EFFECTS OF OPERATIONAL COSTS ON FARM INCOME IN BROILER PRODUCTION IN BOSSO LOCAL GOVERNMENT AREA, NIGER STATE, NIGERIA

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ABSTRACT

The study examined the effects of operation costs on the profitability of broiler production in Bosso Local Government Area of Niger State, Nigeria, using primary data collected on forth nightly basis for three production cycles during the 2008 production season, from April to December. A total of 100 broiler farmers were used for this study. Data were collected using structured questionnaire and were analyzed using descriptive statistics, net farm income analysis as well as Ordinary Least Squares (OLS) multiple regression analysis. Results indicate that, feed, labour and cost of foundation stock had positive and statistically significant effects on farm income. It is recommended that broiler producers should form cooperative societies to consolidate their holdings to be able to meet the needs of members at cost.

Keywords: Operational costs, Broiler production, OLS, Foundation stock

INTRODUCTION

Protein deficiencies remain widespread in developing countries because people subsist on diets that are often entirely made of starchy staples (Adama, 2008). According to Delgado *et al* (2001), annual demand for meat in the developing world is expected to grow from 111million tonnes in 1997 to 213 million tonnes in 2020. The combined per capita consumption of meat, eggs and milk in developing countries grew by about 50 per cent from the early 1970s to the early 1990s. Expanding demand is the result of combination of high real income growth, swelling population, rapid urbanization and the ongoing diversification of developing countries' diets away from high level of starch staples. (Adama, 2008). Quite a number of Nigeria's population however, still consume below the daily per caput protein requirement of which broiler meat can serve as source.

Livestock production is an important component of the Nigeria's agricultural economy contributing about 12.7% of the agricultural Gross Domestic Product (GDP) (CBN, 1999). The livestock industry provides a means of livelihood for a significant proportion of rural pastoral families in the sub-humid and semi-arid ecological zones of Nigeria. Poultry outnumbers all other forms of livestock in Nigeria, and not surprisingly, is found throughout the country. Typically, they are maintained under traditional, low-input, free-range systems of management, but substantial numbers are also reared intensively on a commercial basis, particularly in the Southern States. Current estimates put the country's population at 140million (Adama, 2008). Backyard farmers account for 60 percent of all poultry producers, commercial farmers for 25 per cent and semi-commercial farmers for 15 percent.

Olayemi and Roberts (1999) observed that poultry production has a high priority rating compared with other types of livestock, because, poultry has better energy and protein conversion ratio and that net returns on investment are relatively high. Further buttressing this point, Barau and Ogundipe, (2001) observed that broilers are considered to be a means of livelihood and a way of achieving a certain level economic independence in Nigeria. The primary purpose for keeping broiler birds in all parts of the country is for both dietary and economic reasons. Today, broiler keeping has developed from backyard business to a commercial oriented industry

In fact, broiler, production is unique in that it offers the highest turnover rate and the quickest returns to investment outlay in the livestock enterprise (Barau and Ogundipe, 2001). Funds invested in broiler production are recovered faster than in any other livestock enterprise. The production cycle could be as short as four weeks for brooding and eight weeks for broiler production totaling 12 weeks. The economic efficiency of investment into broiler production depends to a large extent on environmental conditions such as nutrition and management. Management in this context means identifying the various alternative production strategies of various cost and return elements that could be employed to obtain the highest possible returns.

The poultry sector is experiencing cyclical expansion and contractions in output price cycles which is caused by a relatively elastic supply and the tendency for producers to base future production plans on current prices and profits

Perishability of poultry products raises the urgency of farmers to market their products, thus limiting producer flexibility. Birds must be sold when they reach proper market weight and maturity (Kohls and Uhl, 1998). Marcus (2005) observed that profit is maximized when savings is made on feed cost.

Mack (2000) affirmed that efficiency of feed and labour utilization is a very important means of increasing profit in the poultry enterprise and that the profit margin depends mainly on feed utilization, cost of day old chicks and efficient management of resources. Against the backdrop that feed accounts for over 60-70% of the total cost of production (Tanko Jirgi, 2007), a more cursory investigation into the effect operation costs have on profit in the study area has become imminent. This study therefore investigates the effects of operation costs on broiler production, identified factors militating against the enterprise and made policy recommendations towards enhancing broiler production and raising farm income and livelihoods of broiler producers in the study area.

METHODOLOGY

Area of Study

This study was carried out in Bosso Local Government Area (LGA) of Niger State. Niger State is in the middle-belt region of Nigeria. The State shares common boundaries with Kaduna, Federal Capital Territory, Kwara, Kogi and Kebbi States. The dry season is between November and April with a mean monthly temperature of about 35.5° C which is lowest in August. The rainy season is between May and October. The mean monthly temperature is about 25.1° C and an annual rainfall of 133.4mm. The highest mean monthly rainfall occurs in September of about 300mm, (Ibikunle, 1995). The vegetation is principally made up of shrubs, grass land to wood lands. The topography is predominantly plain lands with interrupted undulations. The soil structure is mainly sandy-loam (Ibikunle, 1995). The types of animals that are reared in the survey area are mostly goats and few cattle with traces of poultry keeping.

