

# Determinants and Performance of Broiler Enterprise in Ungogo Local Government Area of Kano State, Nigeria

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Date of Submission: 05-03-2023

Date of Acceptance: 15-03-2023

## ABSTRACT

The Study examined economics of small scale broiler production in Ungogo Local Government Area of Kano State. Both Purposive and random sampling techniques were employed. Eight (8) villages were purposively selected which comprised Rijiazak, Tundun Fulani, Zango Dakata, Zaura, Karo, Basherawa, Rangaza and Paniso. Sixty five (65) broiler producers were randomly selected and data were collected using structured questionnaires. Data were analyzed using descriptive statistics, farm budgeting and multiple regression models. The result revealed that the mean age of the respondents was 36.8 years and majorities (64.62%) of the respondents obtained one form of formal education or the other. The findings also showed that 73.84% of the farmers sourced their initial capital from personal saving and 78.46% of them used family labor. The result further disclosed that 46.15% of the respondents preferred and stocked the Marshal breed and the average flock size was 301 chicks. The net return and return per naira invested were ₦ 57, 875.11 and ₦ 0.41 per production cycle, respectively. The operating, fixed and gross ratios were 0.69, 0.02 and 0.71, respectively. The results also showed that feed and other cost were found to be highly significant ( $p < 0.001$ ) in influencing the revenue. Similarly, cost of chicks, medication and depreciation had a positive coefficient and significant at  $p < 0.01$ . However, inadequate capital, inadequate extension services and outbreak of diseases, among others were the major problems associated with small scale broiler production in

the study area. The study recommends that broiler producers should be encouraged to form cooperative societies in order to have easy access to credits facilities from formal financing institutions. Extension services should be intensified and rehabilitation of veterinary clinics as well as provision of adequate drugs should be encouraged so as to help in improving broiler enterprise in the study area.

**Keywords:** Determinants, Performance, Broiler, Enterprise and Ungogo L. G. A.

## I. INTRODUCTION

Poultry business was first introduced in Nigeria in the late 1950's and 60's along with other modern agricultural development technologies. With the rapid growth of the Nigeria poultry industry around 1970s to 1980s was conditioned by several factors, which included the liberal importation of day old chick's feeds and equipment into Nigeria. These breeds are exotic poultry breed namely white Leghorn, Barred, Plymouth Rock, Rhode, Island Red and alike. (Adio, 2007). Prior to the introduction of commercial poultry business in Nigeria, a few commercial poultry houses were importing processed broiler and table egg with other animal product from abroad, with the successful adoption of some breed of poultry in Nigeria around the mid to late 50's. However the foundation for modern commercial poultry was found. Government programmers were developed based on accelerating poultry production through distribution of day old chicks at subsidized price to poultry farms and importation of pullet.

Government information agencies embarked on enlightens programmed to improved nutritional education and break the residual taboo on egg consumption by children and women. (Ganiyu, 2005).

In Nigeria, animal protein, especially meat is expensive, in short supply and is out of reach to the majority of the population. The effect of inadequate animal protein intake is felt more by a larger proportion of the population especially in the rural areas, whose inhabitants constitute over 70% of the Nigerian population, and who constitute over 85% of the extreme poor in the country (Chukwuji et al., 2006). For this reason and because of expanding population the demand for animal protein will increase. Poultry production (particularly broiler), are exploited towards meeting these needs. The rate of growth in production of poultry is increasing rapidly when compared with ruminants and other monogastric animal (Braenkaert et al., 2002). Poultry play important socio-cultural role and financial purpose in many societies. It has the potential to become a ready source of income for small holder farming sector in rural area. Also poultry manure is an excellent source of organic manure in the field which is important for maintaining fertility of soil and thereby increases productivity. Poultry excreta have become a considerable source of income to poultry farmer in recent years, due to the increase in the price of fertilizer and manure.

