DETERMINANTS OF PROFITABILITY OF BROILER PRODUCTION IN MAIDUGURI METROPOLIS, BORNO STATE, NIGERIA

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ABSTRACT

This study examined the determinants of profitability of broiler production among poultry farmers in Maiduguri Metropolis, Borno State. Both primary data and secondary information were used for the study. Primary data for 2018 production cycle was used for this study which was collected using structured questionnaires. Two stage sampling procedure was employed to select 40 respondents. Descriptive statistics (frequency distribution, percentages, mean and ranking), Net farm income and multiple regression analysis were used to analyse the data collected. The results of the findings revealed a net farm income of ₦ 943.33 in broiler production in the study area. The result revealed that, household size, years of formal education, years of experience in poultry production, labour used, flock size, type of poultry management practiced, and access to veterinary services were the main determinants of profitability among the broiler farmers in the study area. It was recommended that the government should strengthen the security apparatus, the farmers should be encouraged to reactivate the existing cooperative societies to take the advantage of economies of scale in inputs purchase and sales of output and extension education should be encouraged to enlighten the farmers on how to improve their profit.

Keywords: Determinants; broiler; profitability; Maiduguri metropolis

INTRODUCTION

Poultry is by far the largest group of livestock species, contributing about 30% of animal protein consumed in the world (FAO, 2010). Chicken constituted about 98% of poultry population in Africa, providing a highly acceptable form of animal protein to most people throughout the world (FAO, 2013). The poultry industry plays an important role in the socio-economic life of most nations in the world (Oladeebo and Ambe-Lamidi, 2007). In Nigeria, the industry represents more than 57% of the total livestock production (Alabi and Osifo, 2004). The contribution of poultry products to the total livestock output has been on the increase since 1999 probably due their fast growth rate and ease of farming (Ojo, 2003). Broiler farming is one of the farming businesses in Maiduguri Metropolitan area of Borno State, where lot of people venture into its production due to their fast growth rate and marketability especially during festive periods. Broilers production requires little capital investment and yet assures quick returns within weeks and months (Umar *et al.*, 2013; Yusuf *et al.* 2016). Chicken (broilers, layers and cockerels) and other poultry birds such as pigeons,

quails, ducks and turkeys are most commonly reared poultry in Maiduguri, Borno State. The industry has been recommended as the fastest means of bridging the prevailing protein deficiency gap in the nation (Akpabio *et al.,* 2007).

Despite the seemingly impressive breakthrough of the poultry industry in Nigeria, it is yet to witness a commensurate growth probably due to its associated inherent risk and uncertainty (Oso, 2002). The probability or likelihood of losses in the expected profit relative to the potential return on the investment is usually high in poultry enterprise (Carroll, 2004). In poultry industry, production decisions are generally made under the environment of risk and uncertainties resulting in huge losses of profits. For instance, yields, product prices, input prices and quantities are usually not known with certainty when investment decisions are made (Ayinde, 2008).

The broiler industry in Nigeria has suffered a great deal of losses which affects poultry farmers as well as consumers (Ogoke, 2009). Poultry birds in general are prone to several challenges which results to decrease in profit as a result of disease attacks, change in weather, price fluctuation, government policies and high mortality of the birds especially at the early stage. This is further compounded by the current insecurity bedeviling the State. The insurgency attacks on the state and its environs possess great threat and losses to the agricultural sector and the country's economy at large. Unveiling the profitability of broiler production and identification of the factors influencing it are highly essential to ascertain whether the high cost of inputs and low prices of broilers occasioned by the insurgency has effect on profitability so as to encourage its production in the State. This will go a long way in boosting the poultry production in the study area and beyond thereby increase the output level and hence the profitability of the enterprise. It was against this background that this study was conducted to examine the main determinants of profitability among broiler farmers in the study area.

The objectives of the study were to examine the determinants of profit among broiler farmers in Maiduguri Metropolis of Borno State; determine the profitability of broiler production in the study area; examine the determinants of profit among broiler farmers in the study area; as well as to identify the management practices adopted to avert loss of profit by the broiler farmers in the study area

MATERIALS AND METHODS

The Study Area

The study was conducted in Maiduguri Metropolis of Borno State, Nigeria. The Metropolis is made up of two Local Government Areas (Jere and Maiduguri Metropolitan council). It is located on longitude 13^0E and latitude 12^0N with an approximated land area of 69,436 square kilometers (NPC, 2006). It is the largest city in the North-Eastern region of Nigeria. Maiduguri lies in the Sahel savannah vegetation. The average temperature ranges between 35^0 - 40^0 C, the area is usually cold and dry during harmattan (strong wind characteristics of the region), with November to January being the coldest months. The area has an average annual rainfall of about 647mm per annum with the rainy season covering the months of June to October (Borno State Agricultural Development Programme (BOSADP), 2010).