Broiler producers were selected using multi-stage random and purposive sampling techniques. Bosso Local Government Area was chosen purposively based on the preponderance of poultry farmers. In the first stage, four villages, namely Chanchaga, Garatu, Tagwai and Gidan Kwano were chosen randomly. The second stage involved choosing a random sample of 25 farmers from each of the villages. A total number of 100 broiler farmers were chosen for the study during the 2006 production season.

The data for this study were mainly primary data collected via firstly, a recognissance survey, interview schedules, as well as the use of structured questionnaire. Data were collected on fortnightly basis over three production cycles from April to December in 2008.

The data were analyzed using descriptive statistical analytical tools such as tables, means, percentages, frequencies, etc., gross margin analysis and Ordinary Least Squares (OLS) multiple regression analysis. The gross margin of an enterprise is the difference between the total value of production and the total variable costs of production. It measures the contribution of that enterprise to total farm profit. Given the fixed cost on a farm, the larger the total gross margin from all the enterprises on the farm, the larger the profit. Gross margin analysis assumes that fixed cost items are spread evenly across the enterprises.

Mathematically, gross margin can be expressed as:

$$GM = GI - TVC \quad \text{---(1)}$$

$$GM = \sum_{j=1}^{m} P_j Q_j - \sum_{i=1}^{n} P_i X_i \quad \text{...(2)}$$

Where; GM=Gross Margin; Q_j=Quantity of j^{th} Output; P_j=Price of unit of j^{th} output; X_i=Quantity of the i^{th} variable input, P_i=Price of unit of i^{th} Variable input; N = Number of inputs used in production, M = Number of enterprises and $\sum$ = Summation.

Model Specification

In determining the variable cost items significantly affecting broiler production in the survey area, a model was specified implicitly as follows:

$$Y = f(X_1, X_2, X_3, X_4, X_5, e) \quad \text{---(3)}$$

Where:

Y = Total value product (TVP) in Naira.

Table 2: Costs and Returns in Broiler Production in Bosso LGA, Niger State, Nigeria 2006.

Average Fixed Cost (AFC)	Amount in Naira	% of total cost
Day old chicks	4338.00	17.21
Poultry house	2378.00	9.43
Drinkers	917.30	3.64
Feeders	817.70	3.24
Interest on capital	339.00	1.34
Equipment	548.90	2.17
Drier	361.80	1.43
Deep litter	1539.00	6.10
Miscellaneous	836.00	3.31
Sub total	12,075.70	47.87
Average Variable Cost (AVC) item	Amount in Naira	% of total cost
Feed	10.067.00	39.95
Medication	755.60	2.99
Veterinary Service	600.00	2.38
Hired labour	175.09	0.69
Water and electricity	1,519.70	6.03
Subtotal variable cost	13,117.39	52.04
Grand total (FC + VC) =	₦25,193.10	
Average Returns(AR)	Amount In Naira	% of Total returns
Sale	14,156.90	39.09
Culling	9052.30	25.00
Droppings	7342.50	20.27
Empty fed bags	3657.48	15.62
Average Total Returns (ATR)	36209.20	99.98
NFI ATR-(AFC+AVC)	11,016.10	

Source: Computed from survey data,2006.
Note: fixed cost items were depreciated using the straight line method of depreciation.

Table 3: Summary of the problems militating against broiler production in the study area, 2006.

Constraint	Frequency	%
Inadequate Capital	78	44.32
Disease outbreak	35	19.89
Poor pricing	34	19.32
Transportation	29	16.47
Subtotal	176*	100.00

Source: Field survey, 2006.
Note: * implies that multiple responses were recorded.

CONCLUSION AND POLICY RECOMMENDATIONS

This study has indicated that broiler production is a profitable venture because the computed net return value for a typical entrepreneur per production cycle is ₦11,016.10. At the margin, ₦1.00 in invested capital could yield up to ₦1.92k. Feed cost accounted for about 40%, while the variable cost items accounted for about 52.06% of the total cost of production. The problems bedeviling the enterprise in decreasing magnitude of importance are inadequate capital to purchase production inputs such as feed, other variable inputs etc, incidence of diseases as well as poor remunerative prices. Four variables, namely, feed, labour, foundation stock and capital inputs had positive and statistically significant effects on farm income. Since operation cost has significant effect on broiler production and given that the industry is capital intensive and that small holders farmers over rely on household resources for their production activities, the need for farmers to belong to cooperative groups to consolidate their holdings has become necessary to boost production and increase farm income and livelihoods.

Current research efforts on livestock and particularly poultry should be further strengthened to curb the menace of disease by providing prophylactic and curative measures. Broiler production should be demand-driven. The production should be made to target festive periods of the year.

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