According to Chukwuji, et al., (2006), broiler production is carried out in all parts of the country, with no known religious, social or cultural inhibitions associated with their consumption. While it is obvious that more than economic profits are made. It encourages a condition necessary for more producers to enter the business under competitive enterprise environment. The research questions include: What are the socio-economic characteristics of broiler producers in the study area? What are the economic variables that influence total revenue of broiler enterprise in the study area? What are the problems affecting small scale broilers producers in the study area? Meanwhile, there is urgent need to conduct research in this area in order to provide various solutions to the management and production problems in the broiler enterprise. Further, the result of the research will disclosed additional economic benefit derived from the enterprise, which may be very useful to farmers, government and other stakeholder in promoting broiler enterprise. The specific objectives of the study are to:

- i) determine the socio-economic characteristics of broiler producers in the study area;
- ii) examine the economic variables that influence total revenue of broiler enterprise in the study area;
- iii) assess profit level in broiler enterprise in the study area; and
- iv) identify the major problems affecting small scale broiler producers in the study area.

## II. MATERIALS AND METHODS

### 2.1 Study Area

The study was conducted in Ungogo Local Government Area (LGA) of Kano State. The study area was located between latitude 12° 35'N and longitude 8° 30'E. It was bordered to the north by Dawakin Tofa LGA, to the east by Minjibir, to the south by Nassarawa/Fagge and to the west by Gwale/Tofa Local Government Areas. The local government area has about 369,657 people and total land area of 204km<sup>2</sup> (NPC, 2006). The minimum and maximum temperatures ranged between 15°C and 33°C and fall to 10°C during the harmattan season (December to January). Rainfall ranged from 500mm to 1200mm and started around May ends in October while the dry season starts around November and ends in April. Generally, farming was the main occupation of the people in the area and some engaged in other secondary occupations like petty trading among others. Majority were Muslims which constitutes Hausa Fulani with small fraction of Kanuri and other tribes who reside in the local government area.

### 2.2 Sampling Techniques and Sample Size

A pre-survey visit was conducted in which 75 broiler farms were identified and used as a sampling frame. Both purposive and simple random techniques were employed in this study. Eight villages were purposively selected due to large number of broiler farms. Simple random technique was used with the aid of table of random numbers in selecting twenty five (25) producers from Paniso village and ten (10) producers from Rijiazak village. Then five (5) respondents were selected from Tundun Fulani, Zango Dakata, Zaura, Karo, Basherawa and Rangaza villages. This gave a total of sixty (65) samples in the study area.

### 2.3 Method of Data Collection and Analysis

Primary data were collected using a structured questionnaire administered to sixty five (65) respondents. The information collected was those on socio- economic characteristics and information on broiler production in the study area.

The secondary sources of information were from text book, journals, proceeding newsletters, internet and some agricultural parastatals.

Descriptive statistics, farm budgeting and multiple regression analysis were used in analyzing the data. Descriptive statistics such as frequency distributions mean and percentages were used in analyzing objective one and four. The net farm income was used to analyze objective three and it was specified as:

$$NFI = GI - TC \dots (1)$$

Where;

NFI = Net Farm Income for broiler production

GI = Gross Income for broiler production

TC = Total cost for broiler production

Depreciation of assets was estimated using straight line method and it was expressed as:

$$D = \frac{P-S}{N} \dots (2)$$

where;

D = Depreciation

P = Purchase price

S = Salvage value

N = Number of years of asset life

#### 2.4 Measures of Financial Success

A number of indicators have been developed to show at a glance the efficiency of a farm business which measure capital position and financial success (Olukosi and Erhabor, 2005). Three ratios were employed in this study namely: gross, operating and fixed ratios. The gross ratio measures the overall financial success of an enterprise or farm. The lower the ratio, the higher the return per naira invested. The rule says a less than 1 ratio is desirable for any farm business. A higher but less than 1 ratio indicates disastrous for a farm business and might implies over utilization of certain resources. These ratios were specified as:

$$GR = \frac{TC}{GI} \dots (3)$$

where;

GR =Gross Ratio

TC=Total Cost for broiler production

GI=Gross Income for broiler production

$$OR = \frac{TVC}{GI} \dots (4)$$

where;

OR=Operating Ratio

TOC=Total Operating cost for broiler production

GI=Gross Income for broiler production

$$FR = \frac{TFC}{GI} \dots (5)$$

where;

