to the majority of the population. The effect of inadequate animal protein intake is felt more by a large proportion of the population especially in rural areas, whose inhabitants constitute over 70% of the Nigerian population and who constitute over 85% of the extreme poor in the country (Nwandu, 2020). There is therefore need to explore the different sources of animal protein including poultry production towards meeting these needs. Agriculturists and Nutritionists generally agreed that developing the poultry industry in Nigeria is the fastest means of bridging the protein deficiency gap presently prevailing in the country (Netherlands Enterprise Agency, 2020). In spite of these advantages the industry is yet to attain the desired level of productivity in Nigeria due to the high cost of production (Ogba, *et al.*, 2020). For instance, poultry farmers are faced with the problem of extremely high cost of day-old chicks, drugs and other poultry inputs. The situation has forced small scale poultry farms to close down and those still managing to survive are producing at very high cost and also contending with serious input limitations. Availability of credit and capital accumulation within the agricultural sector, poultry sector inclusive is very slow (Nwandu, 2021). There is also low level of productivity (Ogba, *et al* 2020). Amid these problems, there is need to investigate the profitability of embarking on poultry production.

The aim of this study was to evaluate the profitability of small-scale broiler production in Okpe Local Government area of Delta state. The objectives were to: describe the socio-economic characteristics of poultry farmers in study area, estimate the cost and return components of small-scale broiler production, determine the effects of poultry farmer's characteristics on profit and identify constraints to profitability of small-scale broiler production.

Hypothesis

The null hypothesis is that socio-economic characteristics of small-scale broiler farmers do not affect profit.

This study on profitability of broiler production by small-scale farmers will help to identify the best input combinations to use in order to attain the desired maximum level of output.

Methodology

The study was conducted in Okpe LGA of Delta State. The area has a latitude of $5^{\circ}26'N$ and the longitude is $5^{\circ}57'E$. It has a tropical climate characterized by both dry and wet seasons and a mean rainfall range of about 2652mm and a mean temperature of $31.2^{\circ}C$. (Delta State Ministry of Lands and Survey, 2005). The major occupation of the people were farming and trading.

Sample and Sampling Procedure

A multi-stage sampling procedure was adopted for the study. The first stage was the random selection of 8 communities from the 11 communities that made up Okpe Local Government Area. The communities selected include Amuokpoko, Osubi, Okuokoko, Ejume, Oyelie, Olin, Ogiedi, Olan, Okuoke and Igbimidika. The population of the study was all the small-scale broiler farmers in the communities randomly selected for the study. The list of small-scale broiler farmers in the communities were obtained from the Department of Agriculture of Okpe LGA. In all there were 1056 small-scale broiler farmers that raise poultry birds. The second but last stage was the random selection of small-scale broiler farmers who rear broiler birds on small-scale (below 100 birds) from the 8 communities selected. 15 small-scale broiler farmers were randomly selected from each of the 8 communities giving a total of 120 small-scale broiler farmer respondents that was used for the study (Ologbon and Ambali, 2012).

Data Collection: Primary data was used for this study. The primary data was collected by means of a well-structured questionnaire. The questionnaire was administered to the respondents and had a 100% return rate.

Method of Data Analysis: Data was analysed using descriptive statistics, cost analysis, net income analysis and regression analysis.

To achieve the objective of the study the following analytical techniques was used: Socio-economic characteristics of poultry farmers in the study area and identification of constraints to profitability of small-scale broiler production will be achieved using descriptive statistics; estimate of the cost and return component of small-scale broiler production was achieved using cost analysis while the effect of broiler farmer's socio-economic characteristics on profit was achieved using regression analysis.