The predominant ethnic groups in the study area are the Kanuri, Shuwa, Hausa, Fulani, Bura and Marghi. There are also people from southern and eastern states such as Igbo,

Ijaw and Yoruba. Maiduguri is the principal trading hub for North-eastern Nigeria. Its economy is largely based on services and trade with a small share of manufacturing. The climate is favourable for the production of several crops and livestock. The major crops grown in the area include maize, millet, guinea corn, rice, cowpea, fruits and vegetables. The study is prominent in fishing apart from crop farming. It also has great potentials for animal husbandry and feeds production given the large herds of cattle, sheep/goats and poultry reared. Cattle hides, goat and sheep skins, finished leather products, dried fish and gum Arabic are among the city's chief exports (Mikloda and Joshua, 2007).

Sources of Data

Both primary data and secondary information were used for this study. Structured questionnaires were used for collection of primary data from the respondents (broiler farmers), and oral interview was also used where necessary to obtain detail responses. The primary data collected included those on socio-economic characteristics of the respondents, input cost and output prices, factors influencing profitability and measures adopted to avert profit decrease. Secondary information was sourced from journals, textbooks, thesis and other relevant publications.

Sampling Technique

Two stage sampling technique were employed for this study. In the first stage, Ten (10) wards were purposively selected within the Metropolis based on prevalence of broiler production. They include: Bolori, Pompomari, kumshe, Federal Lowcost, Gomari Costian, Moduganari, Hausari, Shuwari, Gomari and Bama road/Tashan Bama. From each of the wards, four (4) broiler farmers were selected at random, giving a total sample size of 40 respondents for the study. The list of broiler farmers was obtained from chick suppliers, feed sellers and the various poultry farmers association in the study area.

Analytical Technique

Analytical techniques that were used in the study included descriptive statistics (such as mean, frequency and percentages), net farm income and multiple regression analysis.

Net Farm Income Analysis (NFI)

Net farm income analysis was used to estimate the profitability of broiler production in the study area. The model is expressed as:

$$NFI = \sum_{i=1}^{n} P_i Y_i - \sum_{j=i}^{m} C_j X_j - \sum_{k-1}^{k} F_k \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad 1$$

Where:

NFI	=	Net Farm Income per Broiler (₦)
Y	=	Broiler output (₦)
P	=	Unit price of the broiler (₦)

C   =   Cost of variable inputs (₦)
X   =   Quantity of variable inputs
i   = Number of inputs used (where i=1, 2, 3 . . . n)
j   = Number of fixed inputs used (where j=1, 2, 3 . . . m)
F   =   Quantity of Fixed inputs
k   =   Cost of fixed inputs
$\sum$ =   Summation sign

Multiple Regression

The multiple regression analysis was used to examine the main determinants of profitability among the broiler famers. The explicit form of the model was expressed as:

$$\text{Log } Y = a + \beta_1 \log X_1 + \beta_2 \log X_2 + \beta_3 \log X_3 + \beta_4 \log X_4 + \beta_5 \log X_5 + \beta_6 \log X_6 + \beta_7 \log X_7 + U \dots 2$$

Where:

$Y=$ Profit (₦)
$X_1=$ Gender (male = 1, female =0)
$X_2=$ Household size (Number of persons)
$X_3=$ Years of formal education (Years spent in school)
$X_4=$ Years of experience (Years spent in poultry production)
$X_5=$ Flock size (number of birds)
$X_6=$ Management practiced (battery cage = 1, deep litter = 0)
$X_8=$ Access to veterinary services (Yes =1 no =0)
$\beta_0 =$ Constant
$\beta_1 - \beta_9 =$ Estimated Parameters
$U =$ Error term

Different functional forms which included linear, semi-log, double-log and exponential functions were tried. The double-log function was selected and used as the lead equation based on both statistical and econometric criteria and number of significant variables.

RESULTS AND DISCUSSION

Profitability of Broiler Production in the Study

Table 1 revealed the profit of broiler production in the study area. The result revealed a net farm income of ₦ 943.33, implying that broiler production farming is profitable farming venture in the study area. The average rate of return per naira invested was 0.64, indicates that for every one naira invested in broiler production there is a profit of 64 kobo per head of broiler in the study area. The result also implies that broiler production is a profitable enterprise in the study area. This finding also collaborates with that of (Okezie and Bime (2006); Oladeebo Ambe-Lamidi (2007) and Mgbakor and Nzeadachie (2013).