FR=Fixed Ratio

TFC = Total Fixed Cost for broiler production

GI= Gross Income for broiler production

Accordingly, return per naira invested was employed and it shows return from broiler production for every naira invested in the business and it is estimated as:

$$RNI = \frac{NFI}{TC} \dots (6)$$

where;

RNI = Return per Naira Invested on broiler production

NFI= Net farm Income for broiler production

TC= Total Cost for broiler production

#### 2.5 Multiple Regression Analysis

Multiple regression models were used in analyzing objective two. That is to estimate economic factors that influenced total revenue. The model was specified in this form:

$$Y = f(X_1 + X_2 + X_3 + X_4 + X_5 + X_6 + e \dots (7)$$

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + e \dots (8)$$

where;

Y =Revenue (₦/broiler production cycle )

X<sub>1</sub>=Chicks (Amount ₦)

X<sub>2</sub>=Feed (Amount ₦)

X<sub>3</sub>=Labor (Amount ₦)

X<sub>4</sub>=Medication (Amount ₦)

X<sub>5</sub>=Fixed cost (Amount of depreciation ₦)

X<sub>6</sub>=other cost (mortality, water, transportation etc ₦)

a = Constant term

b<sub>1</sub> . . . b<sub>6</sub> = Regression coefficients

e = Random error term

### III. RESULTS

#### 3.1 Socio-economic Characteristic of the Respondents

Table 1 show that the average age of the small scale broiler producers was 36.8 years. This implied that most of the small scale broiler producers in the study area were within their active age of production. This result agreed with the findings of Waziri (2010) who reports that there was a predominance of the middle aged who are energetic to face the challenges of broiler production. The results further revealed that majority (73.85%) of the respondents were male. The result agreed with the findings of Apantaku, (2006) who reports that men have the highest number of poultry enterprises than women in the southern part of Lagos State. Similarly, the results disclosed that majority (64.62%) of the respondents obtained one form of education or the other. The

implication of this result was that their literacy may enable them to adopt improved broiler production techniques. The results also showed that 35.38% of the respondents engaged in broiler production only, while 64.62% of the respondents practiced broiler production and other form of economic activity in the study area. This implied that the respondents diversified their sources of income for their livelihood. The results further disclosed that the mean years of experience in broiler production was 10.9 years. This indicates that most of the respondents had reasonable years of experience. This agrees with the adage which says constant and continuous practice make perfects. This result is in agreement with the findings of Adebayo and Adeola, (2005) who reports that the years of experience in poultry production equally indicates a positive relationship with the number of broilers produced and managed in the study area. The result also showed that majority (73.84%) of the respondents sourced their capital from personal savings. The implication of this result was that majority of the respondents obtained their initial capital from informal sources which was inadequate to enable them expand their enterprises.

**Results**

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Table 1: Socio-economic characteristics of the Producers

Variables	Frequency	Percentage
<b>Age</b>		
20 – 29	14	21.54
30 – 39	27	41.54
40 – 49	19	29.23
50 – 59	5	7.69
$\bar{X} = 36.8$ years		
<b>Sex</b>		
Male	48	73.85
Female	17	26.15
<b>Level of education</b>		
Non-formal education	23	35.38
Primary education	15	23.08
Secondary education	21	32.31
Tertiary education	6	9.23
<b>Occupation</b>		
Broiler production only	23	35.38
Broiler and crop production	10	15.38

Broiler and civil service	12	18.46
Broiler and Trading	20	30.78
<b>Total</b>	<b>65</b>	<b>100.00</b>
1 – 5	24	36.92
6 – 10	29	44.62
11 – 15	9	13.84
16 – 20	3	4.62
<b><math>\bar{X} = 10.9</math> years</b>		
<b>Source of initial capital</b>		
Personal saving	48	73.84
Friends and relatives	15	23.08
Commercial bank	2	3.08
<b>Total</b>	<b>65</b>	<b>100.00</b>

Source: Field Survey, 2022

### 3.2 Management Systems, Breeds and Flock Size Handled

The results in Table 2 show the management system practiced by the respondent in the study area. The results revealed that majority (95.38%) of the respondents adopted deep litter management in their production indicating that none used free range system. This indicates that most farmers operate purely on commercial

production to make profit. The results further indicates that 46.15% of the respondents preferred and stocked the Marshal breed, while 33.85% kept Hubbard breed. The average flock's size in the study area was 301 chicks and this implies that the farmers were operating on small scale production. The result is in line with the finding of Subhash et al., (1999) where farms having less than 1000 birds were considered as small farms.