Cost and Return Analysis

The short run cost function was used to determine the monetary value or cost component of input in the small-scale broiler production. In poultry production Olayide and Heady (1982) gives the mathematical cost function equation as:

The cost function was expressed as follows:

$$C = r_i x_i + h t b t \dots\dots\dots 1$$

$$TC = TVC + TFC$$

Where

r_i = prices of variable input used in poultry production

x_i = Variable input used in poultry production

$h t$ = prices of fixed input used in poultry production

$b t$ = fixed input used in poultry production

TC = Total cost of inputs

TVC = Total variables cost of inputs

TFC = Total fixed costs of inputs

Net Income Analysis

The general profit function was used to estimate the net profit. Adegeye and Dittoh (1985) expressed the profit equation mathematically as:

$$\pi = TR - TC \text{ when } >0 \text{ Equation 2}$$

Where

π = Profit

TR = Total Revenue

TC = Total Cost

Regression Analysis

$$Y = f (X_1, X_2 \dots\dots\dots X_n) \text{Equation 3}$$

$$Y = b_0 + b_1 x_1 \text{ -----}x_9 + e \text{ equation 4}$$

Y = Value of output of broiler farming (Naira)

X₁ = Cost price (Naira)

X₂ = Selling price (Naira)

X₃ = Transport cost (Naira)

X₄ = Age (Years)

X₅ = Marital status (1 married, 0 otherwise)

X₆ = Household size

X₇ = Experience (Years)

X₈ = Primary occupation

X₉ = Membership of association (1member, 0 otherwise)

X₁₀ = Credit access (1 access, 0 otherwise)

X₁₂ = Education (1 formal, 0 otherwise)

RESULTS AND DISCUSSION

Socio-Economic Characteristics of Respondents

The socio-economic characteristics of the respondents include age, gender and marital status, level of education, household size and farming experience.

Age: Most of the small-scale broiler farmers (45%) fell within the productive age range of 31-40 years with a mean age of 36.9 years. Therefore, for small scale broiler famers, there is the tendency that productivity will continue to rise. The mean age of 36.9 showed that the poultry farmers are most likely to be productive in the next decade and broiler production in the country will likely increase.

Sex: Table 1 showed that men accounted for 61.7% while female were about 38.3%. This finding showed that both men and women were actively involved in broiler production but the percentages of men were more.

The high number of males might be attributed to hard task (such as building of the poultry house, changing of poultry litters, processing of fish meal/blood meal etc.) while women may not have the stamina to undertake such task.

Marital Status: The distribution of the respondents showed that about 58.3% of the respondents were married, 21.7% were single while 11.7% were divorced and 8.3% were widowed. High number of married people in the business reduces labour cost as most married persons have children that constitute the labour force in poultry production as also observed by Otitoju, *et al*, (2018).

Educational level of respondents: About 58.8% of the poultry farmers had formal education at tertiary level, 20.8% attended secondary education, and 12.5% of the respondents had their primary education while 10.8% had no formal education. This implied that there were more educated people in small- scale broiler production. However, this does not suggest that in poultry production education was a barrier but rather an added advantage for efficient management. With this level of education, there was tendency for the farmers able to increase their level of adoption of technology and skill acquisition. This study agreed with the findings of Ologbon and Ambali,(2012) that greater percentage of small scale poultry farmers in Ogun state had formal education. The findings disagreed with the findings of Gbigbi (2012) that greater percentage of Artisanal fishing households in Niger Delta had no formal education. The disagreement may be due to geographical location of the studies and type of occupation .

Household Size: Table 1 showed that majority of the respondents (58.3%) fell within the household size of 4-6 persons, 10% fell within the household size of 10 and above persons. This result agreed with the findings of Ugboime (2006) who found out that majority of the respondents (small scale poultry farmers in Delta state) had an average family size of 6 people.

Farming Experience: Table 1 showed that 54.2% had farming experience of about 6-10 years while 45.8% had 1-5 years, 11-15 years and above 15 years respectively. This result showed that majority of the broiler farmers had been into production for 10 years. However, the more experienced the broiler farmers have, the more technically efficient they will be in production.