Table 1: Net farm income per broiler production in MMC

Variables	Average value (₦) per bird
Revenue	2,400.00
Variable Cost	-
Bird	100.00
Feed	300.00
Vaccine	80.00
Drugs	33.33
Total Variable Cost	513.33
Fixed Cost	-
Depreciation	
Building	571.33
Cage	266.67
Drinkers	26.67
Feeders	42,67
Others	36.00
Total Fixed Cost	943.33
Total Cost	1,456.67
Net Farm Income	943.33
Average Rate of Return	1:64

Source: Field Survey, 2018

Determinants of Profitability among the Broiler Farmers in the Study Area

The result in Table 2 shows that, all the parameters estimated carry positive signs. The F-value, 63.94, showed that all explanatory variables taken together have a significant effect on the dependent variable (profit). The R^2 value of 0.92, implying that about 92% of the variation in the dependent variable was explained by the independent variables, while the remaining 8% was captured by error term.

The result revealed that the coefficient of household size (0.147) was positive and significant ($P<0.05$), implying that a unit increase in size of household would lead to about 0.15 % increase in profit among broiler farmers in the study area. This could be probably due to the fact that large number of family members implies availability of labour for giving prompt attention and take good care of the birds. The prompt attention would reduce mortality rate and improve the efficiency in production and hence higher profit. The coefficient of education (0.384) was positive and significant ($P<0.01$), suggesting that a unit increase in formal education will lead to an increase of about 0.38% of profit of broiler production. This might probably be due to the fact that educated people have a better understanding of modern and improved farming techniques that could improve the performance of the birds. The coefficient of years of broiler farming experience (0.108) was also positive and significant ($P<0.01$) which implies that as farming years increase; there is a considerable increase (0.19%) in profit of broiler farmers. Ogoke (2009) reported that the longer the years of farming experience, the more efficient the farmer becomes because the number of years a farmer has spent in the farming business may clearly give an indication of

the practical knowledge he has acquired. This is an advantage to reduce farming risk which will help to boost production in any pre-determined period in farming business.

The coefficient of the flock size (0.033) was also positive and significant (P<0.01). This indicates that 0.03 unit increase in flock size would lead to about 0.03% increase in profit of the broiler farmers. This is plausible as the amount of profit on any farm is a function of farm size. The larger the farm size, the higher would be amount of profit from the farming operation. This finding is in line with that of Ajibefun and Daramola (2000), Subahash *et al.* (1999) and Bamiro *et al.* (2006) that the larger the flock size, the higher, the greater the outputs and profit farmers generate from their production activities.

Table 2: Determinants of profitability among broiler farmers

Variables	Parameter	Coefficient	SE	t-ratio
Gender	X_1	0.064	0.093	0.690
House Hold size	X_2	0.147	0.057	2.580**
Formal Education	X_3	0.384	0.028	13.90***
Years of Experience	X	0.108	0.033	3.250
Flock Size	X_5	0.033	0.007	4.73***
Management System	X_6	0.268	0.074	3.64***
Access to Veterinary	X_7	0.386	0.027	14.23***
R^2	0.92			
F-value	63.94			

Source: Field Survey, 2018, Note: ** and *** are probability levels at 5% and 10% respectively

Management Practices Adopted by Broiler Farmers in the Study Area

Table 3 shows the management practices adopted by broiler farmers to improve profitability in the study area were ranked according to the most practiced management.

Table 3: Management practices adopted to improve the broiler profitability

Management Practices	Frequency	Percentage	Rank
Vaccination and Hygiene	22	40	1
Proper Housing	17	30.9	2
Stocking from Trusted Source	15	27.3	3
Others	1	1.8	4
Total	55*	100	

Source: Field Survey, 2018, *Multiple response from the respondents, hence a total frequency of more than 40 (n=47)

The management practices adopted to avert losses and improve broiler profitability were proper and timely vaccination and good hygiene practice (40%) ranked first, followed by proper housing (30.9%) ranked second and buying of day old stock from trusted suppliers with 27.3% ranked as the third management practice. Furthermore, 1.8% of the respondents identified other management practices means like cultural practice, timely feeding and watering as means of averting decrease in profit level in the study area. This supports the findings of Effiong *et al.* (2014) and Timothy (2015) in their respective studies.

CONCLUSION

Broiler production in Maiduguri Metropolis, Borno State is a profitable farming venture. The farmers are receiving appreciably high amount of profit from the farm enterprise. However, the amount of profit realized are constraints by certain factors.

Hence, to further improve the profit level, it is recommended that Government should strengthen the security apparatus so as to create conducive atmosphere for farming business; farmers should be encouraged to reactivate the existing cooperative societies to take the advantage of economies of scale in the purchase of production inputs and sales of output so as to increase profitability in the enterprise; and extension education should be encouraged by successive governments to enlighten the farmers on how best to be profitable broiler farmers.

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