Table 2: Management systems, broiler breed and flock size handled by the respondents

Variables	Frequency	Percentage
<b>Management systems</b>		
Semi intensive	3	4.62
Deep liter (intensive)	62	95.38
<b>Broiler stains</b>		
Marshal	30	46.15
Hubbard	22	33.85
Cobb	9	13.85
Anak 2000	4	6.15
<b>Flock size</b>		
1 – 200	28	43.08
201 – 400	19	29.23
401 – 600	12	18.46
601 – 800	2	3.07
801 – 1000	4	6.15
<b>Total</b>	<b>65</b>	<b>100.00</b>

$\bar{x} = 301$  chicks

Source:Field Survey, 2022.

### 3.3.Average Net Farm Income per Production Season in the Study Area

The results in Table 3 shows that variable cost constituted the greater proportion of the total cost of production which was estimated at 96.39%, specifically, feed cost covered 45.90% of the total cost. This result agrees with the findings of (Baku and Ya'u, 2012; Haruna, et al., 2007 and Bamiro et al., 2006) who reports that the cost of feed constituted more than half of the total variable cost

of broiler enterprise. The total cost and revenue for producing 301 broilers were ₦140,360.73 and ₦198, 235.84, respectively. The Net return (profit) was ₦57, 875.11 and the return per naira invested was 0.41. This implied that in every naira invested, the farmer realized a return of ₦0.41. Hence, broiler enterprise is a profitable business. This is in agreement with the findings of Baku and Ya'u (2012) who reported that small scale broiler production is a profitable enterprise.

Table 3: Average net farm income per production season (n = 301 chicks)

Items	Amount	Percentage
<b>Average Variable Cost</b>		
Chicks	57,212.23	40.80
Medication	6,663.41	4.75
Feed	64,435.78	45.90
Water	1,469.61	1.05
Electricity	1,697.55	1.21
Transportation	1,437.95	1.02
Wood shaving	1,265.47	0.90
Rent	1,303.50	0.93
Labor	503.50	0.36
<b>Total Variable Cost (TVC)</b>	<b>135,989.00</b>	
<b>A. Fixed Cost</b>		
Depreciation on asset	4,371.73	3.11
Total Fixed Cost (TFC)	4,371.73	
<b>Total Cost (TC)</b>	<b>140,360.73</b>	
<b>B. Returns</b>		
Sales of birds	196,622.46	
Sales of manure	1,613.38	
<b>Total Returns</b>	<b>198,235.84</b>	
Net Farm Income (profit)	57,875.11	
Return per Naira Invested (RNI)	0.41	
<b>Total</b>		<b>100.00</b>

Source:Field Survey, 2022

### 3.4 Measures of Financial Success

The results in Table 4 show that revealed that the financial coefficients were found to be 0.69, 0.02 and 0.71 for operating, fixed and gross ratio, respectively. The operating ratio shows the proportion of the gross income that goes to pay for

the operating cost which constituted 69% of the gross income, while fixed cost covered 2% of the gross income. The lower the ratio, the higher the return per naira invested and all the ratios were less than one (1) which implies broiler enterprise was profitable in the study area.

Table 4: Financial measures for broiler enterprise

Financial ratios	Coefficient	Percentage
Operating	0.69	69.00
Fixed	0.02	2.00
Gross	0.71	71.00