Table 1: Frequency Distribution of respondents according to their Socio-economic Characteristics

Variables	Frequency	Percentage (%)	Mean
Age			
11-20	6	5	
21-30	18	15	
31-40	54	45	36.9
41-50	20	16.7	
51-60	12	10	
Above 60	10	8.3	
Gender			
Male	74	61.7	Male
Female	46	38.3	
Marital Status			
Single	26	21.7	
Married	70	58.3	Married
Divorced	14	11.7	
Widowed	10	8.3	
Education			
Tertiary	67	55.8	
Secondary	25	20.8	
Primary	15	12.6	Tertiary
No Education	13	10.8	
Family Size			
1-3 persons	23	19.2	
4-6 persons	70	58.3	4-6 persons
7-9 persons	15	12.5	

Above 10	12	10	
Farming Experience			
1-5 years	33	27.5	
6-10 years	65	54.2	6-10 years
11-15 years	16	13.3	
Above 15 years	6	5	

Source: Field Survey, 2021

Cost and Returns of Broiler Production

This section gave the summary of the cost and returns of the broiler production and consequently the gross margin and the net farm income. The result on Table 2 revealed that the total cost incurred in broiler production in the study area was N74,900 while the total revenue generated was N125,000. The gross margin was N73,100 while the net farm income was N50,100. The farmers return on investment (ROI) was N0.67 implying that for every one naira spent by poultry farmer in the study area attracts a gain of 67 kobo. This implied that the business of poultry production in the study area was profitable venture. The finding was in tandem with the result of (Emokaro and Eweka, 2015) who reported that broiler production was a profitable enterprise. The implication of this result is that farmers who want to venture into broiler production can easily do that without any doubt since the business is lucrative.

Table 3: Net Farm Income Statement for Broiler Production

Item	Quantity	Price/ Unit (N)	Total (N)
A. Output (Broiler)	50	2,500	125,000
B. Variable Cost			
Cost of Day- old Chicks	50	500	25,000
Feed	237.5kg	80	19,000
Labour (Man/days)	2	1500	3,000
Veterinary Services			4,000
Transport			900
Total Variable Cost (TVC)			51,900
C. Fixed Cost			
Feeding trough			3,000
Watering trough			2,000
Battery Cage			18,000
Total Fixed Cost (TFC)			23,000
D. Total Cost (B + C)			74,900
E. Gross Margin GM (A - B)			73,100
F. Net Farm Income = A - (B + C)			50100
Return on Investment = NFI/TC			0.67

Sources: Field Survey, 2021

Estimated Coefficient of Effects of Broiler Farmer's Characteristics on Profit.

The result of the linear regression analysis for the broiler farmers' characteristics showed that the independent variables explained the variations in the profit of broiler farmers. The R² was 0.717 which implied that the relevant variables entered into the model determined over 72% changes in the profit margin of the broiler farmers. An F-ratio of 24.54 indicated that the overall regression equation was significant at 1% level. The various variables entered in the model, cost price of day-old chicks, selling price of matured chicken, transport cost, household size, experience in poultry production and access to credit were statistically significant on their effect on the profit margin of the broiler farmers. The details of the effect of each variable were as discussed below:

Cost Price of Day-Old Chicks: The cost price of day-old chick had a coefficient of -10.66 with a t-value -2.55 and statistically significant at 5% level. This implied that as the cost price increased the profit which is the dependent variable reduced.

Selling Price of Matured Broiler: The coefficient of selling price for culled chicken was 7.55 and significant at 1% level with a t-value of 3.56. This implied that 1% increase in the selling price will lead to a 7.6% in profit margin which was the dependent variable. Cost price was negatively related to selling price.

Household Size: The household size had a coefficient of 3537.80 with a t-value of 2.25 and statistically significant at 5%. This implied that as the household size increase, the dependent variable which was the profit increase. This was interpreted to mean that the more the household size, the more family labour can be employed in the poultry business This observation was made by Sonaiya and Swan (2004).

Experience: It had a coefficient of 376.15 with a t-value of 7.44 and statistically significant at 1%. This implied that the more the experience of the broiler farmers the better the application of inputs to maximise profit.

Access to Credit: The coefficient of access to credit was 61333.65 with t-value of 4.18 and statistically significant at 1%. This implied that if access to credit to poultry farmers increase, there may be increase in output if the credit received by the broiler farmers are properly managed and not diverted to other unproductive ventures.

Educational Level: The education level had a coefficient of 130.63 with a t-level of 3.83 and statistically significant at 1%. This suggests that as the level of education increases the profit efficiency also increases.

Table 3 Effects of poultry farmer’s characteristics on profit.

	Standardized Coefficient	Standard Error	Unstandardized coefficient Beta	t - value	Significance
Constant	190334.917	71893.993		2.648	.009**
Cost Price	-10659	4.187	-.074	-2.546	.009**
Selling Price	7.548	2.067	.131	3.651	.000***
Transport Cost	-974.156	1356.785	-.065	-.718	.474
Age	-145.374	407.728	-0.32	-.357	.722
Marital Status	235.680	333.506	.064	.707	.001
Household Size	3537.802	1570.199	.206	20253	.026**
Experience	3761.147	505.240	.066	7.441	.000***
Primary Occupation	-2085.665	5499.698	-.035	-.379	.705
Membership of poultry farmers association	897.735	859.122	.105	1.045	.298
Credit Access	61333.654	14680.104	.392	4.178	.000***
Education	130.630	34.147	.004	3.826	.001
R ²	0.717216				
F-Ratio	24.536				

Dependent Variable: profit

NB: *significant at 10%, **significant at 5%, *significant at 1%**

Constraints on Broiler production as Perceived by the Farmers

Table 4 presented the identified constraints on small scale broiler production as perceived by the farmers. The major constraint encountered by small- scale broiler farmers was cost of feed (45.8%). This is because most small- scale broiler farmers do not produce their own feed but purchase their feeds from feed manufacturers and dealers. This finding agreed with the findings of Ugboime (2006) that feed cost was the major constraint on poultry production. Lack of capital was estimated to be 26.7%. Other problems included pest/disease outbreak (8.3%), pilfering (5.8%), high mortality rate (8.3%) and shortage of water (4.2%). One could then say that the constraints to poultry production were mainly due to input factors than management factors.

Table 6: Constraints Associated with Small Scale Poultry Production

Constraints	Frequency	Percentage (%)
Pilfering	7	5.8
Pest/Disease outbreak	10	8.3
Feed Cost	55	45.8
Lack of Capital/Fund	32	26.7
High Mortality rate	10	8.3
Shortage of water	5	4.2
Total	120	100

Source: Field Survey, 2021

CONCLUSION

This study was carried out with the view to examine the profitability of small-scale broiler farmer's production in Delta State, Nigeria. Specifically considering the socio-economic characteristics of small-scale broiler farming households in the study area, estimate the cost and return components of small-scale broiler production, determine the effects of poultry farmer's characteristics on profit and identify constraints to profitability of small-scale broiler production. Greater percentage of the small-scale broiler farmers about 45% of them fell between age range of 31-40 years in the study area. Males with 61.7% dominated broiler production in the study area. Majority of the respondents about 58.3% were married. Greater percentage of about 58.8% of the broiler farmer respondents had tertiary education in the study area. Greater percentage of about 58.3% of the poultry farmer household fell within the household size of 4-6 persons. Greater percentage of about 54.2% was found to have farming experience of 6-10 years. Findings also revealed that broiler production was found to be a profitable venture. Recommendations include that the government and private sector should make feed available to broiler farmers at subsidized rate as that will encourage more farmers to venture into the business. Small-scale broiler farmers should be taught how to improvise and produce broiler feeds to help reduce cost of feed production. This can be done through the use of extension agents, non governmental organisations and relevant government agencies. Improved technology should be provided by both government and private enterprise to boost poultry production in the study area. Since majority of the broiler farmers are educated, workshops, seminars and symposiums should be organized for the poultry farmers at intervals on poultry production. This will help boost their level of understanding which in turn will affect the business positively. Veterinary service should be provided to the farmers at affordable rate.

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