Source:Field Survey, 2022

### 3.5 Factors Influencing Revenue in Broiler Enterprise

Multiple regression analysis was applied to determine the economic factors influencing total revenue in broiler production. Six variables were included in the model which comprised chicks, feed, labor, medication, depreciation of assets and other charges. Linear functional form was chosen as lead equation based on the high number of

variables that were found significant and high value of  $R^2$ . The results in Table 5 indicated that feed and other cost were found to be highly significant ( $p < 0.001$ ) in influencing the revenue. This implied that the higher quantity of feed, the more the chickens can grow which in turn lead to realization of higher revenue. Similarly, cost of chicks, medication and depreciation had a positive coefficient and significant ( $p < 0.01$ ) which implied

that the higher the number of chicks being purchased and adequate medication, the higher the total revenue. However, labor had negative coefficient and was not significant due to the fact that most of the respondents employed family labor. The implication of this was that the higher the family labor used, the lower the cost of

production which in turn increases the revenue. Accordingly, these variables jointly accounted for about 82% of the variation in the total revenue of broiler production. In fact, this was not by chance as confirmed by the F-value (42.78) which is statistically significant ( $p < 0.001$ ).

Table 5: Influence of economic factors on revenue in broiler enterprise

Item	Linear	Semi log	Cob Douglas
Constants	22234 (-1.75)***	-1087779 (-9.51)** *	0.5490 (1.84)***
Cost of chicks ( $x_1$ )	0.6247 (2.87)**	41504 (1.30) <sup>NS</sup>	0.31766 (3.82)***
Feed ( $x_2$ )	0.9480 (6.69)***	112524 (6.18)***	0.37272 (7.84)***
Labor ( $x_3$ )	-7.208 (-1.19) <sup>NS</sup>	2.8666 (0.61) <sup>NS</sup>	0.0500 (0.14) <sup>NS</sup>
Medication ( $x_4$ )	15.170 (3.07)**	7.5290 (2.24)*	0.11526 (1.31) <sup>NS</sup>
Depreciation ( $x_5$ )	3.226 (2.57)**	18089 (1.18) <sup>NS</sup>	0.05480 (1.37) <sup>NS</sup>
Other cost ( $x_6$ )	9.792 (3.86)***	32714 (1.26) <sup>NS</sup>	0.18387 (2.70)**
R <sup>2</sup>	0.816	0.706	0.750
R <sup>2</sup> adjusted	0.797	0.676	0.734
F	42.78***	23.25***	34.70***

\*\*\* =  $P < 0.001$ , \*\* =  $P < 0.01$ , \* =  $P < 0.05$ , NS = Not Significant

Figures in parenthesis are t-values

Source:Field Survey, 2022

### 3.6 Problems Affecting Activities of Broiler producers in the Study Area

The results in Table 6 shows that inadequate capital and inadequate extension service were the most serious problems affecting the producers which constituted 18.81% and 17.89%, respectively. The respondents further highlighted that those problems were associated with their

sources of the initial capital which is informal sources and the funds are not adequate, while the latter constraints was associated with inadequate extension workers in the study area. Other problems identified were outbreak of disease (16.06%) and unavailability of drugs (12.39%) as constraints affecting the smooth operations of broiler enterprise in the study area.

Table 6: Problems affecting activities of broiler producers in the study area

Problems	Frequency	Percentage
Inadequate capital	41	18.81
Unavailability of drug	27	12.39
High cost of drug	14	6.42
High cost of feeds	22	10.09
Lack of good vaccination	14	6.42
Inadequate extension service	39	17.89
Poor market price	20	9.17
High cost of day old	6	2.75
Others (outbreak of disease)	35	16.06
<b>Total</b>	<b>218*</b>	<b>100.00</b>

\* Multiple responses obtained

Source:Field Survey, 2022

#### IV. CONCLUSION AND RECOMMENDATIONS

The broiler enterprise was found to be a profitable agribusiness in Ungogo Local Government Area of Kano state. However, there are some constraints that affect the smooth operations of small scale broiler production in the study area. These constraints includes inadequate capital, inadequate extension services, outbreak of diseases, high cost of feeds, and unavailability of drugs among others. Thus, the study recommends that small scales farmers should be encouraged to form cooperatives societies in order to increase their chances of obtaining formal source of financing broiler production and better marketing opportunities. Moreover, extension activities should be intensified in the study area, especially increasing the number of extension workers and encouraging good management practice in the study area. Provision and/or rehabilitation of veterinary clinics and employing trained veterinary personnel to assist farmers to operate at disease free poultry environments in the study area.

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